



System Hardening & Reliability Improvement Program (SHRIP)

A Concept Paper in response to Department of Energy's:
Funding Opportunity Announcement (FOA) Number: DE-FOA-0002740
FOA Topic Section 40101(c): Grid Resilience Grants

Topic Area 2

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Project Location

City of Lake Worth Beach Electric Utility
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Lake Worth Beach Florida 33461

Upgrade and modernization initiatives will occur at various locations throughout the City.
The iguana on the cover caused outages in Lake Worth Beach as seen on CNN.
This application does not contain any confidential information.



Lake Worth Beach – GRIP Topic 2 Project and/or Technology Description

How the project addresses the topic area’s eligible uses and technical approaches.

The City of Lake Worth Beach Utility (CLWBU) is seeking federal investment for a Smart Grid Grant (BIL 40107) to enhance its system capabilities. Unlike most cities in surrounding areas, the City of Lake Worth Beach (the “City”) does not use the nearby investor-owned utility, Florida Power and Light (FP&L), for its electric provider. Instead, the City owns and operates its own small utility¹ electric company. CLWBU sources approximately half of its electricity needs from its own aged power plant combined with ownership interests in larger power plants statewide, with the other half of its needs being met from by a contract with Orlando Utilities Commission, also a municipal electrical utility in Florida. CLWBU’s fuel mix is approximately 38% nuclear and solar, with the remainder coming from fossil fuels. CLWBU’s reliance on fossil fuels is expected to decrease significantly by 2026 as deliveries of solar energy under already executed contracts begin and its aged fossil-fueled plants are retired. Lake Worth Beach has an aging electric delivery infrastructure, low-income population, and, due to its location on the coast of eastern Florida, significant climate risk. Tropical storms and hurricanes pose significant danger to the power grid, and new upgrades are crucial to avoid frequent, extended outages. With the help of DOE funding, the city aims to purchase and deploy smart grid technology to increase transmission capacity, integrate renewable energy, improve system visibility and communication, and anticipate and mitigate the effects of severe-weather events.

Transmission capacity and capability are among the City’s most urgent needs, as the utility has the worst electric system reliability numbers in the state. The City’s outdated transmission and distribution systems are so degraded that in 2019 there were 473 outages (4,188,894 minutes of customer interruption, 61,168 minutes of outages). This improved slightly in 2021 with 326 outages (3,663,672 minutes of customer interruption, 34,948 minutes of outages). See Table 1

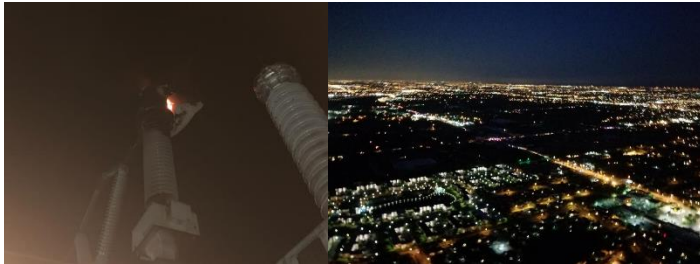


Figure 1 A fire on a single transmission line’s metering CT (left) caused a city-wide outage (right)

below. The state of this system illustrates a critical need to recruit and hire STEM (science, technology, engineering and math) skilled workers for key positions related to system design, engineering, operations and maintenance, which this project will accomplish (see the Community Benefits Plan).

RELIABILITY	Affected	Operations	Events	Minutes of Outages	Customer Minutes of Interruption	Outages
YTD 11/2022	44,048	84	112,623	33,521	1,437,749	289
2021	107,050	79	159,035	34,948	3,663,672	326
2020	78,165	83	124,874	61,168	4,188,894	473
2019	55,697	65	130,535	48,606	2,240,495	390

Table 1 CLWBU Grid Reliability 2019-2022

¹ Small utility is defined as an entity that sell no more than 4,000,000 MWh of electricity per year.

To provide reliable clean energy, every aspect of the City's electric infrastructure needs to be replaced, transformed and/or modernized. To address this problem, the City has leveraged private sector and non-federal public capital as part of the **SHRIP** (System Hardening and Reliability Improvement Program) initiative launched by Lake Worth Beach in 2019, which has funds ready to bear 50% of the cost of proposed changes. These long-range multi-year capital improvement plans focus on providing the most consequential system needs, as well as creating meaningful and robust engineering and technology opportunities. However, because the changes are extensive and system-wide, DOE support is necessary to fully fund the proposal. Without DOE GRIP support, these planned upgrades are projected to take **10-20** years to fully complete. With GRIP support, we anticipate reducing the time to completion of the entire SHRIP to **5** years, with many initiatives completed in 3. The end result will be a highly adept system that will employ greater transmission, visibility, and renewables to accommodate the unique needs of Lake Worth Beach for the long term.

A Smart Grid GRANT (BIL section 40107) would support a series of seven (7) infrastructure upgrade initiatives designed to transform the community's electrical grid and reduce its vulnerability to climate change. These initiatives have been coordinated and assembled into a cohesive strategy for funding and executing these upgrades. Each of the initiatives has an existing scope and timing prior to the GRIP funding, but with GRIP funding we will be able to increase the pace and scope of each initiative beyond what we could have accomplished without it. Each of the initiatives below is an eligible project and cost under the GRIP funding opportunity.

- **Increasing transmission capacity and operational transfer capacity.** We aim to provide more robust connections to our single radial transmission line tap by adding a new interconnection to the statewide high voltage transmission grid with improved protection capabilities, redundant power flow paths, and backup autonomous switching for power restoration. Currently, our sole transmission line tap, which is 50 years old, puts the city at much greater overall risk of experiencing an outage, and recent storms have caused city-wide problems precisely because there is only a single line. Adding redundancy, protection capabilities, and autonomous switching will enable us to limit the impact of future outages. The City will add a second transmission/distribution station tie to the grid with automated switching and control through smart devices to maintain primary power connections. *Grid Benefit:* The network topology and flow control device improvement will enhance the reliability of our system which has expired generation capabilities and a single radial tap to the grid currently. With DOE funding, the grid can also incorporate a parallel path express feed to add redundancy to the network.
- **Improving the visibility of the electrical system and recover autonomously.** The City plans to add 60+ reclosers and other sectionalizing devices, including load flow sensors, to autonomously rebalance the electrical system. These devices will provide real time data and sectionalizing and restoration capability that is autonomously controlled from centralized outage management system and electric distribution system analysis software to restore as many customers as quickly as possible, in some case automatically using smart grid technology. *Grid Benefit:* This will drastically improve the reliability and timing of outages for customer through minimization of distribution system segment

lengths and exact data return from the field for the system operators. This will also improve response time to identify and reach the exact area of problem.

