



# 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 1

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### Project Location

City of Lake Worth Beach Electric Utility  
1900 2<sup>nd</sup> Avenue, Lake Worth Beach Florida 33461

Upgrade and modernization initiatives will occur at various locations throughout the City.

The iguana on the cover was responsible for a system outages as seen on CNN.

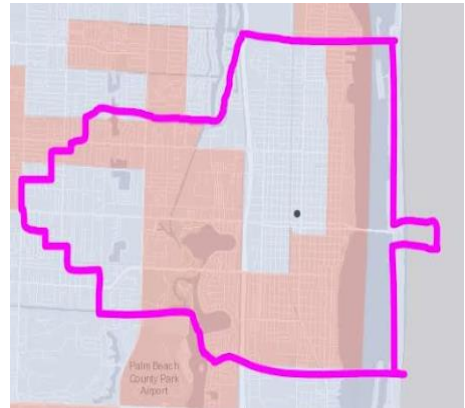
This application does not contain any confidential information.



## Lake Worth Beach – GRIP Topic 1 Project and/or Technology Description

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

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 utility<sup>1</sup> electric company (“City of Lake Worth Beach Electric Utility” or CLWBU). CLWBU sources approximately half of its electricity needs from its owned aged power plant combined with ownership interests in larger power plants statewide, with the other half of its needs being met from a contract which Orlando Utility 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 of 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.



*Figure 1 Lake Worth Beach electric service area showing disadvantaged communities in red/pink*

The system provides electricity to the City of Lake Worth Beach, a community where 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%. Average kWh growth over the last 10 years has been 1.555% annually.

The City’s outdated transmission and distribution systems are so degraded that in 2019 there were 473 outages (4,188,894 minutes of customer interruption, 61,168 minutes of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 only 326 outages (3,663,672 minutes of customer interruption, 34,948 minutes of outages). See Table 1 below. Unsurprisingly, the City has the worst electric system reliability numbers in the state. 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

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

*Table 1 CLWBU Grid Reliability 2019-2022*

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

Plan). Furthermore, it is well documented that extended disruptions to the electric grid have serious consequences to public health and safety, national security and civil unrest. To provide reliable clean energy, every aspect of the City's electric infrastructure needs to be replaced, transformed and/or modernized. In response, the City has leveraged private sector and non-federal public capital. The City Commissioners approved two (2) rounds of municipal bond funding since 2019. The approved bonds combined with capital budget allocations launched the \$85 million System Hardening and Reliability Improvement Project (**SHRIP**) in October 2019 which is currently in full progress. The City has completed one (1) substation to a new switchyard, new hardware and control vault for our Main Yard substation, and about fifteen percent (15%) of hardening to our distribution network. 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. 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.

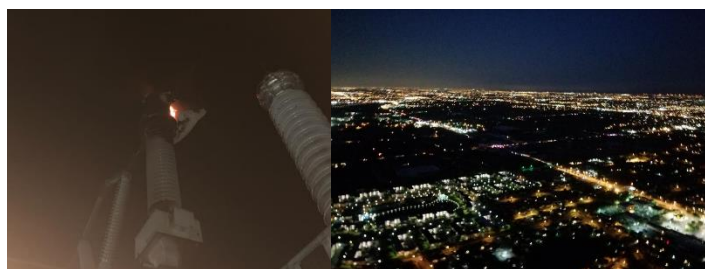


Figure 2 A fire on a single transmission line's metering CT (left) caused a city-wide blackout (right)

The City is seeking federal investment for Grid Resilience (BIL section 40101(c)) to support a series of ten (10) infrastructure upgrade initiatives that together will 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 under a singular project called the **System Hardening and Reliability Improvement Project (SHRIP)**. Each of the initiatives comprising **SHRIP** has an existing scope and timing prior to the GRIP funding, and with GRIP funding we will be able to increase the pace and scope of each initiative beyond what we could have accomplished without the GRIP funding. Each of the initiatives below is an eligible project and cost under the GRIP funding opportunity.

- **Upgrading Substations to Regulated Switch Stations.** Replace antiquated substations with transformers beyond life expectancy for new switchyards in conjunction with distribution voltage conversions from 4kV to 26.4kV. *Grid Benefit:* Creates redundancy improving reliability, reduces fault current, and corrects voltage imbalances. Additionally, converting to lower amounts of oil type equipment and utilizing environmentally friendly cooling liquid such as FR3.
- **Voltage Conversion - Step up.** Voltage conversion transforms the distribution system to operate at a larger voltage while reducing the current. This eliminates any possible overloading of the distribution system and reduces outages. *Grid Benefit:* Enables 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.

