Fort Pierce Utilities Authority
Director of Utilities
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December 14th, 2022

U.S. Department of Energy
Grid Deployment Office
Office of Clean Energy Demonstrations
ATTN: Colin Meehan
1000 Independence Avenue, SW
Washington, DC 20585
FOA2740@netl.doe.gov

RE: Concept Letter from Fort Pierce Utility Authority for the 2022 DOE Grid Resilience grant

Dear Mr. Meehan,

On behalf of Fort Pierce Utilities Authority, I am pleased to submit our enclosed Concept Paper to the Department of Energy's Grid Deployment Office, Grid Resilience and Innovation Partnership Program, for our project *Mitigating Impacts of Extreme Weather and Natural Disasters through Increased Grid Resiliency.*

As described in the narrative and attachments, this project addresses Topic Area 1, Grid Resilience Grants (Utility and Industry), and will provide critical grid resilience updates in Fort Pierce, which is an underserved community in Florida. Our team is prepared to develop a full application if invited to do so. The project total is $8,300,000. FPUA is prepared to meet the 33% match as required for small utilities.

Fort Pierce Utilities Authority has authorized Rachel Tennant, Manager of the Public Affairs and Sustainability Department, to act as the Key Business Contact for this project, and Mr. Eric Meyer, Supervising Engineer of Gas and Electric, to act as the Key Technical Contact for this project. I understand that all correspondence concerning the grant application will be directed to the above designees.

Sincerely,

Javier Cisneros

Javier Cisneros, P.E.
Director of Utilities

EXECUTIVE SUMMARY

This Concept Paper is being submitted by Fort Pierce Utilities Authority (FPUA) in Fort Pierce, Florida to apply for the Grid Resilience Utility and Industry Grant being offered by the U.S. Department of Energy Grid Deployment Office. It begins with a brief summary about the overall project and FPUA, followed by detailed information regarding the three major project activities being proposed.

The Proposed Project: The proposed grant project contains three project parts to enhance the reliability of the electric grid managed by FPUA:

1. Transformer upgrades and related reconductoring
2. Converting a key substation to ring bus configuration; and
3. Deployment of TripSaver mounted reclosers

The total project cost is estimated at $8,300,000, which is equal to FPUA's investment in electric grid mitigation over the last three years. If selected, FPUA will ensure match of 33.3% as required for small utilities. Also, the proposed project reaches these four DOE Categories:

1. Hardening of power lines and substations
2. Replacement of old overhead conductors
3. Utility pole management
4. Adaptive Protection Technologies

Importantly, a number of the proposed activities are developed in response to recommendations following a Transmission Planning Assessment that took place in November 2022. The Assessment identified a need for transformer upgrades and reconductoring in select areas of our grid system, which are described further in Project Part 1.

About FPUA: Fort Pierce Utilities Authority is a small municipal utility provider in Fort Pierce, Florida that sells less than 600,000 MWh of electricity per year. FPUA is an all-requirements member of Florida Municipal Power Agency (FMPA). We purchase power from FMPA and sell and distribute it to our customers. FPUA also manages and operates the Treasure Coast Energy Center, which is a natural gas power plant owned by FMPA in the City of Fort Pierce.

FPUA provides electric, water, wastewater, natural gas, and fiber internet utility services to the City of Fort Pierce and part of St. Lucie County. Upgrading the infrastructure for all of our utility services is therefore a priority not only to FPUA but also to the City of Fort Pierce and St. Lucie County. Our mission is to provide economical, reliable, and friendly service in a continuous effort to enhance the quality of life in our community.

FPUA firmly understands that building a more resilient and reliable electric utility grid requires significant improvements that will mitigate the disruptions which are caused by hurricanes, severe storms, and other natural disasters.

Regional Resilience and Reduction of Likelihood and Consequences of Disruptive Events: This project supports many community and regional resilience initiatives to reduce the likelihood and consequences of disruptive events on our customers. Each project part explanation below includes a specific discussion of its contribution toward this benefit, however, we want to emphasize this piece with a discussion of the broader plans and initiatives here.

Specifically, by increasing the capacity of key components within the FPUA electric grid, this project ensures a more regionally resilient grid that mitigates the consequences of disruptive events to largely vulnerable populations. The State of Florida Statute 380.083(1)(2)[1] recognizes electric production and supply facilities as critical infrastructure for resiliency purposes. At the same time, Florida is actively pursuing expansion of electric vehicle infrastructure, which brings with it increased demand on the electric grid.[2] In its three-year strategic plan, St. Lucie County committed to align resources with infrastructure needs to ensure preventative maintenance and future resilience, as well as to develop a St. Lucie Regional Resilience Plan for, among other things, infrastructure.[3] St. Lucie County is also growing; its population increased an average of 1.9% every year since 2010, with a 3.7% increase between 2020 and 2021.[4] This growth poses real challenges to an electric infrastructure that was designed for a smaller population and lesser load demand.

Finally, FPUA customers are especially vulnerable to disruptive events, which can eliminate their limited income. Accordingly, this project will yield very important stability benefits for our community. The U.S. Government's Climate and Economic Justice Screening Tool recognizes a majority of the City of Fort Pierce as a disadvantaged community under multiple variables, including Energy.[5] Specifically, in Fort Pierce, 27.1% of persons are in poverty, more than double the State of Florida's 13.1% of persons in poverty, and the US poverty level of 11.6%.[6] FPUA is reliant on grant opportunities such as these to permit us to more proactively carry out grid resilience mitigation projects in our area. Without grant support, we are forced to rely on our annual budgeting process and rates revenue, which is challenging and limited due to the income demographics of our area.