- **Enhance secure communication and data flow between distribution components.** The City will add utility-owned dedicated fiber to/from each of our stations and remote line devices to enhance our existing wireless radio network for electric system primary protection coordination and backup data to the fiber network. More reliable licensed frequency radios will be installed for high-speed smart devices coordination with our System Control and Data Acquisition (SCADA) system. *Grid Benefit:* Enhances the reliability and security of the data in our system, as primary data to operations will change from radio to fiber optic. Additionally, it will allow for quicker protection coordination for the expanding complexity of mesh grid coordination.
- **Anticipate and mitigate the impacts of extreme weather or natural disaster on grid resiliency.** In light of our significant storm risk, the City plans to prevent hurricane and tropical storm damage by upgrading our existing 1970's radial transmission line to meet newer Category 5 storm wind loading requirements, in some cases sub-transmission feeder cables/conductors will be placed underground for increased resilience. Additionally, we will improve the conductor capability to meet end point capabilities and add animal protection on a large scale to prevent vegetation, bird, iguana, and other animal related outages, especially at substations. *Grid Benefit:* Storms are a major problem in Lake Worth Beach. Storm protection will provide significant community resilience and is consistent with distribution grid needs to improve infrastructure to provide underserved and disadvantaged communities with reliable and flexible electric service.
- **Integration of distributed energy resources and devices to provide system benefits such as renewable energy resources and electric vehicle charging infrastructure.** The City will add to our existing 1.7MW local solar capacity, including adding community solar initiatives, to get closer to our stated goal of a 100% carbon-free energy portfolio by 2050. Our Integrated Resource Plan (IRP) calls for us to design and implement a large battery storage facility to provide the ability to deliver night-time power using our growing solar portfolio while also serving to reduce and one day eliminate generating electricity from fossil fuels during the day. Additionally, we plan to enhance our vehicle charging infrastructure to the community which will provide local jobs, increase the potential influx of remote visitors for business, and encouragement of electric vehicle purchases in the region. *Grid Benefit:* The solar power would provide green energy flow which, along with large battery storage, and would provide relief to the state grid as well as the local community. The charging stations would encourage the transition to electric vehicles and increase traffic to help businesses in the community.
- **Improve grid visibility and condition to facilitate more efficient and accurate system-related decisions.** To better enable grid operators to regulate the system, we plan to install an Advanced Metering Infrastructure (AMI) System across the entire service territory. *Grid Benefit:* The AMI System would improve outage identification and restoration times, while providing customers with real-time consumption data to aid in energy conservation measures. In our current system, due to the outdated technology, system operations are frequently impacted by weather events, outages, or partial

outages and technicians cannot always determine which customers have electricity service. With new technology to identify and isolate faults, grid operators will be able to facilitate a quick response.

- **Improve grid-related decision making based upon historical and real-time system data.** The City will also install a Meter Data Management (MDM) System to collect, organize and retain all valuable data points to facilitate more efficient and accurate grid-related decisions. *Grid Benefit:* System events could be easily categorized, analyzed, and retained for continuous improvement processes related to reliability and system operation. We envision this as a significant future benefit in understanding and managing our community's power usage.

The seven (7) initiatives described above correspond to the funding priorities laid out in the FOA. They provide new methods and technical approaches to increase the capability of our transmission system, prevent faults, integrate different renewable energy infrastructure, and enhance the communication network to create overall visibility improvements to the operators and autonomous control success.

How the project supports State, local, Tribal, community and regional resilience, in reducing the likelihood and consequences of disruptive events, decarbonization, or other energy strategies and plans.

The City's proposed upgrades are designed to bolster local resilience, especially for disadvantaged communities, substantially mitigate disruptive events, and contribute to decarbonization while also providing opportunities for growth.

CLWBU serves one of the most ethnically and racially diverse municipalities in Palm Beach County, Florida. Located in a high-risk hurricane zone, the City has regularly been impacted by hurricanes and other weather events that are exacerbated and made even more frequent because of climate change. Additionally, in 2019, **27.4%** of residents were considered impoverished, which is more than twice the countywide average of 12.0% and nearly double the Florida average of 12.4%. Access to reliable power is a benefit to all communities, but outages and power issues disproportionately impact disadvantaged communities such as Lake Worth Beach, which are less likely to have modern infrastructure and backup power systems in place. Grid outages in these communities last longer and impact more people, many of which are most reliant on reliable electricity supply a basic necessity. Considering the ethnic and racial diversity of the Lake Worth Beach communities, DOE funding would have a significant impact on the city's ability to provide economic and energy justice benefits to its communities.

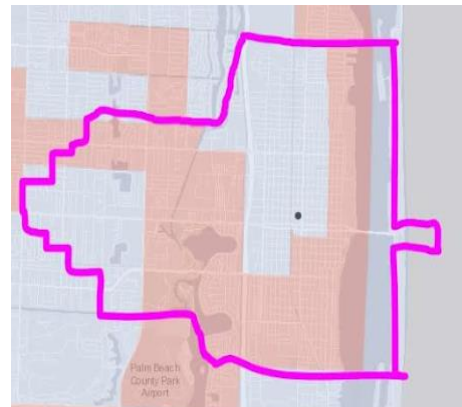


Figure 2 Lake Worth Beach electric service area showing disadvantaged communities in red/pink

The proposed upgrades would significantly reduce disruptive events and contribute to decarbonization both in Lake Worth Beach and in the broader region. When completed, we anticipate that the grid will experience far fewer outages, that power lines will be protected from

hurricane and storm damage and that increased transmission capacity will mean that damaged circuits will have diminished impact, and that grid operators will be able to restore power quickly in the event of an outage. Additionally, integrating renewable energy into the grid will provide regional and statewide benefits by reducing the amount of power generated using fossil fuels.

Beyond this, Lake Worth Beach is far from the only coastal city in Florida or elsewhere with aging infrastructure and severe-weather risk. We hope that our model of municipal revenue-backed bond funding and self-raised capital allocations, combined with DOE funding, will be useful for other regional towns as they contemplate how to harden their own systems, and that the enhanced workforce incorporated as part of this project will make an experienced labor pool available regionally. Beginning in 1965, the City, in accordance with Florida Statutes, Section 163.01, which allows governmental units to make the most efficient use of their powers by enabling them to cooperate with other localities on a basis of mutual advantage; has participated in at least 16 interlocal, regional and State agreements for participation and project funding for transmission systems, utility adjustments, and other improvements, and we plan to share the roadmap of our project widely. In terms of innovative risk, the initiatives we have proposed are highly feasible, offer a new way to incorporate modern technology into existing systems, and can greatly reduce the problems that older infrastructure experiences.

Moreover, the improvements could contribute to growth from developers and investors, due to the additional reliability. **SHRIP** also supports and advances the City's current long-range electric utility plan to replace its aged 4 kv and overloaded electric distribution system with a new 26.4 kv system, upgrade existing 26.4 kV distribution circuits to sustain operations during storms of up to Category 5 wind strength, and design and construction of a dedicated 26.4 kV Sub-Transmission System Loop. **SHRIP** will add animal guards to prevent animal-caused outages.

Climate Change: As a coastal community already experiencing the effects of climate change including sea level rise and violent hurricane events, the City's electric utility has completed its 2022 and beyond Integrated Resource Plan (IRP) that specifies the energy supply resources that will be needed to reach its stated goal of zero carbon energy by 2050, and a System Hardening and Reliability Improvement Program (SHRIP).