- **Re-conductor.** Replacement of old overhead conductors to increase power delivery while addressing possible future shifts in loads on the distribution system. *Grid Benefit:* Reduces disruptive events in provided electricity available to customers when it is needed most. See Figure 3.
- **Underground Distribution Replacement.** Replacing directly buried, 40-year old existing underground conductors. *Grid Benefit:* Replacing old and unprotected underground conductors to eliminate the innovated risk and modernize the delivery of reliable energy.
- **The Relocation of Power Lines, 18th – Move to Street – No Access.** Relocation of sub-transmission and distribution power lines from backyards to street fronts in residential neighborhoods. *Grid Benefit:* Reducing repair time and cost, risk of health and safety to line crew during disruption events caused by severe weather events.
- **Undergrounding Distribution System at Substations.** Undergrounding the distribution feeder to harden and reduce disruption events at substations. *Grid Benefit:* Reduces risk to health and safety of line crew during maintenance and repair, and reduces disruptions events for power lines and substations during extreme weather events.
- **Adaptive Protection Technologies, Reactors, Regulators, Pole mount Reclosers, Cap Banks.** To add this equipment in to all new switchyards and improve the existing substations with this new equipment for resilience. *Grid Benefit:* Reactors will improve fault reduction, regulators help with voltage control, single phase reclosing to reduce customers effected, and capacitors to improve power quality to all new switchyards.
- **Intracoastal Submariner Cable Replacement.** Replace antiquated, 50-year old existing submariner electrical cable that is submerged under the Intra-coastal waterway. *Grid Benefit:* Addresses the grid needs of replacing submarine aging infrastructure to enable significant community resilience.
- **Undergrounding to Hypoluxo.** To underground the overhead radial transmission line to increase reliability. *Grid Benefit:* The major benefit is to reduce **flight path concerns**, and **vehicle/train derailment concerns as well as reduce damage during weather events.**
- **Vegetation.** Tree trimming is actively performed to contribute to system hardening throughout the year to mitigate any outages caused by over-grown trees, other vegetation, or animal. *Grid Benefit:* Managing vegetation around critical infrastructure is a preventative measure which helps reduce the likelihood of a disruption event and facilitates quick access and ability to conduct maintenance or repair of any infrastructure with no delay or additional cost.

CLWBU is committed to providing a reliable electric service through the initiatives identified above. Not only do these reliability initiatives support the local community and reduce disruptive events, they create good-paying, skilled professional and the STEM job opportunities for the local community who call Lake Worth Beach home.

**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 CLWBU is a small utility that 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. With the help of a DOE investment, the CLWBU will be able to increase the pace and scope of efforts to harden and modernize its electrical grid, which will reduce the likelihood of disruptive events, and will support our communities by generating quality jobs. Access to reliable power is a benefit to all communities, and outages and power issues disproportionately impact disadvantaged communities such as Lake Worth Beach. These communities are less likely to have backup power systems in place and grid outages in these communities last longer and impact more people. 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 justice benefits to its communities. A DOE commitment provides substantial community benefits, reduces disruptive events and outage times to critical loads such as schools, health care, businesses, and the local commercial customers. The projects provide additional local quality job opportunities; moreover, the improvements could contribute to growth from developers and investors, due to the additional system 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 distribution, circuits to sustain operations during storms of up to Category 5 wind strength, and design and constructions of a dedicated 26.4 kV Sub-Transmission System Loop.

**Climate Change:** As a coastal community already experiencing the effects of climate change including sea level rise and violent hurricane events, the CLWBU 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). **SHRIP** will also add animal guards to all installations.

**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 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.

**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 under 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**. 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, shown 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.



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.



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.