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[1] "Critical asset" includes critical infrastructure, including . . . electric production and supply facilities. https://www.flsenate.gov/laws/statutes/2021/380.093

[2] Governor Ron DeSantis announces plan for expansion of Florida's electric vehicle infrastructure (July 2019). https://www.flgov.com/2019/07/24/governor-ron-desantis-announces-plan-for-expansion-of-floridas-electric-vehicle-infrastructure/

[3] St. Lucie County Strategic Plan: 2021-2023. https://www.stlucieco.gov/home/showpublisheddocument/8680/638024838586870000

[4] https://usafacts.org/data/topics/people-society/population-and-demographics/our-changing-population/state/florida/county/st-lucie-county

[5] See Climate and Economic Justice map and Fort Pierce information: https://screeningtool.geoplatform.gov/en/#7.89/27.009/-80.878

[6] Fort Pierce: https://www.census.gov/quickfacts/fortpiercecityflorida
State of Florida: https://www.census.gov/quickfacts/fact/table/FL/IPE120221
United States: https://www.census.gov/library/publications/2022/demo/p60-277.html#:~:text=Highlights-,Official%20Poverty%20Measure,37.9%20million%20people%20in%20poverty

PROJECT PART 1: TRANSMISSION RELIABILITY UPGRADES

MITIGATION ACTIVITY:	Upgrading transformers (with reconductoring and pole hardening)
ESTIMATED COST:	$6,000,000
DOE CATEGORIES:	1) Hardening of power lines and substations; 2) Replacement of old overhead conductors; 3) Utility pole management

1.1 Eligible Uses and Technical Approach

As part of our storm hardening efforts to improve grid reliability and resilience, FPUA and Florida Municipal Power Agency (FMPA) have determined that upgrading two critical substation transformers, reconductoring the connected transmission lines between that substation and others, and upgrading the affected transmission poles from wood to ductile iron poles would increase capacity, reduce the likelihood of outages during peak demand and storm surges, and provide more reliability and resilience while accommodating future growth needs.

Specifically, FPUA's electric grid relies on three major transformers to bring electric power to customers: two at Hartman substation and one at Garden City substation. In its annual Transmission Planning Assessment carried out in November 2022, FMPA found that FPUA's Hartman transformers are forecasted to exceed their short-term emergency ratings within the 10-year planning horizon. Specifically, the current transformers are sized at 100 Mega Volt Ampere (MVA) and should be upgraded to 120 MVA in order to account for increasing load demand caused by growing population and heavier load demands from technologies such as EV charging and more, including surges during storm events.

Upgrading the transformers will require reconductoring of lines to increase the gauge from 559.5 kCMil to 927.2 kCMil. Further, part of the reconductoring process will require FPUA to upgrade the existing transmission poles from wood to ductile iron poles. The ductile iron poles have a life expectancy of at least 70 years (compared to the FPUA-calculated 42 years from the existing wood poles), and will be placed closer together than the current wooden poles to accommodate the increased weight of the power lines.

1.2 Regional Resilience in Reducing Consequences of Disruptive Events

In addition to the broader resilience discussion provided in the Executive Summary of this concept paper, Project Part 1 provides key resilience benefits for our community. FPUA's aging infrastructure is currently vulnerable to disruption by storm events and maintenance limitations. We utilize only three 138kV/69kV transformers, one at the Garden City substation and two at the Hartman substation, that act as terminal points from the overall power grid to FPUA's transmission system and are consequently the only sources of electric power for FPUA.

In the event of unexpected outages, disruptions may take effect if FPUA enters into an N-2 operating condition, i.e. a condition wherein two system elements within the electric grid have

been eliminated or damaged. For example, in the event the Garden City transformer and one of the Hartman transformers were to become damaged or eliminated from the system, FPUA would need to shed load, causing significant brownouts, in order to ensure the safe operation of the electric system. By upgrading the two transformers located at the Hartman substation, this specific N-2 condition is eliminated, and there is no longer a risk of needing to shed load and cause brownouts.

Further, reconductoring the transmission lines drastically reduces the risk, and catastrophic impact, of disruption in service for FPUA customers. FPUA's 69 kV transmission lines, currently 559.5 KCMil, are in a looped configuration for reliability. If the Garden City transformer and one of the two transmission lines from the Hartman substation were to be damaged and therefore eliminated from the looped configuration, this unilateral direction of service from the Hartman substation could overload the emergency rating in the transmission line and create a need to shed load, causing brownouts.

Currently, for this specific N-2 condition, the size of the conductor in these transmission lines is not sufficient to serve radially through the 69kV transmission system due to the entire load flow for FPUA going in one direction. If encountered, FPUA will need to shed load, causing brownouts, possibly for days if FPUA's daily system load exceeds the nominal value. In contrast, upgrading and increasing the size of the transmission line to 927.2 kCMil enables FPUA to continue operating in the event of this second N-2 condition, removing the risk and the need to shed load.

Finally, reconductoring the transmission lines also enables FPUA to upgrade the utility poles within this project area. New ductile iron utility poles will be placed closer together, providing more stability and reducing the risk of low-hanging wires in the transmission lines.

1.3 Grid Benefitting Outcomes

Upgrading the transformers at Hartman substation and reconductoring the select transmission lines will allow FPUA to maintain reliable electric service while reducing impacts on the grid caused by unexpected outages, extreme weather and natural disasters.

Outcome 1.3.1: Increase Transformer Capacity to Accommodate Demand and Storm Surges

Upgrading the two identified Hartman transformers will allow FPUA to provide continued service without risk of overload from growing demand caused by population and innovative technologies. Overall, FPUA currently has six 69kV substations and three major transformers, one located at the Garden City substation and two located at the Hartman substation, that loop electric service in the Fort Pierce community. The Garden City substation is currently able to support 167 MVA, and FPUA's Hartman substation supports 100 MVA. Currently, FPUA is able to cover the electric load, however, projected population growth and the influx of EV chargers and solar panels, require us to upgrade the Hartman transformers from 100 MVA to 120 MVA.