Population and Energy Demand Growth: For many years, the City has provided free energy audits to customers to assist them in achieving energy savings. CLWBU has also provided for installations of customer-owned renewable generation systems (such as rooftop solar) to be interconnected to the utility's electric grid and pays customers for any excess electric generation on their part annually. Additionally, the City has budgeted funds to evaluate technologies, costs, and benefits of demand response technology, which the SHRIP upgrades will facilitate. Average kWh growth over the last 10 years has been 1.555% annually.

Incorporating City-Owned and Privately-Owned Renewables into Grid Operations: CLWBU has interconnected into its grid a 1.7 megawatt-AC solar power plant, a 1.54 megawatts-AC comprised of 182 privately-owned solar systems (with an additional 0.47 megawatts-AC comprised of 64 systems in the permitting process for interconnection), and 26.55 megawatts-

AC of privately-owned solar under contract for delivery in 2023, 2024, and 2025 to be indirectly interconnected to its grid, with an additional 20 megawatts-AC of privately-owned solar currently in contract negotiation for indirect interconnection into its grid.

Microgrids (including distributed energy resources); the City's electric utility has performed a conceptual assessment of a potential microgrid anchored by a to-be renovated hotel and new residential complex and includes advanced grid functionality such as demand response, V2G and V2X, smart equipment on the utility side as well as the customer side that can reduce and manage loads; the City's electric utility has completed its 2022 and beyond Integrated Resource Plan that calls for a portion of its capacity needs to be met via the use of Demand Response technologies. The utility has budgeted for and is currently reviewing solicitations for the first step towards implementing such technology, selection of the preferred technology, identification of costs and benefits, and logistics of implementation. Also included in long range planning is community growth plans and the energy needed to support growth, as the City's electric utility's Integrated Resource Plan is reflective of expected community growth plans. The utility tracks yearly growth and looks ahead using historic trends and know projects under development to estimate energy needs. Growth estimates are reviewed by multiple external resources and are utilized in the utility's short-term and long-term financial planning.

SHRIP is crucial to growth of the community and economic development that will enhance growth of both the population as well as business and industry. The City's economic development plan envisions supporting greater density and increased business development, as represented by three proposed mixed use development sites within the City, described below. These developments will rely upon and will not be viable without the upgraded and improved electrical system to be developed by **SHRIP**. Each site has several options with varying power requirements.

Site 1 is a 13.60 acre site located near the northern boundary of the City on the west side of North Dixie Highway. Zoning is Mixed Use Dixie Highway (MU-DH), and the future land use is Mixed Use East (MUE). Conceptual site plans show a 60% residential and 40% mixed use configuration. The Rendering 3 option is expected to utilize approximately 2,272,656 kWh of energy per year.



Figure 3 Site 1 is a Mixed Use Development 60/40

Site 1 has several variations at different densities and configurations as shown in Table 2.

Site 1 Options	Lot Coverage	Building Coverage	Floor Area Ratio Max	Density (units / acre)	Height (stories)
Rendering 1	65%	50%	1.55	30 (408 units)	4 (45 ft)
Rendering 2	65%	50%	2.325	45 (612 units)	6 (67.5 ft)
Rendering 3	65%	50%	2.55	55 (748 units)	7 (82.5 ft)

Table 2 Site 1 Development Options

Rendering 3 – Transfer Development Rights – Density, Intensity and Height Incentives

- Lot coverage – 65%
- Building coverage – 50%
- Floor Area Ratio – Max 2.5575 or 1,515,104 sq. ft.
- Density – 55 units per acre or 748
- Height – 82.50 ft not to exceed seven stories.



Figure 4 The third / highest option for Site 1.

The Rendering 3 option is expected to utilize approximately 2,272,656 kWh of energy per year.

Site 2 is a 4.83 acre site located along the Florida East Railroad right of way south of Lake Ave., where the City envisions a future East Coast Link light rail or transit station. Zoning is Transit Oriented Development East (TOD-E), and the future land use is Transit Oriented Development

(TOD). Conceptual site plan shows 35% residential, 50% commercial and 15% hotel mixed use. The Rendering 3 option is expected to utilize approximately 1,379,928 kWh of energy per year.



Figure 5 Site 2, south of Lake Ave, aerial rendering

Site 2 also has several variations at different densities and configurations, shown in Table 3.

Site 2 Options	Lot Coverage	Building Coverage	Floor Area Ratio Max	Density (units / acre)	Height (stories)
Rendering 1	65%	55%	2.20	50 (241 units)	5 (55 ft)
Rendering 2	65%	55%	3.975	75 (362 units)	7 (82.5 ft)
Rendering 3	65%	55%	4.3725	85 (410 units)	8 (97.5 ft)

Table 3 Site 2 Development Options

The Rendering 3 option is expected to utilize approximately 1,379,928 kWh of energy per year.

Site 3 is a 9.897 acre site located next to the Lake Worth Tri Rail Station along the south side of Lake Worth Road west of Interstate 95. Zoning is Transit Oriented Development West (TOD-W), and the future land use is Transit Oriented Development (TOD). Conceptual site plan demonstrates a 35% residential, 50% commercial, and 15% hotel mixed use configuration.



Figure 7 Site 3 Development Options

Site 3 also has several variations at different densities and configurations shown in Table 4.

Site 3 Options	Lot Coverage	Building Coverage	Floor Area Ratio Max	Density (units / acre)	Height (stories)
Rendering 1	65%	60%	2.60	50 (495 units)	5 (55 ft)
Rendering 2	65%	60%	5.30	75 (990 units)	7 (82.5 ft)
Rendering 3	65%	60%	5.83	85 (1,098 units)	8 (97.5 ft)

Table 4 Site 3 Development Options

The Rendering 3 option is expected to utilize about 3,770,239.5 kWh of energy per year.

Rendering 3 - Transfer Development Rights - Density, Intensity and Height Incentives

- Lot coverage – 65%
- Building coverage – 60%
- Floor Area Ratio – Max 5.83 or 2,513,493 sq. ft.
- Density – 85 units per acre or 1,098 units
- Height – 97.5 ft not to exceed eight stories



Figure 8 Site 3 Option 3 Use Case

The grid-benefitting outcomes to be delivered by the project.