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

- Lot coverage – 65%
- Building coverage – 55%
- Floor Area Ratio – Max 4.3725 or 919,952 sq. ft.
- Density – 85 units per acre or 410 units
- Height – 97.50 ft not to exceed eight stories



Figure 6 Rendering 3 for Site 2, third / highest option

**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 approximately 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 – 97.50 ft not to exceed eight stories



Figure 8 Rendering 3 for Site 3, third / highest option

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

In 2019, electricity was being delivered on wooden poles which are decades past their expected end of life.<sup>2</sup> Moreover, 900 of the wooden electrical poles had sustained significant weather and structural damage or were rotted (See Figure 5), and were often located in resident’s backyards, and frequently inaccessible to line-crews. Due to the outdated technology, system operations are frequently impacted by weather events and outages or partial outages and cannot always determine which customers have electricity service. This uncertainty requires field technicians to be dispatched to determine if customers have electricity or not, thereby increasing the cost, complexity and time required to resolve service outages or interruptions, resulting in an increased cost to the City, burden on community residents, slowing economic growth and making the City less attractive to private investment.



Figure 8 Rotted power poles present dangers to the community and when they fail will cause an outage.

The **SHRIP** is transformative to the local grid’s reliability as it will increase transfer capacity between regions of the electric grid and reduce disruptions that serve critical loads in the community such as education institutions, health care, businesses, and underserved communities. The specific grid benefits from **SHRIP** initiatives include:

- Increase transfer capacity and decreases interdependencies between infrastructure systems to deliver clean energy to the local community.

<sup>2</sup> [Utility Poles: Maintenance or Replacement | UPA Blog \(utilitypartners.com\)](https://www.utilitypartners.com/blog/utility-poles-maintenance-or-replacement)

- 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 disruptive events in provided electricity 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 beneficial outcomes for community residents:

- Reliable electricity in education institutions that provide student learning environments with reliable power for heating, cooling, and lighting. This benefits the local community allowing the schools to stay open longer for students to study and learn.
- 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 better pay and increased opportunities.
- Support economic growth and development planned for the next 20 years.