Outcome 1.3.2: Allow for Critical Infrastructure Maintenance without Outages.

An additional benefit to the transformer upgrades comes from the need for offline maintenance on a transformer. The increased capacity provides the ability to hold peak loading conditions without the risk of power loss within the Fort Pierce community.

Outcome 1.3.3: Increase Transmission Line Capacity

Similar to the transformer upgrade benefits, reconductoring the transmission lines provides more reliability to the electric grid. As previously mentioned, FMPA concluded that "capital improvements on the Hartman 69kV transmission lines will alleviate potential overload on those lines and eliminate the need for potential load shedding." Reconductoring will allow FPUA to maintain service continuity if we were to lose our Garden City substation and either transmission line connected to the 69 kV Totten substation.

Outcome 1.3.4: Upgrade to Storm-Hardened Utility Poles that Reduce or Eliminate Sag.

Increasing the conductor size provides the opportunity for utility pole improvements. In order to reduce the physical strain on FPUA's transmission structures, caused by transmission line sag, the utility poles will be upgraded to ductile iron poles. These poles will be placed closely together to reduce the risk of sag, and low-hanging wires.

1.4 Impact to Reduce Innovative Technology Risk

Fort Pierce Utilities Authority has already begun seeing an increase in demand, especially from new innovative technology. Upgrading the transformers located at the Hartman substation reduces the risk of disruption caused by the increased demand for EV charges, solar panels, and other innovative technology. The increased capacity alleviates the risk of a disruption caused by the increased demand.

Reconductoring the transmission lines between the Hartman and Lawnwood substations and the Hartman and Savannah substations also reduces the risk associated with innovative technology. The increased capacity and size of the transmission line will improve operations, even with an increase in load demand caused by the influx of EV charges, solar panels, and other innovative technologies.

1.5 Impact to Achieve Further Deployment At-Scale

Not only do the proposed upgrades provide greater resilience for the electric grid, but they also provide an example for other grid-hardening activities in our service area. There are twelve additional substation power transformers. Utilizing the best practices from the project will provide a guideline for future hardening projects within the electric grid.

Reconductoring power lines is a common practice among utility companies. FPUA plans to use this project as a guide for reconductoring the remaining four 69kV transmission lines. Based on this project, FPUA will continue to replace utility poles in the same fashion.

1.6 Impact to Lead to Additional Private Sector Investments

FPUA is always striving to provide increased capacity for more private sector investment opportunities in our growing community, alongside the City of Fort Pierce. The State of Florida has also taken a clear interest in investing in private sector growth and development in Fort Pierce, as evidenced by the recent grant funds issued to Fort Pierce from the Department of Economic Opportunity. Governor Ron DeSantis awarded $2.7 million through the Florida Job Growth Grant Fund to facilitate infrastructure improvements and the redevelopment of the City's historic downtown area to spur economic growth and bring jobs closer to home for the City's residents.[7] This included some funding for water and electric infrastructure.

Here, increasing the capacity of two main transformers gives the City of Fort Pierce a greater ability to take on new private sector investments without placing strain on the electric grid. Reconductoring the transmission lines between substations also greatly increases the capacity. The additional capacity allows for future loads to be served and accommodates private sector investment opportunities in the Fort Pierce community.

1.7 Impact of DOE Funding

Without DOE Funding, the transformer upgrades and associated reconductoring are unlikely to occur in the near future because they would require an increase on electric utility rates at a time when our customers are already struggling due to high inflation.[8] In fact, the cost to perform the transformer upgrade and reconductoring would require funding that exceeds the previous year's entire capital budget for FPUA's electric division. In other words, in order to obtain the funding required to carry out this project without your support, FPUA will need to increase its rates, severely impacting this disadvantaged community.

Similarly, the utility poles would not be upgraded or replaced at this time without DOE funding. While FPUA is constantly upgrading our infrastructure to become more resilient to vegetation, wildlife, hurricanes, and other natural disasters, utility poles are inspected throughout the year, and only poles that are damaged and unsafe are replaced. The funding from DOE would enable FPUA to replace a significant number of poles immediately (those associated with the transformer upgrades and reconductoring).

1.8 Readiness, Viability, and Expected Timing of Project

FPUA is ready to move forward with this project as soon as funding is approved. Upon acceptance of the grant contract, FPUA will proceed with order for supplies. All elements of the

[7] Governor Ron DeSantis Awards $2.7 million to City of Fort Pierce for Infrastructure Improvements through the Florida Job Growth Grant Fund. https://www.flgov.com/2022/08/30/governor-ron-desantis-awards-2-7-million-to-city-of-fort-pierce-for-infrastructure-improvements-through-the-florida-job-growth-grant-fund/

[8] 'Everything's going crazy': Fort Pierce family, business owners struggle with inflation. https://www.wpbf.com/article/everythings-going-crazy-says-fort-pierce-resident-about-inflation-numbers/39706654

project (transformer upgrade, reconductoring of transmission lines, and utility pole improvements) can commence upon receipt of the materials. The transformer upgrade supplies are expected to arrive within six months of order. Due to uncertain supply chain issues, the reconductoring and utility pole maintenance supplies are expected to arrive within up to nine months of order. Once materials arrive on site, upgrading the transformers is expected to take 15-30 days to project completion and reconductoring is expected to take 21-24 months to project completion.