Lake Worth Beach’s current electrical grid is inadequate to provide consistent, reliable power to the community. This failure in turn has several ripple effects: it puts critical institutions, such as City offices, first responders such fire and safety, educational institutions, health care, and businesses at risk, further disadvantages underserved communities which experience longer

outages from the least modernized infrastructure, and makes the city less attractive to private investment. Interruptions to electricity in these locations have significant consequences, especially during and in the aftermath severe-weather events. In light of this, immediate grid benefiting outcomes include:

- Increase transfer capacity and decreases interdependencies between infrastructure systems to deliver clean energy to the local community.
- Create redundancy improving reliability, reduces fault current, and corrects voltage imbalances. Additionally, converting to lower amounts of oil-cooled type equipment and utilizing environmentally friendly cooling liquid such as FR3.
- Enable significant community resilience and is consistent with distribution grid needs to improve infrastructure to provide underserved and disadvantaged communities with reliable and flexible electric service.
- Reduce disruptions to electric service available to customers when it is needed most.
- Replace old and unprotected direct-buried underground conductors to eliminate risk of failure and modernize the delivery of reliable clean energy
- Reduce repair time and cost, risk of health and safety to line crew during disruption events caused by severe weather events.
- Reduce risk to health and safety of line crew during maintenance and repair and reduce disruptions events for power lines and substations during extreme weather events.
- Improve fault reduction of reactors, regulators help with voltage control, single phase reclosing to reduce customers effected, and capacitors to improve power quality to all new switchyards.
- Address the grid needs of replacing aging submarine cable infrastructure to our barrier island to enable significant community resilience.
- Reduce damage and outages during lighting and weather events, adjacent airport flight path concerns, and vehicle/train derailment accident concerns.

These grid benefits will generate the following additional beneficial outcomes for community residents:

- Reliable electricity in education institutions that provide student learning environments with reliable power for heating, cooling, and lighting.
- Powering health care and residential nursing home facilities with reliable and resilient power is essential for the local community. The facilities require electricity to refrigerate vaccines, sterilize, power equipment, provide lighting during any procedure, and provide basic services to nursing home residents.
- Businesses benefit from access to reliable power to provide lighting, run machines, and communication technologies. In addition, these businesses provide various job opportunities to the local disadvantaged community.
- Electricity helps strengthen the local communities. Reliable electricity power things such as lights at night for safety, pumps to clean and filter water at our water treatment plant, and other living essentials.

- Improved reliable power helps bring new development and as a result more businesses and homes which result in improved housing units, better pay and increased opportunities.
- Support economic growth and development planned for the next 20 years.

Creating a smart grid is an essential step in paving the way for future private investment in the city, which is why the City chose to leverage private sector and non-federal public capital. We anticipate that this will demonstrate to investors our successful management of capital investments, a planned approach to budget management, and a serious commitment to future residents. As a city with an above-average growth rate of more than 20% since the last census, we aim to build a stable power grid that can accommodate an influx of newcomers, their businesses, and the expanding needs of our existing schools and hospitals.

The impact of the project to reduce innovative technology risk; achieve further deployment at scale; and lead to additional private sector investments.

The **SHRIP** will be crucial to de-risking private investment into renewable energy generation, including solar, wind and other renewable generation sources, and microgrids that provide localized continuity of service during grid outages. Investors in renewable generation want the

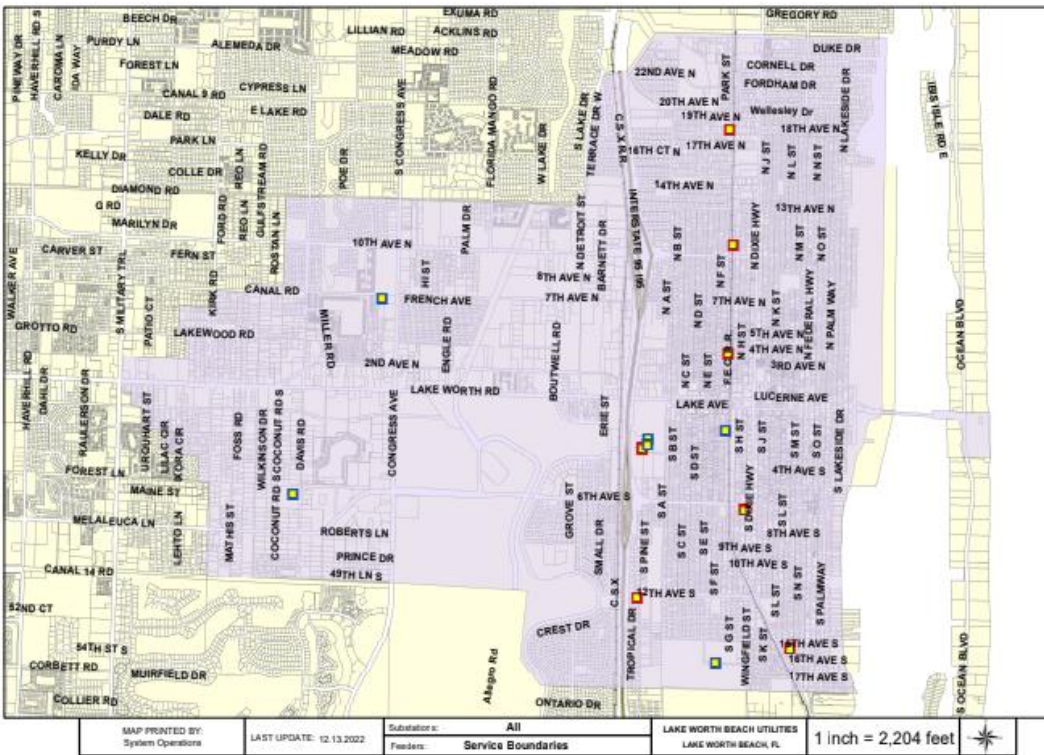


Figure 4 Lake Worth Beach utility infrastructure

ability to sell excess electricity back to the grid, as this creates a potential revenue stream for the equipment owner / operator and increases their motivation to deploy such technologies. Without the ability to receive and purchase energy from

DERs, the motivation for these private sector investments is lowered. By upgrading the transmission system, the **SHRIP** enhances the local grid's ability to receive and utilize energy generated by community DERs and to enable future energy purchasing from DER owners across the City.

The impact that DOE funding would have on the proposed project

The **SHRIP** Initiatives started by CLWBU are currently funded by the City's Utilities Series 2020 and 2022 bond funds and associated budgeted capital items and are being managed by individual project schedules. The available funding made possible for grid resilience by the DOE GRIP grant will impact the current SHRIP program in the following ways:

- 100 new Science, Technology, Engineering, and Mathematics "STEM" jobs will be made available by CLWBU to the local community.
- This project will mitigate multiple hazards that affect the communities in this service area, including hurricanes, flooding, extreme heat, which have repeatedly disrupted power service to our communities.
- Expansion of scope to expand sub-transmission lines and undergrounding of main distribution feeders as additional efforts in the value of system resilience initiatives.
- Improving capacity of power, resilience of network, and reduction of maintenance for the transmission line.
- Enhanced renewable energy projects, which will increase the availability of carbon-free energy to the grid and allow for mass integration of electric vehicle charging stations.
- Improved grid visibility in SCADA and distribution controls systems for rapid or automated load rebalancing, fault isolation, and repair.
- Improved security for grid data transmissions and additional protection against cyberattacks and domestic terror threats.

The readiness, viability, and expected timing of the project.