**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 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.

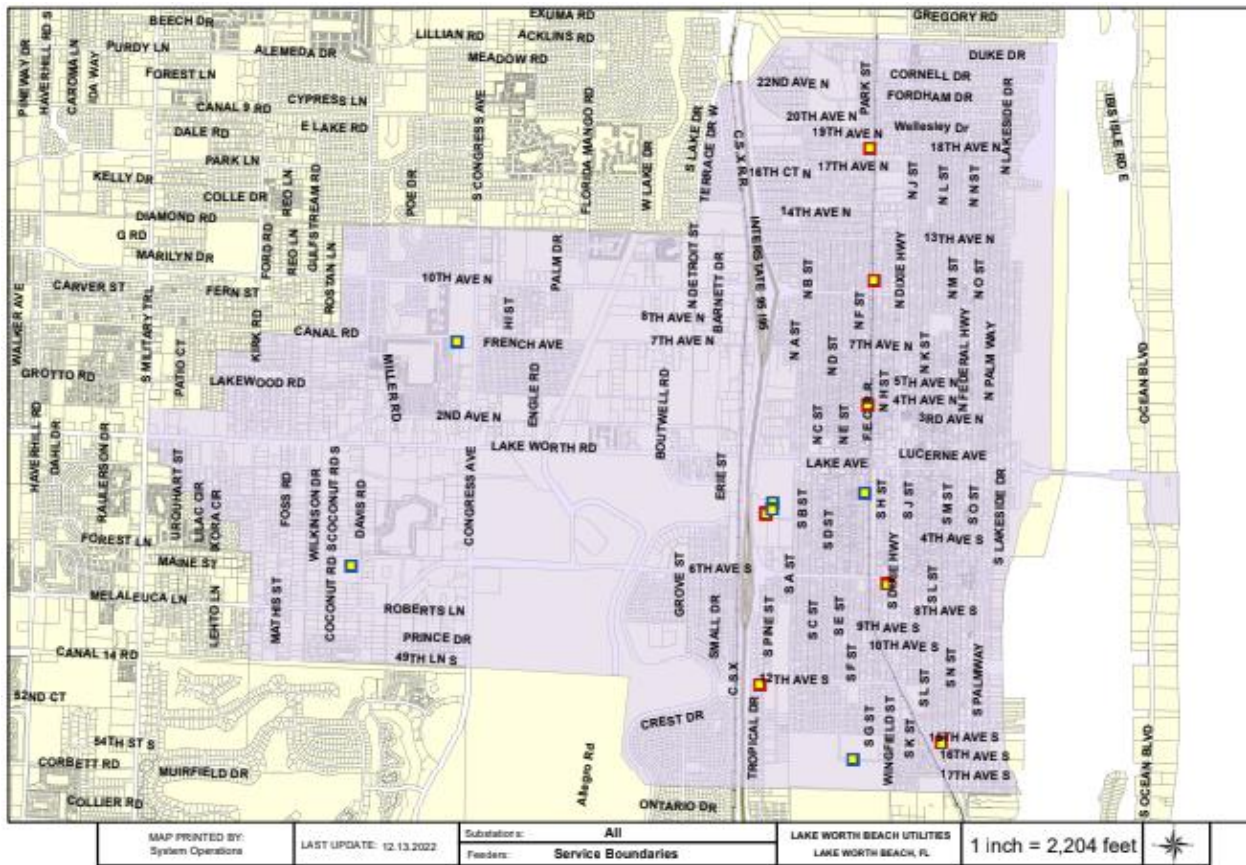


Figure 9 Lake Worth Beach utility infrastructure

**The impact that DOE funding would have on the proposed project**

The financial assistance from this grant would help prevent rate increases to customers resulting from self-funding sources such as bonds and loans. Additionally, with the current progress outlined for each SHRIP initiative below, CLWBU is able to demonstrate the success of each initiative in the program. The SHRIP Initiatives started by CLWBU are currently funded by the City Utilities Series 2020 and 2022 bond funds and associated budgeted capital items, and they are being managed by individual project schedules over the next 60 months. The available funding made possible for grid resilience by the DOE GRIP grant will impact the current SHRIP program in the following ways:

- Additional new Science, Technology, Engineering, and Mathematics “STEM” jobs will be made available by CLWBU to the local community.
- The funding opportunity will expand and accelerate all planned relocation for maintenance accessibility and/or replacement of dangerous and rotted utility poles, as well as aged conductors to harden the system before the next severe weather incident as a cost-effectiveness and system value.
- This project will mitigate multiple hazards that affect the communities in this service area, including hurricanes, flooding, extreme heat and domestic terrorism attacks, which have repeatedly disrupted power service to our communities (which also are disadvantaged communities as well).
- Expansion of scope for replacement of underground electric conductors serving disadvantaged communities to provide reliable needed electricity and minimize the current and future rates for customers as an economic benefit for the local community.
- Further expansion of scope to expand sub-transmission lines and undergrounding of main distribution feeders as additional efforts in the value of system hardening initiatives.
- Provide more reliable switchyards that improve redundancy, power quality, public safety, recovery time, and outage occurrences all while reducing maintenance and strengthening against weather events.
- Improving capacity of power, resilience of network, and reduction of maintenance for the transmission line.

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

**2020 Bond:** projects already in motion and most in construction or design. Complete use of these funds is expected mid-2024. **2022 Bond:** 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 new substations, voltage conversion, and hardening at a minimum. If the City approves the 3<sup>rd</sup> bond issuance, then those funds would last approximately 4 years from the date of the bond. A 2024 bond would put completion of some activities at approximately 2028 or so, but this is NOT completion of everything. This is only up to a 3<sup>rd</sup> bond which could likely cover 75% of the system hardening. A 4<sup>th</sup> bond would likely be needed around 2026/27 to get close to the 100% completion of new station hardening, voltage conversion, and distribution hardening. That would put us in completion of those 3 topics at around 2030.

If we received the GRIP funding then we would be able to execute multiple designs at the same time including stations and circuits and build simultaneously as much as possible. Each of the **SHRIP** Initiatives is in progress, and GRIP funding will allow all but one of these initiatives to be completed faster than they otherwise would be, as reflected in Table 5 below.

Expected Time Frame to Completion of Initiatives (years) without and with GRIP funding			
SHRIP Initiative		Without	With
1	Upgrading Substations to Regulated Switch Stations	10+	5
2	Voltage Conversion Step-up	10+	5
3	Re-conductor	10+	5
4	Underground Distribution Replacement	10+	5
5	Relocation of Power Lines 18 <sup>th</sup> – Move to Street – no access	20+	5
6	Undergrounding Distribution System at Substations	10+	5
7	Adaptive Protection, Reactors, Regulators, Pole Mount Reclosers, Cap Banks	10+	5
8	Intercoastal Submariner Cable Replacement	5	5
9	Undergrounding to Hypo	10+	5
10	Vegetation management required to perform these projects	10+	5

Table 5 How GRIP funding will impact SHRIP timelines

The current status of **SHRIP** initiatives is reviewed below.