PROJECT PART 2: CONVERTING TOTTEN TO RING BUS CONFIGURATION

MITIGATION ACTIVITY:	Convert Totten substation to ring bus configuration
ESTIMATED COST:	$300,000
DOE CATEGORY:	Hardening of power lines and substations

2.1 Eligible Uses and Technical Approach

Another critical component of the electric grid is the bus configuration within each substation, which encompasses many of the protection and control elements within the grid. Currently, FPUA utilizes manual switches to separate exiting transmission line terminals instead of circuit breakers at our critically important Totten substation, which serves as a through-point to our 138 kV transmission supply system from the Hartman substation.

In the unfortunate event that damage occurs to the bus within this substation, the circuit breakers protecting the outside terminals of this substation would operate leading to disruption and complete inoperability of this substation until a crew could get on-site to manually make repairs. This situation would put FPUA into the dire situation of relying entirely on its Garden City substation for service.

The proposed solution, upgrading the existing infrastructure into a ring bus configuration, has been shown to have high reliability with relatively medium-to-low cost when compared to other substation bus protection configurations; the main benefit is avoiding loss of power in the entire Totten substation and being able to continue providing reliable service to our customers. The ring bus setup is a commonly built configuration in utilities across the county and would be the ideal bus configuration for this project. Upgrading the Totten substation monitoring and control system from a manual switch configuration to an automated ring bus configuration would also enable FPUA to isolate the incident using our digital SCADA (**S**ource **C**ontrol **A**nd **D**ata **A**cquisition) system and reduce or eliminate disruption to our community.

2.2 Regional Resilience in Reducing Consequences of Disruptive Events

The current manual switch configuration leaves Fort Pierce vulnerable to extended outages during storms. FPUA's Totten substation is one of two locations where the grid's main 69kV transmission line is separated to distribute electricity throughout the entire City of Fort Pierce. The transmission lines that exit the substation are protected by circuit breakers, however, the

existing infrastructure that separates the transmission lines within the substation is separated by manual 2-position switches. The existing switches must be flipped manually in order to disconnect the substation bus and do not act as protective devices for the substation bus. If damage occurs within the substation and the bus is damaged, the breakers protecting the exiting terminals of the substation will operate and place the entire substation offline, therefore cutting off service from the Hartman substation. This requires a crew to be on-site to make repairs, which can be difficult and unsafe during hurricanes, severe storms, and other natural disasters. The impact of this means that customers may be without power for an extended period of time if it is deemed unsafe for the crew to deploy.

The current configuration also creates a risk of significant stress on the remainder of the Fort Pierce electric grid. Currently, the Totten substation is at risk for an outage for the entire City of Fort Pierce. If damage occurs to the substation bus, FPUA will enter into a severe N-2 condition, relying entirely on the Garden City substation for service; if this Garden City line is damaged, FPUA will be entirely without power.

In contrast, the ring bus configuration would allow FPUA to utilize circuit breakers in place of the manual switches in the substation, which allows for sectionalizing the exiting terminals to de-energize damaged portions of the substation bus automatically. With the Totten substation in a ring bus configuration, only the damaged area within the substation would be placed offline, leaving the substation still in service and only the damaged area without power.

An additional benefit of the ring bus configuration is that circuit breakers can be monitored and controlled by our Systems Operations department through our SCADA (**S**ource **C**ontrol **A**nd **D**ata **A**cquisition) system. If desired they can monitor the voltages, currents, frequency, etc. flowing through the circuit breakers and can issue an “open” command manually through the SCADA system to control it. Using SCADA technology would further enable us to eliminate the risk of broad outages by isolating the incident to a specific section of the bus.

2.3 Grid Benefitting Outcomes

Outcome 2.3.1: Increase Resilience and Reduce Disruption by Isolating Events

Upgrading the Totten substation to install ring bus configuration rather than manual switch configuration will allow FPUA to provide continued service without risk of extended outages any time that the Totten station experiences damage to its 69 kV substation bus. Specifically, ring bus configurations make the power grid more reliable by allowing staff to isolate incidents on energized buses within substations, rather than taking the entire substation offline.

Outcome 2.3.2: Allow for Critical Maintenance Infrastructure Without Outages

An additional major advantage to a ring bus configuration is the ability to remove one of the circuit breakers for maintenance without disrupting service continuity. This not only allows

for service continuity but also safety, keeping a safe method for operating while maintaining service continuity.

2.4 Impact to Reduce Innovative Technology Risk

Innovative technology in itself would not pose a risk to the current configuration at the Totten substation. However, the grid's aging infrastructure (which is too small to accommodate the demand increase from innovative technology) puts the Totten station at a greater risk for surges that could lead to extended outages and risky manual maintenance. Specifically, as indicated in Project Part 1, while critical parts of the grid are still undersized, the Totten substation poses a real risk of surges that could lead to system-wide outages.

Accordingly, installing the ring bus configuration will make FPUA's power grid more reliable and reduce the risk of disruption caused by the increased demand for EV chargers, solar panels, and other innovative technology. It will ensure that incidents inside the Totten substation will be isolated and not create concerns for the electric system in its entirety.

2.5 Impact to Achieve Further Deployment At-Scale

Although this upgrade would not be transferred to other parts of the FPUA grid, its deployment at the Totten substation would make a significant impact on the resiliency of our electric grid, further empowering us to move forward with additional storm hardening and resiliency upgrades.

Ring bus protection schemes are typically only used for transmission systems. FPUA's electric system contains three transmission-level substations, including the 138 kV Garden City substation, the 138 kV Hartman substation and the 69 kV Totten substation. Our Hartman substation currently utilizes the ring bus configuration and would therefore not require such an upgrade. All other substations within FPUA's electric service territory are distribution-level substations.