Current upgrades are being funded by two rounds of municipal revenue-bond funding, and substantial preparations have been made to secure contractors and suppliers, build a workforce capable of implementing the planned projects, and execute on the most critical repairs quickly. Many of the work agreements and contracts are already in place and are designed to quickly be scaled to the full project with the appropriate funding. The major barrier to accomplishing the goals set out in this proposal is funding limitation. Of the first bond, secured in 2020, most projects are already in motion and either in construction or design. Of the second bond, secured in 2022 Bond, the projects are just starting in the design phase and construction is expected to start by late 2023 with depletion of most of the funds by early 2026. The City will either need to do a 2024 or 2025 bond in order to continue the work, but this would not complete everything; a fourth bond would likely be needed around 2026/27 to secure the most critical upgrades. However, this would be far from completing everything; further work would need to continue for at least another decade, contingent on funding, in order to fully transform the grid. With GRIP funding, we would be able to execute multiple designs at the same time and build simultaneously as much as possible. Successive rounds of bond funding and associated repayment costs will place a significant burden on our disadvantaged community. The table below indicates the difficulty in completing all the necessary projects to the extent that our engineers have recommended; barring federal investment, several of these initiatives will need to wait for future funding rounds.

Expected Time Frame to Completion of Initiatives (years) without and with GRIP funding			
SHRIP Initiative		Without	With
1	New transmission station and automated controls	20+	3-4
2	Add reclosers and other sectionalizing devices, including load flow sensors	20+	3
3	To add fiber to/from each of our stations and some remote line devices.	20+	3
4	Underground transmission line	20+	3
5	Add to our existing 2MW local solar capacity and create battery storage facility	20+	5
6	Installation of an Advanced Metering Infrastructure (AMI) System	20+	3
7	Installation of a Meter Data Management (MDM) System	20+	3

Table 5 How GRIP funding will impact SHRIP timelines

The current status of each initiative is reviewed below:

- All design work for the addition of two 138kV transmission lines under the Purchase Power Initiative at this time is complete with final permits expected in January 2023. Implementation of the new station and connections will start early 2023. The expected completion time for part of this SHRIP Initiative is scheduled over the next 18 months. However, with DOE funding, engineers can integrate additional upgrades and enhancements to the transmission lines from the new tap to the existing tap and main substation as well as a parallel path express feed, a substantial improvement over the current projected design which is not possible without additional funding.
- The city has already invested \$250k with another \$250k awaiting execution on smart grid devices such as reclosers for sectionalizing and mesh grid connecting. This currently will only cover about 10% of the desired improvements to smart grid technology enhancements. The goal is to continue forward to a full remote smart grid capable of receiving autonomous control instructions from a secure centralized analyzation software to restore power to the most customers in the least amount of time. With DOE funding, the city can add the remaining reclosers to cover the remaining 90% of the power grid.
- The city has invested in full design and installation of 3 large segments of utility owned fiber optic communications cables worth over \$400k which will be dedicated to electric utility system protection and critical operating data transfer. Radios will remain as backup data communication providers at the substation and switching stations and upgraded radio infrastructure will be used for remote smart devices to enhance autonomous control and protective coordination. Fiber optic cable systems are currently in design and the 3 segments will be completed by October of 2023. An addition of substation fiber rings will still need to be completed over the next 3-5 years. As of this current funding round, only 20% of the necessary fiber optics can be included, but with DOE funding, the remaining 80%, which are planned but not funded, can be installed as well.
- Preliminary design has been completed on the hardening of our existing transmission line to enhance the capacity and reliability to withstand potential extreme weather. Also, overhead static line clamp inspections and upgrades have been completed along with Infrared inspections and grounding improvements to the existing transmission line. GRIP funds would allow us to either fully upgrade the overhead capacity and infrastructure or move it all underground.
- The City has already invested in its own 2MW solar field with room for much more solar power. CLWBU has also purchased a cooperative contract for more solar in the state of

Florida to increase the portfolio to over 50% carbon-free energy by 2025. DOE funding would allow for battery storage, to store large quantities of daytime solar power for nighttime use, as well as support overnight electric vehicle charging with solar energy rather than fossil-fueled energy.

- The city has already begun to explore and evaluate AMI and MDM solutions available in the market and expects a 3-year total project timeline after selection of the appropriate vendor(s). However, DOE funds are necessary for installation and implementation into the power grid.

COMMUNITY BENEFITS PLAN

The proposed smart grid upgrades would provide more stable, resilient access to electricity for Lake Worth Beach, new quality job opportunities, and an improved quality of life for many disadvantaged and underserved communities. Lake Worth Beach is a rapidly growing city and one of the most economically and racially diverse municipalities in Palm Beach County. Because of the small size of the power utility and the diverse population who make up Lake Worth Beach's community, this funding proposal directly corresponds to the FOA's stated goals of channeling clean energy to disadvantaged Americans. Additionally, providing increased transmission capacity, storm protection, secure communication, and renewable energy integration are necessary to ensure that its grid can cope with increased demand and provide excellent service to existing low-income communities.

Below are several ways in which **our *System Hardening and Reliability Improvement Project (SHRIP)*** proposal advances the following four priorities: (1) community and labor engagement; (2) investing in the American workforce; (3) diversity, equity, inclusion, and accessibility (DEIA); and (4) the Justice40 Initiative. In preparing for this grant proposal, CLWBU has taken steps to ensure that the community is aware of, actively involved in, and fully represented in the process. The proposal will result in new quality jobs and pathways to careers in highly competitive fields. Additionally, CLWBU has taken steps to ensure that underrepresented and minority communities will be part of the project in every stage, as well as securing similar commitments from its partners. The completed project will result in significant improvement for the city as a whole, clean energy for Justice40 communities, and spillover benefit for the regional and state-wide electrical grid.

COMMUNITY AND LABOR ENGAGEMENT

Lake Worth Beach is committed to transparency and actively engaging our citizens at every step of the process. In order to obtain community feedback, we plan to address our proposal through several advisory boards, staffed by residents, which reflect our diverse population and regularly solicit citizen input on key city matters. The boards involved in this project will include the following:

- Electric Utility Advisory Board
- Construction Board of Adjustment and Appeals
- Community Redevelopment Agency
- City Trees
- Historic Preservation
- Planning and Zoning
- Recreation
- Finance

The members of these boards consist of ordinary citizens and regularly hold sessions which are publicly notices in advance, open to the public in accessible locations, and open to the public via Zoom web conference. Filtering the proposals through these boards will allow residents of various standings and capacities outside of city government to attend meetings, make their opinions, desires, and opinions known, and offer perspectives on the work. We anticipate that using existing city mechanisms will engage a diverse set of voices and increase transparency about the proposed upgrades to the electrical grid. Additionally, where possible, work opportunities will be made available through local businesses, with additional attention being

given to Small Minority Owned Businesses. In order to encourage small businesses to remain in Palm Beach County, preference in providing goods and services will be given to a local business (entity or person) with a physical address within the corporate limits of the City of Lake Worth. The procurement division and city staff are strongly encouraged to utilize small businesses for purchases that are anticipated to have a total value of less than fifty thousand dollars (\$50,000.00). Additionally, in order to advance diversity, equity, and accessibility, the city will utilize the databases of Palm Beach County Office of Small Minority Owned Business and the small business program of other municipalities within Palm Beach County to acquire lists of potential vendors for procurement opportunities.