- All design work for the addition of two 138kV transmission lines under the Purchase Power Initiative at this time is complete. The expected completion time for this **SHRIP** Initiative is scheduled over the next 18 months.  
Upgrading all 4kV substations to switch stations and adding adaptive technology to improve the reliability and capability of the grid.
- The modeling and design for the Conversion of the operating voltage in the distribution system is currently 30% complete. Of the total amount of feeders, 15% is hardened and completed. The remaining construction for this **SHRIP** initiative is expected to be completed in 60 months.
- The Replacement of Conductor Initiative to increase power delivery has currently replaced a total of 10 miles and is expected to be finalized within 60 months.
- Currently, 75% of underground cable proposed for replacement is completed. All work for this **SHRIP** Initiative is expected to be completed within 60 months.
- Relocation of Power Lines for accessibility is currently in the design and construction phase. At this time 10 % of the total design work is finalized, and the construction phase has not started. The remaining design and construction work to be performed for this Initiative is expected to be completed in 72 months.
- The design stage for Undergrounding Distribution System at Switch-stations and Substations is 20 % complete. Of the total amount of the distribution system to be undergrounded at switch stations and substations, 10 % of the construction work is complete. This project will be completed within 72 months.
- Adaptive Protection Technologies (Reactors, Regulators, Pole Mount Reclosers, Cap Banks) will be integrated in each project to the extent possible. One out of twelve of the substations has been completed with this new technology with plans to continue on the remaining eleven substations.
- The replacement of the Intracoastal Submarine Cable is currently in the validation of design stage. Work on this project is expected to begin and finish in 26 months.
- Undergrounding the existing radial transmission line from our Hypoluxo transmission station. This has already been through preliminary planning but exceeds our small utilities

funding capabilities compared to the improvement the funds can provide on the distribution portion of the utility.

- The Vegetation initiative under the **SHRIP** program is currently in progress and active the entire calendar year. The relocation of backyard and inaccessible locations will help minimize the day to day risk from vegetation and animals such as iguanas who cause large scale outages.

## COMMUNITY BENEFITS PLAN

The City of Lake Worth Beach (the “City”) is one of the most economically and racially diverse communities in Palm Beach County, which means that the services provided by the utility are consumed in majority part by minority and disadvantaged community residents. Unlike most cities in surrounding areas, Lake Worth Beach does not use Florida Power and Light for electrical services, and instead uses its own non-profit and citizen-owned utility, Citizen Owned Energy, which provides reliable, low-cost, and clean energy to over 27,000 residents and commercial customers. This citizen-owned utility has multiple responsibilities and functions as an electric grid operator; electricity generator; transmission owner or operator; and distribution provider. Because of the utility’s small size and the diverse population who make up the City’s population, this funding proposal directly corresponds to the FOA’s stated goals of channeling clean energy accessibility and affordability and other benefits from the grant-funded project to disadvantaged Americans and communities. The following plan shows how this proposal advances the DOE’s 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.

The City’s history as a diverse town and hub of immigrant communities has contributed to its rich, vibrant feel, but also presents unique challenges in terms of grid capabilities. For instance, the local media reports that the 2020 Census revealed that Lake Worth Beach’s population increased by 20.9% - substantially more than the county’s overall growth of 13% - but that much of that increase is believed to have come from parts of the immigrant community who were already present and previously uncounted, meaning that there is an even greater proportion of disadvantaged residents in the City than the census numbers would suggest. Lake Worth Beach Commissioner Christopher McVoy theorizes that the population rise reflected in the census is “much less an actual net influx of people and more a better job of counting them.” Since the number of residents living on the power grid is variable, the network revitalization project described in this proposal will deliver a benefit of providing more efficient, stable energy to low-income and racially diverse communities as proscribed by the Justice40 Initiative.