2.6 Impact to Lead to Additional Private Sector Investments

Reconfiguring the Totten station will strengthen FPUA's grid reliability which is an essential feature for attracting private sector businesses and investments to the City of Fort Pierce. Grid reliability is recognized as a public good. Installing systems like the ring bus configuration can bring smart grid features to our local grid, such as communications with the SCADA system. As stated by the Energy Information Administration, "[a] smarter grid makes the electrical system more reliable and efficient by helping utilities reduce electricity losses and to detect and fix problems more quickly."[9] Private investors who are interested in bringing their business to the City of Fort Pierce are likely to be more willing to do so if they know that the electric grid is reliable and being modernized for continuity and growth.

[9] Electricity explained. https://www.eia.gov/energyexplained/electricity/delivery-to-consumers.php

2.7 Impact of DOE Funding

DOE funding will ensure that this project is prioritized earlier than it may otherwise be carried out. Because of the expense of the project, and competing maintenance and upgrade priorities throughout the aging system, it is unlikely that this project would be funded fully through FPUA capital budget within the next five years. Therefore, DOE's funding will ensure that FPUA can proceed now, before an emergency or system-wide outage has occurred.

2.8 Readiness, Viability, and Expected Timing of Project

This project is ready to launch upon contract acceptance and receipt of materials. Commencement would begin upon receipt of materials. Due to uncertain supply chain issues, materials will likely arrive within 12 to 24 months. Once materials have arrived on site, the project work is to be completed within 9 months.

PROJECT PART 3: DEPLOYMENT OF TRIPSAVER MOUNTED RECLOSERS

MITIGATION ACTIVITY:	Deployment of TripSavers and self-healing capabilities to the grid
ESTIMATED COST:	$2,000,000
DOE CATEGORY:	Adaptive Protection Technologies

3.1 Eligible Uses and Technical Approach

The final part of this proposed project applies adaptive protection technologies to the FPUA electric grid by installing TripSaver mounted reclosers on 20% of the grid, with a focus on laterals that have an elevated number of yearly outages with transient causes. Though the target reach for TripSaver deployment utilizing the funding from DOE is 20%, the goal is to reach 100% of FPUA protection points (e.g., fuse locations) within 20 years. FPUA has already installed 76 TripSavers out of 3,326 prospective locations, totaling about 2.3% of our electric grid.

TripSavers are self-powered, electronically controlled, single-phase reclosers with a vacuum fault interrupter that bring self-healing capabilities to overhead distribution lines. In the event of a short circuit, a TripSaver will disrupt the fault current and attempt to reclose up to three times. If the fault remains, the device will open and remain that way to provide a visible gap in the power system. This helps isolate the damaged section of the grid, making it easier for utility personnel to locate the fault and make repairs. If the fault stops, service will immediately be restored to the customer. TripSavers have a wide range of programmable settings that allow them to easily be configured to protect the system.

3.2 Regional Resilience in Reducing Consequences of Disruptive Events

Overhead electrical systems such as the one managed by FPUA are constantly experiencing a significant number of outages caused by wildlife, vegetation, and other events that are transient in nature. Manual fault systems can create extended outages that would otherwise

be significantly shorter in duration, partly because the outage can be difficult to find and isolate. Currently, FPUA's Customer Average Interruption Duration Index (CAIDI) value is estimated to be about 50 minutes, indicating that the average duration of an outage is about an hour for any given customer. Without the adaptive protective technology that TripSavers provide, each fault that results in a blown fuse would result in an outage for 30-60 minutes for all customers served by the lateral fuse that is experiencing the issue. Accordingly, the proposed installation of TripSavers to the FPUA grid will reduce the outage time and provide much more reliable service to our customers.

3.3 Grid Benefitting Outcomes

Outcome 3.3.1: Reduce Customer Wait Time During Faults Caused by Transient Disruptors

Almost 70-85% of faults have a transient cause that would be self-healing with the proper TripSaver installation. The benefit of utilizing TripSavers technology is that once the transient fault has cleared, power would be restored to the affected customers immediately rather than having to wait for staff to identify and close the fault.

Outcome 3.3.2: Reduce Utility Maintenance Costs and Restoration Man-Hours.

The current restoration process during electrical faults is manual and time-consuming. For example, during and after storm events, staff "bird-dog" throughout the territory to identify the faults in the system by driving around and looking for open faults or disruptions to the line, then calling back to the SCADA team to report the fault for manual repair. TripSaver technology will reduce the incidence of outages where lines were automatically maintained, and will reduce the number of man hours needed to identify and then manually repair the fault if the line were not equipped with TripSaver technology.

3.4 Impact to Reduce Innovation Technology Risk

TripSavers represent an important modernization of the FPUA electric grid that will allow us to keep pace with the quickly evolving demand on the grid. As previously mentioned, TripSavers have a large variety of programmable settings that allow them to be easily configured to protect the electrical system and its elements. These programmable settings can be adjusted to accommodate increased load caused by, among other things, the addition of EV charging, solar panels, and population growth.

3.5 Impact to Achieve Further Deployment At-Scale

Deployment of TripSavers adaptive protection technologies can serve as an example for FPUA's entire electric system. As previously mentioned, the target for this project is to bring TripSavers deployment to 20% of the FPUA electric grid, with a focus on laterals that have an elevated number of yearly outages with transient causes. FPUA's goal, according to our current spending plan (without grant support) is to install TripSavers on 100% of the electric grid by 2043, replacing every first-stage fuse serving an overhead lateral in our system.