INVESTING IN THE AMERICAN WORKFORCE

The City is committed to investing in America’s workforce in a meaningful way, especially through local ties. **96.52% of the City employees are in union eligible positions.** The City has collective bargaining agreements with the following Labor Unions:

- International Brotherhood of Electrical Workers (IBEW) has 82.93% minority membership
- Public Employees Union (PEU) has 68% minority membership
- Professional Managers and Supervisors Association (PMSA) has 51% minority membership

SHRIP builds on these existing relationships between labor unions and the city, provide skill upgrades for local workers, and offer new possibilities for good quality jobs. Some of the money funded by this proposal will provide opportunities for apprenticeships, new jobs within these unions, and additional training for existing workers. The multi-year timeframe of the work, the varied tasks involved, and the unionization of labor will meet all the criteria for providing good quality jobs as defined in the FOA: (1) exceeds the local prevailing wage for an industry in the region, includes basic benefits (e.g., paid leave, health insurance, retirement/savings plan), and is unionized, and (2) helps the employee develop the skills and experiences necessary to advance along a career path. Table 6 below identifies job positions projected to be created by the SHRIP, prior to, without GRIP funding and with GRIP funding.

Position	Position Details					
	Educational Requirement	OJT?	Starting \$/yr.	Union Eligible	# of new positions without GRIP	Number of new positions with GRIP
EVSE installer	Electrician Certification	Yes	\$130,000	Yes	0	4-6
Construction workers	none	Yes	\$95,000	Yes	0	45-55
Transmission Engineer	Engineering Degree	Yes	\$110,000	Yes	0	7-10
Linemen	High School/GED	Yes	\$105,000	Yes	0	16
Cable installers	High School/GED	Yes	\$61,000	Yes	0	20
Meter installer	High School/GED	Yes	\$81,000	Yes	0	10
Network Engineer	High School/GED	Yes	\$105,000	Yes	0	1
Project manager	College	Yes	\$105,000	Yes	0	3
Substation technician	High School/GED	Yes	\$60,000	Yes	0	2
Technical Trainer	College	Yes	\$80,000	Yes	0	2

TOTAL						110-125
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Table 6. Jobs to be added by GRIP funding.

Through bargaining agreements with the unions, we have agreed upon a strategy in hiring practices to prioritize and maximize utilization of local resident workers as well as diversity, equity, accessibility and inclusion for minorities, women and people from disadvantaged backgrounds. The City has a state-certified 4-year apprenticeship program for lineman. Per our policies minorities and local applicants are given preference. Seven of the linemen who have graduated the apprenticeship and continue to work for the City, and several have been promoted to higher level positions. The City Human Resource team performs a Class and Compensation study to ensure that job descriptions are accurate with alignment of compensation in the surrounding areas for like jobs. All employees are eligible for and encouraged to pursue professional development, at the City’s expense. The City has a partnership with DeVry University for professional growth training focusing on skills development and workplace opportunities.

In addition to the jobs created by the infrastructure upgrades themselves, as noted above, by improving the community’s electrical infrastructure to permit greater community growth and density, this project will also advance job creation across an even wider range of industries and further enhance regional economic growth. To understand our community better, the City has undertaken an outreach and engagement campaign with the community and has been successful in engaging many companies, organizations and individuals to better understand their energy needs and growth plans and to obtain their support for **SHRIP**.

DIVERSITY, EQUITY AND INCLUSION AND THE JUSTICE40 INITIATIVE

CLWBU policies provides preference to and encourages procurements to vendors who are minority, small business, disadvantaged, local. In the event that jobs are created as a result of funding, many of those jobs would be local. The City has been engaging with scores of its local suppliers and vendors and secured commitments to support the SHRIP from: Municipal Lighting Systems Inc, Nassau National Cable, Lawson Products, Transformer Gasket and Components, GHMR, Waco Filters Inc, GE Power & Water, American Safety Utility Corporation, Grainger, K &M Electric, Irby, Highfields Mfg. Co., WESCO, Anixter, American Wire Group, Fastenal, Electric Sales Associates, Inc., Gresco, Victory Bolt, Precast Specialties LLC, Sesco Lighting, Inertia Engineering, Langdale Forest Products/Koppers, Ace Pole Company. Tri-state Utility Products Inc, Jack2Rack/Vertical Cable, Graybar, Sunbelt-Solomon Transformer, Transformers Now, MS-TN Transformers, T&R Electric Supply, Emerald Transformer, Transformer Network, OTC Services, Power Asset Recovery Corp, Normandy Machine, Waste Management Inc of Florida, Great Western Printing, Miami Transfer, Altec Truck Repair, Altec Supply, Altec truck rental, Hi-Line, FarWest , Hall’s Safety , Bobs Barricades, FDOT Permitting, Line-tec Inc, Viking Utility, Tallman Equipment, Sunbelt, Lawnmower Headquarters, American Solutions for Business, LV Superior Landscaping, A Quality Bushog Services Inc, Davey Tree, Acorn Locksmith, National Vision, Halsey and Griffith, Robbins Manufacturing Company, Banyan Printing, Neeld Paper & Supplies, Wilco LLC, LE MYR Group , Hooper Corp, Restore It All, Nucat Corp.. Some of these are minority, veteran or woman owned and/or have committed to prioritizing minority and local hires (Table 7).

Minority owned:	<u>Electrical Distribution Engineering:</u> E.C. Fennell
Minority veteran owned:	<u>Electrical Dist. construction & equipment:</u> Divergent Alliance
Committed to prioritizing minority and local hires:	<u>Electric Pole Line Hardware Suppliers:</u> Electric Supply, Inc., Gresco Utility Supply Inc., Sonepar USA. <u>Ductile Iron Pole Manufacturer:</u> McWane, Inc. <u>Wholesale Power Agency:</u> Florida Municipal Power Agency <u>Electrical Distribution Constr.:</u> L.E. Meyers Co., Hooper Corp. <u>Electrical Distribution Engineering:</u> Power Eng, Inc., BHI Energy <u>Utility Forestry and Vegetation Management:</u> Davey Tree

Table 7. Minority, Veteran or Woman Owned Business supporting SHRIP and/or Committed to DEIA hiring

These companies have also been informed of and agreed to the city’s emphasis on diversity, equity, and accessibility in hiring, especially the need to factor the region’s racial and economic diversity into their hiring decisions. Pursuant to city ordinance, contractors and subcontractors are prohibited from discriminating against an employee or client because of race, color, religion, disability, sex, age, origin, marital status or sexual orientation. Additionally, all city contractors are required to participate in the E-Verify platform to ensure that work involved in this project goes to American citizens and legal resident immigrants.

By improving the community’s electrical infrastructure to permit greater business and economic growth, population density, and critical service resilience to climate impacts, **SHRIP** will facilitate job creation across a wide range of industries, as partially represented by the list above, thereby enhancing regional economic growth for decades to come. As noted in the project description, improvements in the electrical infrastructure will enable planned multi-use developments that will support residential and business growth across a spectrum of income levels and job types, including hotel, retail, IT, technology, banking, healthcare, manufacturing, and many more.