### COMMUNITY AND LABOR ENGAGEMENT

In order to obtain community feedback, we have and will continue to consult with our existing community boards on the **SHRIP** efforts. The City has several advisory boards, staffed by residents and citizens, which reflect our diverse population and regularly solicit citizen input on key city matters. These boards are created by ordinance, resolution, Florida statute, or motion approved by the City Commission, and 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 noticed in advance, open to the public in accessible location, and open to the public via Zoom Web Conference. Filtering proposals through these boards will allow residents of various standings and capacities outside of city government to attend meetings, make their opinions, and desires 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 preference being given to Small and 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 follow written directives that provide preference for and strong encouragement to utilize small businesses for purchases that are anticipated to have a total value of less than fifty thousand dollars (\$50,000.00). To advance diversity, equity, and accessibility, the city has published policies to 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. As an example of relevant training, crews are working to install poles that can withstand a Category 5 hurricane and higher with capacity distribution wires or "circuits," which will provide the future energy needs of our customers. Accompanying this work, and a key component of the project, is the upgrading of the city's substations that feed the circuits. 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	Total Number of Positions					
	Educational Requirement	Average \$ /yr.	Union Eligible	Before SHRIP	SHRIP no GRIP	SHRIP with GRIP
AutoCAD designer	High School/GED	\$70,000	Yes	0	0	4
Budget managers	College Grad	\$110,000	Yes	0	0	4
Communications Specialist	Some college	\$55,500	Yes	0	0	1
Compliance Analyst	Some college	\$70,000	Yes	0	0	4
Construction Workers	HS Diploma	\$95,000	Yes	0	0	20
Distribution engineers	Engineering Degree	\$110,000	Yes	2	0	20
Engineering project mgr.	Engineering Degree	\$110,000	Yes	0	1	2
GIS Mapping	HS Diploma	\$70,000	Yes	0	0	4
Linemen apprentices	HS Diploma/ GED	\$88,000	Yes	0	1	2
Linemen	HS Diploma/ GED	\$105,000	Yes	18	0	50
Multilingual outreach	HS Diploma/ GED	\$65,000	Yes	0	0	2
Network engineers	HS Diploma/ GED	\$105,000	Yes	2	0	4
Technical Projects manager	College Grad	\$105,000	Yes	0	0	3
Assistant Project Managers	College Grad	\$60,000	Yes	1	0	3
Project coordinators	HS Diploma/GED	\$50,000	Yes	1	0	10
Safety coordinator	HS Diploma/ GED	\$70,000	Yes	0	0	6
Standards technician	HS Diploma/GED	\$70,000	Yes	0	0	4
Substation engineering	College Grad	\$90,000	Yes	2	1	8
System Operators	High School/GED	\$90,000	Yes	6	0	2
Utility Services	High School/GED	\$77,000	Yes	2	2	11
Arborist	Some college	\$56,000	Yes	1	0	1
Vegetation Management	High School/GED	\$34,000	Yes	0	0	10
<b>TOTAL</b>				<b>35</b>	<b>4</b>	<b>175</b>

Table 6. SHRIP jobs created before SHRIP and SHRIP without and with 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 Y).

<b>Minority owned:</b>	<u>Electrical Distribution Engineering:</u> E.C. Fennell
<b>Minority veteran owned:</b>	<u>Electrical Dist. construction &amp; equipment:</u> Divergent Alliance
<b>Committed to prioritizing minority and local hires:</b>	<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%.<sup>3</sup> 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 public safety and environmental health of these communities in the following ways:

- 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 **175** good quality 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.

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<sup>3</sup> <https://www.census.gov/quickfacts/fact/table/palmbeachcountyflorida,FL/PST045221>

## Addendum A

The City of Lake Worth Beach Electric Utility (CLWBU) team has been successfully managing grid hardening and resiliency projects of this scope and size. The utility employees more than 100 years of experience collectively 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

CLWBU has extensive prior experience in projects of similar size and scope, 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.

**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 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.

**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 certification from Harvard University.

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

<b>Table 8 - Projects in Progress</b>	
<b>Category / Project Title</b>	<b>Status / Description</b>
<b>Transmission</b>	<b>In Progress</b>
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
<b>Substation</b>	<b>In Progress</b>
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
<b>Distribution</b>	<b>In Progress</b>
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.
1W05 Phase 2 -Constr. RR Tracks 18th Ave N to 24th Ave N	1W05 Phase 2 Constr.

<b>Table 8 - Projects in Progress</b>	
<b>Category / Project Title</b>	<b>Status / Description</b>
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 Underbuilds Distribution Circuits (6004 & 6003)	DESIGN - Distribution Underbuilds on FP&L 138kV T-Line
138kV Tie-Line Underbuilds Distribution Circuits Materials & Construction (6004 & 6003)	MATLS & CONSTR - Distribution Underbuilds on FP&L 138kV T-Line
Undergrounding & Dist. 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 Circuit	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*

<b>TABLE 9 - Completed Projects (SHRIP):</b>	
<b>Project Title</b>	<b>Description</b>
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.