3.6 Impact to Lead to Additional Private Sector Investments

Installing TripSavers will enable FPUA's electric grid to be more resilient to vegetation, wildlife, hurricanes, severe storms, and other natural disasters. The added resiliency will also strengthen FPUA's grid reliability, which is essential for attracting private sector businesses and investments to the City of Fort Pierce. Installing system upgrades like the TripSavers can advance our local grid and reduce its reliance on time-consuming, manual labor that requires 60 minutes or more to restore a transient fault that could otherwise self-heal with proven TripSaver technology.

As stated by the Energy Information Administration, "[a] smarter grid makes the electrical system more reliable and efficient by helping utilities reduce electricity losses and to detect and fix problems more quickly."[10] Private investors who are interested in bringing their business to the City of Fort Pierce are likely to be more willing to do so if they know that the electric grid is reliable and being modernized for continuity and growth.

3.7 Impact of DOE Funding

DOE funding will ensure that this project is prioritized earlier than it may otherwise be carried out. Because of the expense of the project, and competing maintenance and upgrade priorities throughout the aging system, it is unlikely that this TripSavers project would be funded fully through FPUA capital budget within the next five years. In fact, a typical budget of $100,000 per year would allow FPUA to reach 20% system deployment by 2045 at about 15-20 TripSavers per year.

Therefore, funding from the DOE would provide the much-needed boost to help create a more resilient electric grid, and support economic growth, small businesses and entrepreneurship, and future private sector investment opportunities.

3.8 Readiness, Viability, and Expected Timing of Project

This project is ready to launch within 30 days upon contract acceptance and receipt of materials. FPUA is familiar with TripSaver installation and all legal and physical matters are in place to allow us to proceed. Due to uncertain supply chain issues, materials will likely arrive within 4-6 months. Once materials have arrived and the project can commence, project completion is expected to finish within 9-12 months.

[10] Electricity explained. https://www.eia.gov/energyexplained/electricity/delivery-to-consumers.php

COMMUNITY BENEFITS PLAN

1. How is the project supporting the community and labor engagement leading to negotiated agreements?

Fort Pierce Utilities Authority is a local, municipal company that prides itself on its community ownership. Our mission is to provide our customers with economical, reliable, and friendly service in a continuous effort to enhance the quality of life in our community. FPUA is consistently engaging with Fort Pierce residents, businesses, and local governments in order to strategically plan how to create a resilient community. FPUA works directly with the City of Fort Pierce leadership for major projects and budget approval. Similarly, the Fort Pierce Mayor sits on FPUA's governing board. FPUA also collaborates with local governments to identify projects and ways to better serve our community and provide economic, reliable, service with resilient infrastructure.

FPUA partners locally with the Fort Pierce Redevelopment Agency, St. Lucie Economic Development Council, and Indian River State College for the purpose of supporting our community's growth and local labor engagement where possible.

First, the Fort Pierce Redevelopment Agency has identified multiple projects that will increase the private sector investment and business development within the community. It is one of their goals to evaluate additional regulatory and financial incentives for potential implementation that encourages private sector investment and business development.[1] FPUA's proposed project in its entirety enables the electric grid to support the increased demand for electric services related to achieving this goal.

Second, the St. Lucie Economic Development Council (EDC) collaborates with its partners, including FPUA, to bring quality jobs to St. Lucie County and diversify the local economy. FPUA worked with the EDC alongside the City of Fort Pierce to secure a $2.7 million grant from the Florida Department of Economic Opportunity **Florida Job Growth Grant Fund** to revitalize Fort Pierce's downtown, including electric and water utility upgrades and installations. In August 2022, Governor DeSantis visited Fort Pierce to announce this highly celebrated grant for our community.[2]

Third, FPUA partners with local college, Indian River State College, **for workforce development and community engagement opportunities.** For example, FPUA attends the annual IRSC Job Fair and, as a protocol, lists its job opportunities on the IRSC College Central job bank. Recently, FPUA welcomed IRSC student interns to its Public Affairs & Sustainability Department and its Electric & Gas Engineering Department. FPUA has also participated in previous years'

[1] The 2020 Fort Pierce Redevelopment Agency Community Redevelopment Plan, Page 36. https://cityoffortpierce.com/DocumentCenter/View/9381/2020-Updated-FPRA-Plan

[2] Governor Ron DeSantis Awards $2.7 Million to City of Fort Pierce for Infrastructure Improvements through the Florida Job Growth Grant Fund. https://www.flgov.com/2022/08/30/governor-ron-desantis-awards-2-7-million-to-city-of-fort-pierce-for-infrastructure-improvements-through-the-florida-job-growth-grant-fund/

internship programs, specifically in the Electric & Gas Engineering, and Water/Wastewater Engineering departments.

This project provides the opportunity for FPUA to utilize these partnerships to support the community by creating a reliable and resilient electric grid.

2. How is the project investing in job quality and workforce continuity?

This project will be driven by local engineers who are municipal utility employees for FPUA. It will provide FPUA staff with critical opportunities for professional development including strategic storm hardening priorities planning and follow-through. **By the end of this project, at least ten FPUA employees will have been fully engaged in the storm hardening process, creating critical workforce continuity benefits by ensuring in-house knowledge and buy-in of this highly important initiative.**

FPUA knows that quality of life starts with the security provided by a good, reliable job. The City of Fort Pierce and the surrounding demographic area have suffered for years due to generational poverty, lack of education, and access to quality jobs. The investments and commitments made by new investment in the community will mitigate these barriers and provide needed access to jobs at all levels, enhancing the quality of life of residents in the Fort Pierce community and surrounding area.