Lake Worth Beach meets multiple criteria of the Justice40 Initiative. According to the US Census Bureau, as of 2019, an estimated 27.4% of residents were considered impoverished, more than twice the countywide average of 12.0% and nearly double the Florida average of 12.4%.² It is also a minority-majority community, with only 31.44% of the town identifying as non-Hispanic White alone and substantial Hispanic (45.85%), African-American (18.44%), and mixed-race populations. Approximately 38.7% of residents were born outside of the United States, many of whom immigrated from the Caribbean or Latin America, and one of the most significant immigrant groups includes the Mayan community, a group that fled the Guatemalan government's genocidal attacks during the 1980s and arrived in Palm Beach County mostly undocumented and often afraid of authorities.

Besides directly benefiting underserved communities with more reliable and less expensive energy, the initiatives described herein have been developed to contribute to the overall environmental health of these communities in the following ways:

² <https://www.census.gov/quickfacts/fact/table/palmbeachcountyflorida,FL/PST045221>

- Our commitment to clean energy will enable us to provide electricity which is over 50% free of greenhouse gases by 2026, among the best in the country and Florida. GHGs contribute to climate change, which is documented to negatively affect disadvantaged communities disproportionately because of their lack of access to mitigation resources.
- Replacing outdated, often inaccessible electric utility poles to provide stable, consistent power, and streamline repairs;
- Decreasing power outages and improving reliability;
- Decreasing in environmental exposure by undergrounding electrical equipment and wires; and,
- Increasing energy resilience by strengthening the electrical distribution system with stronger infrastructure, including utility poles and hardware.

This electrical infrastructure revitalization and modernization project will:

- a) provide more consistent, stable service to Justice40 communities who currently rely on dangerously outdated and inadequate power infrastructure and who suffer disproportionately from negative impacts from outages;
- b) improve the environmental impact of the power utility; and,
- c) offer the possibility of **100** good jobs and career pathways through our commitment to DEIA, local unions and labor directly associated with this project.

This project supports the planned economic and population growth and increased density in the City, which will increase the population that stand to benefit from the improved infrastructure. In turn, this increased population generates more economic activity, which also benefit the local community.

ADDENDUM A

The City of Lake Worth Beach Electric Utility (CLWBU) team has been successfully managing grid upgrade projects of this scope and size. The utility employees boast more than 100 years of collective experience and have successfully managed millions of dollars of projects since 2020. CLWBU has permanent access to approximately 20,000 square feet of indoor warehouse storage space and an additional 10 acres +/- of secured outdoor laydown sites. The City owns material handling equipment such as forklifts and flatbed trucks, as well as distribution system maintenance equipment such as bucket trucks and digger derricks. Additional local office and facility space has been identified already if required following Commission approval.

Contracts and suppliers have been identified and can be activated as soon as funds are available. CLWBU has extensive prior experience in large-scale projects, intimate familiarity with the problems and needed repairs, as well as the skill and experience needed to successfully execute the project plan. All projects listed below have a similar fiscal risk in that the funding has been provided by multiple rounds of municipal bonds, with associated project completion timelines. An illustration of projects that are currently in design or are in queue to begin construction are listed in the Table A below, while projects that have recently been seen through to completion are listed in Table B.

Key personnel:

Ed Liberty has served as the Electric Utility Director for the City since August 2017. In this role he leads all aspects of the electric utility's operations and business activities, including energy procurement and resource planning, power generation operations, transmission and distribution operations, materials management, revenue protection, and management of the City's customer service operations. Mr. Liberty also serves on the boards of the Florida Municipal Power Agency, the Florida Municipal Electric Association and Florida Gas Utility as the City's representative. Prior to joining the City, he was employed by Public Service Electric & Gas ("PSE&G") of Newark, New Jersey as Director of Utility Operations Services for the period of 2012 to 2017. Mr. Liberty had previously worked for PSE&G in various roles for sixteen years in the utility and non-utility electric generation and energy services business. Experience included multiple rotational assignments at both the field and corporate level across varied business units. His experience included roles in power plant operations and maintenance, owner's representation on joint-owned power plant assets, engineering, business planning, industrial customer retention, marketing and sales. From 2005 to 2012 Mr. Liberty served as Vice President of Dome-Tech, Inc. and a member of the company's executive committee. Dome-Tech was an energy consulting company providing industrial, large commercial, healthcare, higher education and public entities nationwide with assistance in energy system master planning, improving energy efficiency, reducing greenhouse gas emissions, energy procurement and managing energy cost. During his tenure at Dome-Tech, the company was acquired by United Technologies Corporation, where he worked until returning to PSE&G in 2012. From 1997 to 2005 Mr. Liberty worked for NUI Corporation, a natural gas utility holding company with operations in various states in the eastern U.S., including Florida. In this role he led the company's efforts to grow industrial customer sales and margins,

development and delivery of energy services and the expansion of natural gas distribution/transmission/storage infrastructure to serve markets in New Jersey, Florida, Maryland, North Carolina, Pennsylvania and New York. He was the developer of natural gas pipeline infrastructure projects in support of the corporation's energy hub strategy; projects included pipeline and natural gas storage assets. Mr. Liberty holds a Bachelor of Science degree in Mechanical Engineering from Newark College of Engineering at New Jersey Institute of Technology.

Jean St. Simon, has nearly 20 years of experience in Electrical Distribution Projects. Mr. St. Simon has served as an Electrical Distribution Engineer with the City since 2006. In this role he leads all aspects of the Distribution Engineering projects including: technical design, electrical drawing review, underground and overhead replacement projects, overseeing other engineering activities and requirements. Mr. St. Simon is pivotal in materials management activities to determine which poles, cable, transformers, switch are appropriate and required. He provides the quarterly and annual reports to the Public Service Commission as required by law. He also manages the timelines, permitting requirements and specifications of each project. These projects were similar in size / scope to the project proposed herein, included DEIA components, and were successful in achieving all their objectives including completion on time and budget.

David Martyniuk has nearly 10 years of experience in managing utility projects of similar scope and complexity. In addition to Lake Worth Beach Utility projects, David also managed a number of Power Systems related at Keys Energy before coming to Lake Worth Beach in 2019. The projects were similar in size / scope to the project proposed herein, included DEIA components, and were successful in achieving all their objectives including completion on time and budget.

Mike Jenkins will be a key component on the project team with over 40 years of experience in the Electric Utility industry. Mr. Jenkins has worked for the City for many years and currently oversees all of the energy delivery functions of the City of Lake Worth Beach, and has extensive prior experience managing projects of various size and scope. Mr. Jenkins is also a certified lineman apprentice instructor with Associated Builders and Contractors, Inc as well as a Journeyman Lineman.

Thomas McKee has 15 years in Materials Management at electrical utilities and has worked for the City for a number of years. Mr. McKee has focused on projects that require materials demand planning, logistics, warehousing, supply chain coordination, minority owned and women owned vendor sourcing where possible. Thomas has also developed an expansive list of vendors to mitigate the current supply chain disruptions. Mr. McKee also ensures: the City of Lake Worth Beach Project Team has adequate access to equipment and facilities necessary to accomplish the projects described in this application.