By supporting FPUA and our proposed project, DOE would be investing in a local, municipal employer whose operational mission includes job quality and workforce continuity. Aligning with the Executive Orders on **Ensuring the Future is Made in All of America's Workers (EO 14005), Tackling the Climate Crisis at Home and Abroad (EO 14008), Boosting Quality of Federal Construction Contracts (EO 14063), Promoting Competition in the American Economy (EO 14063), and Implementing the Infrastructure Investment and Jobs Act (EO 14052),** Fort Pierce Utilities Authority strengthens prosperity by expanding good-paying, secure and safe jobs accessible to all employees.

FPUA fosters safe, healthy, and inclusive workplaces with equal opportunity, free from harassment and discrimination. As part of the employee benefits package, employees receive hands-on training, education, and skill development along with support to advance in their careers. FPUA offers paid sick and vacation time, employer-sponsored health insurance, and a retirement/savings plan, along with a continuing education program for employees to earn credentials and degrees relevant to their career pathways.

FPUA considers labor to be an investment, placing importance on skill-set growth for career advancement opportunities. Toward that end, FPUA also has several tiered positions and an apprenticeship program in order to promote within. For example, an employee can begin working as an Apprentice, or Trainee, for our wastewater plant. That employee can utilize FPUA's Education Assistance Program and work towards becoming a Plant Operator C. From there the employee can become a Plant Operator B, Plant Operator A, and potentially a Plant

Foreman or Senior Plant Operator. As previously mentioned, FPUA also participates in internship opportunities to provide hands-on training for various positions within the company, and has been successful in providing permanent positions for interns in previous years.

3. How is the project advancing diversity, equity, inclusion, and accessibility?

This project will advance diversity, equity, inclusion and accessibility by ensuring that one of the most demographically diverse and impoverished communities in Florida receives support to modernize its electric grid. Without this support, the utility will be required to rely on rates revenue, and possible rate increases, to pursue the identified projects in the near future. **DOE's support will ensure that federal funds are driven to a diverse area with a demonstrated need, reducing the community's vulnerability to storm events and outages.**

Fort Pierce is a Historically Disadvantaged Community[3] with challenges in common with many urban areas in Florida. These challenges include limited resources, aging infrastructure, and environmental degradation. Fort Pierce is also demographically diverse. According to the most recent U.S. Census (2021 figures), nearly 44% of Fort Pierce's population of 47,297 identifies as African American alone and 23% identifies as Hispanic or Latino.[4]

Fort Pierce Utilities Authority recognizes the value and importance of diversity and inclusivity, including diversity of thought, throughout its staff and Board of Directors. As of 2022, FPUA's major demographic make-up is 180 Caucasian, 57 African American, 19 Hispanic employees, and 6 Other. That amounts to approximately 69% Caucasian, 22% African American, 7% Hispanic, and 2% Other of the major demographic make-up categories.

To encourage underserved individuals and applicants of all skill-sets to join our team, FPUA provides highly organized apprenticeship programs that train and promote within the company. For example, an employee can begin working as an Apprentice, or Trainee, for our wastewater plant. That employee can then utilize FPUA's Education Assistance Program for a fully-funded degree at our local Indian River State Collage to work towards becoming a Plant Operator C. From there the employee can become a Plant Operator B, Plant Operator A, and potentially a Plant Foreman or Senior Plant Operator.

Similarly, FPUA's Board of Directors includes Board Members from geographic districts who are intended to ensure the proper representation of the different and diverse regions of the City of Fort Pierce.

FPUA also launched its very first Utility Advisory Committee this year. The committee is comprised of individuals who are citizen customers of FPUA. Each member was appointed by either an FPUA Board Member or a City Commissioner. The Committee works closely with the Public Affairs & Sustainability Department to identify staff presentations that they would like to see during their monthly meetings. To date, this advisory committee has viewed and discussed

[3] See Climate and Economic Justice map and Fort Pierce information: https://screeningtool.geoplatform.gov/en/#7.89/27.009/-80.878

[4] https://www.census.gov/quickfacts/fortpiercecityflorida

topics such as FPUA Communications and Power Cost Adjustment protocols, Storm Response protocols in the SCADA operating room, and a full tour of all of FPUA's utility services provided. This month, they will receive a presentation about meter-reading, including manual and AMI meter-reading, in response to questions they have posed about the process and validity of it.

4. How is the project contributing to the Justice40 goal that 40% of the overall benefits of certain climate and clean energy investments flow into disadvantaged communities?

This project contributes to the Justice40 goal by benefitting a demonstrated underserved community. The U.S. Government's Climate and Economic Justice Screening Tool recognizes a majority of the City of Fort Pierce as a disadvantaged community under multiple variables, including Energy.[5] Specifically, the median per capita income in Fort Pierce is $21,781, with 27.1% of the population living in poverty according to the US Census (more than double the state of Florida).[6] In comparison, the statewide median per capita income is $35,216, with 13.1% of the population living in poverty.[7] For further comparison, nationwide poverty is 11.6% for 2021.[8]

FPUA is reliant on grant opportunities such as these to permit us to more proactively carry out grid resilience mitigation projects in our area. Without grant support, we are forced to rely on our annual budgeting process and rates revenue, which is challenging and limited due to the income demographics of our area.

Further, Downtown Fort Pierce is the historic epicenter of St. Lucie County. As such, the majority of utility infrastructure is dated (in some cases 100 years old or more) and undersized to support the unprecedented growth in our area. This lack of modern infrastructure stifles local economic growth and challenges FPUA and the City of Fort Pierce's efforts to revitalize.

In conclusion, the proposed project provides an increased ability to support activities that will modernize the electric grid and reduce impacts from extreme weather and natural disasters while also supporting the incoming and much-needed growth of good, high-paying jobs in our community. DOE's support will ensure that federal funds are driven to a diverse and disadvantaged area with a demonstrated need, reducing the community's vulnerability to storm events and outages. This opportunity will increase the resiliency of the electric grid as well as reduce outage frequency and duration.