Ashley Sirdar has multiple engagements with the City. Her most recent achievement is earning a Bachelor's degree in Project Management from a local Lake Worth Beach based university. Ashley had the foresight to enter the electric utility industry, by accepting an internship with the City in 2021. Following her successful graduation, Ashley is now an incredibly resourceful Project

Manager at the City leading budgeting initiatives for the 2020 and 2022 Bonds, providing project activity and cost tracking reporting of SHRIP projects.

Alyssa Kirk a female veteran of the GWOT has 12 years managing Electric Utility projects including managing \$75M in technical projects for Oncor Transmission and Distribution. Alyssa has a Masters Certification in Engineering Project Management from Villanova University and a technical management certifications from Harvard University.

Tables 8 and 9 below lists past projects of similar size and complexity and risk as the **SHRIP** efforts discussed in this application.

TABLE 8 - Projects In Progress	
Category / Project Title	Status / Description
Transmission	In Progress
Transmission Line - Canal 138kV Switch Station	Transmission Line project
Transmission Line OPGW	New OPGW Canal to Main & Hypoluxo to Main
Main Yard Control House (TWN)	Eng. Design, purchase & install
Substation	In Progress
6th Ave S sub (6-bank station PB&Z, Survey & Design)	6th AVE South (H Street) Substation Design project
6th Ave S sub (6-bank station Materials & Construction)	7th AVE South (H Street) Substation Construction projects
Main Yard Buss Insulators & Switch Replacement	Main Yard Buss, Switch, Insulator replacement
New Canal 8 Bay Substation (6001,6002,6003,6004)	New Canal 8-Bay Substation (6001,6002,60003,6004, 4DR01)
Substation Capacitor Banks (Main Yard)	Main Yard Capacitor Banks, Study, Eng, Materials & Install
Digital Gas Analysis Equipment from ABB for (4) large power transformers	Digital Gas Analyzer for XFMRS & SCADA
SEL FR12 Digital Fault Indicators (12 sets)	Fault Indicators
12th AVE SUB (Design & Construction)	R/R Existing 4kV with 26kV
Omicron Testing Equipment	New Substation Testing Equipment
Engineering Services Support	ECF Engineering Support @ 1900
Distribution	In Progress
7th AVE Circuits Constr. (0702,0703, 0704)	7th AVE Circuit Hardening & Voltage Conv. (LE Myers)
Canal Feeder - Constr. (4DR01)	4DR01 - College Feed from Canal Hardening & Voltage Conversion (LE Myers)
6th AVE S. - Circuit Design (0601,0602,0604)	DESIGN - 6th AVE/H Street Substation Circuit Design, Constr. & Voltage Conversion
6th AVE S. - Circuit Materials & Construction (0601,0602,0604)	DESIGN - 6th AVE/H Street Substation Circuits Constr. & Materials
6th AVE S. - Circuit Design (0603 and 1200)	DESIGN -6th AVE/H Street Substation Circuits
6th AVE S. - Circuit Materials & Construction (0603 and 1200)	MATERIALS & CONSTRUCTION -6th AVE/H Street Substation Circuits
1W05 Phase 1 -Constr. A St. 10th Ave N to 18th AVE N, east on 18th AVE N to Substation	1W05 Phase 1 Constr.

TABLE 8 - Projects In Progress	
Category / Project Title	Status / Description
1W05 Phase 2 -Constr. RR Tracks 18th Ave N to 24th Ave N	1W05 Phase 2 Constr.
1W05 Phase 2 -Constr. RR Tracks 18th Ave N to 24th Ave N	
1W13/0704 Phase 2 - Constr.	1W13 Phase 2 - French Ave Relocate & Hardening
1W13/0704 Phase 2 - Constr.	1W13 Phase 2 - French Ave Relocate & Hardening
Beach Tie - New ICW crossing design, survey & Geotechnical	DESIGN - ICW crossing to Casino Complex
Beach Tie - New ICW crossing materials & construction	MATLS & CONSTR - ICW crossing to Casino Complex
Canal Sub Circuits - Hardening (6001,6003, 6004)	Canal Circuit Hardening (HOOPER)
Canal Sub Circuits - Hardening (6001,6003, 6004)	Canal Circuit Hardening (HOOPER)
Canal Sub Mods - Design (4DR01, 6001, 6003 & 6004 UG/Relocate @ Canal for New Sub)	Canal Circuit Hardening Design
Distribution Modeling & Trip Coordination	Arc Flash, Trip Coord. Modeling (1W05 First, Substation Arc Flash)
138kV Tie-Line Underbuild Distribution Circuits (6004 & 6003)	DESIGN - Distribution Underbuild on FP&L 138kV T-Line
138kV Tie-Line Underbuild Distribution Circuits Materials & Construction (6004 & 6003)	MATLS & CONSTR - Distribution Underbuild on FP&L 138kV T-Line
Undergrounding & Distribution Circuit Mods 5003, 0602, 0603	Undergrounding and loop feed for Gulfstream and Bryant Park Beach Tie
1W05 Phase 3- Design & Construction - UG Work (W05-E09-E06-3N11-3N12)	1W05 Phase 3 Design & Construction
1E09 & 1N11/0703 UG at 7th AVE N & I-95	E09 & 1N11/0703 UG at 7th AVE N & I-95
System Reclosers	Distribution System Reclosers
XPLE UG Cable Replacement @ various locations & Substations	XPLE UG Cable Replacement
12 AVE S Circuits	12th AVE Circuits (1201, 1202, 1203 & 1204)
New Main Yard Feeder 1W18	New Main Yard Feeder tie to 1W05/1E03

Table 8 Projects in Progress

TABLE 9 - Completed Projects (SHRIP):	
Project Title	Description
138kv Tie-Line Static Line Repairs	138kv Static Line Repairs
Main Yard GT2 138kV Cable Replacement	138kV UG Cable Replacement
Underground 3S04 Circuit at FEC RR and 1st AVE S	Underground 3S04 Circuit at FEC RR and 1st AVE S
South Loop Conversion	0602 In-House Labor (O&M)
E08 & ABB Breaker Project	E08 Breaker Replacement and ABB Breaker Upgrades
EU/City Fiber & Communication	Fiber to CLWB Substations
7th AVE N Substation (Constr.)	7th AVE Sub Construction

Table 9 Completed Projects (SHRIP)

Many of the projects are utilizing or replacing existing facilities. The equipment contracts, consultants, and contractors are often existing contracts. If the City receives GRIP funding,

through commission approvals we can quickly execute on these projects as we already have them scoped out, but we do not have the funding to achieve them without GRIP. The equipment involved in these projects has a hybrid acquisition process between contractors and CLWBU where the larger normal stock items would be ordered in advance of the project construction and stored on site at various locations. The remainder of smaller more abnormal items such as conductive bus, control cabling, nuts/bolts, etc. are typically left to the contractor to purchase specific to the project.