[5] See Climate and Economic Justice map and Fort Pierce information: https://screeningtool.geoplatform.gov/en/#7.89/27.009/-80.878
[6] https://www.census.gov/quickfacts/fact/table/fortpiercecityflorida,FL/PST045221
[7] https://www.census.gov/quickfacts/FL
[8] https://www.census.gov/library/publications/2022/demo/p60-277.html

ADDENDUM A

FPUA PROJECT TEAM SKILLS & EXPERTISE

The key FPUA personnel associated with this project shall consist of the following individuals:

Mr. Craig Crawford, Director of Electric and Gas Systems: Mr. Crawford has 32 years of experience in the utility industry from doing installations, inspections, project management, operations management and now directing Electric and Gas Systems. As the Director of Electric and Gas Systems, he will be responsible for higher-level oversight and ensuring that the project team is equipped with the resources and programmatic support that they need.

Mr. Eric Meyer, P.E., Supervising Engineer: Mr. Meyer will be the technical project manager. He has 13 years of engineering experience with 10 of those years in the electric utility industry. Mr. Meyer has performed activities related to power line designs including reconductoring, single-to-three phase conversions, line extensions, and new power lines; system planning including load flow studies and contingency analyses; system protection studies including circuit breaker/fuse coordination; power quality investigations with emphasis on IEEE standard interpretation, Variable Frequency Drive (VFD) troubleshooting and motor-start analyses and substation activities including P&C's (Panels and Control), circuit breaker replacement and power transformer replacement. Mr. Meyer also has experience in Project Management for electric utility improvements, developments, and overall projects with maximum budgets (on a specific multi-year project) of up to $2.2 million dollars. Mr. Meyer is familiar with the procedures and processes that go into initializing, maintaining, and closing out projects so that they stay under budget and meet utility standards.

Ms. Rachel Tennant, Public Affairs and Sustainability Manager: Ms. Rachel Tennant is FPUA's lead grant manager. While working for the Environmental Protection Agency Office of Groundwater and Drinking Water, Ms. Tennant graduated from the University of Maryland College Park with an MS in Sustainable Development and Conservation Biology and an MPP in Environmental Policy in 2013. After graduating, she accepted a position as the Grants Program Associate for the Amazon Conservation Association, where she oversaw project and contract implementation totaling nearly $2.5M in international grants between the Washington, D.C. office and indigenous communities in Peru and Bolivia. She successfully led project start-up negotiations between key contractors (oil company, indigenous communities, grantor, foreign government, and conflict mitigation experts) for the $1.2M USAID-funded project to Strengthen Indigenous Capacity in Conflict Resolution and Sustainable Resource Management. She began work at FPUA's Manatee Center in 2017 where she oversaw all operations, fundraising, and grants before transferring to the Sustainability Program in February 2022.

Ms. Ashley Levin, Sustainability Program Associate: FPUA's Sustainability Program also employs Sustainability Program Associate, Ashley Levin, and emphasizes internal grant capacity development to ensure that the various departments and divisions understand the requirements of the grants through which their projects are funded. FPUA also relies on contracted grant specialists for select projects, who have decades of grant management years and millions of dollars of grant management experience combined.

FPUA's Prior Experience

Fort Pierce Utilities Authority (FPUA) was established in 1972 and is currently celebrating 50 years of providing economical, friendly, and reliable electric service to our customers. We maintain approximately 38 square miles of electric service territory covering the municipalities of Fort Pierce, St. Lucie Village and parts of unincorporated St. Lucie County in the State of Florida. FPUA maintains two transmission substations at 138 kV and six distribution substations at 69 kV; interconnecting these substations is one 138 kV transmission line, followed by six 69 kV transmission lines in a looped configuration around the electric service territory. FPUA receives its energy from four transmission terminals on its two 138 kV substations from the neighboring transmission system owned and operated by Florida Power & Light.

The project proposed by FPUA is entirely within FPUA's existing experience and technical ability to carry out. It does not consist of new infrastructure but rather the enhancement of existing infrastructure due to age, degradation, anticipated load growth, and reliability purposes. Each proposed project part involves the knowledge, skills, and experience of previous undertakings done by FPUA in a similar scope and size.

FPUA will take a Project Management role in the completion of these projects; FPUA anticipates using contract labor for the engineering, construction, and commissioning (if required) and will serve to oversee the scheduling, budgeting, and quality-control for each individual project. The project activities proposed by FPUA for this grant are within the purview of staff selected to oversee the contractors' capable completion of the relevant project elements.

FPUA also has in-house grant management experts and support. The Sustainability Program Department provides grant management services for all of FPUA's divisions and departments and is currently managing ten active grants, as well as two ongoing FEMA reimbursement cases, totaling $8,262,527 of funding. The largest is a sewer lining grant for $3,792,768 funded with federal CDGB HUD dollars through the Florida Department of Economic Opportunity. FPUA also has an additional $33,696,808 pending in five outstanding proposals that are under review. The FPUA Finance Department, in conjunction with the Sustainability Program Department, oversees all audit requirements to ensure proper grant management and finance tracking procedures.

PREVIOUS EXPERIENCE WITH TEAMING PARTNERS

FPUA has a Professional Engineering and Design/Build Services contract that it intends to use for engineering on selected projects. Each contractor/vendor listed as qualified has been reviewed by staff engineers for their ability to produce high-quality designs with a proven track record of success for previous clients. FPUA has worked with a multitude of these vendors to perform various engineering projects (on FPUA facilities) which are typically constructed by FPUA personnel; each project done by all vendors on their projects has been concluded with high-quality success.

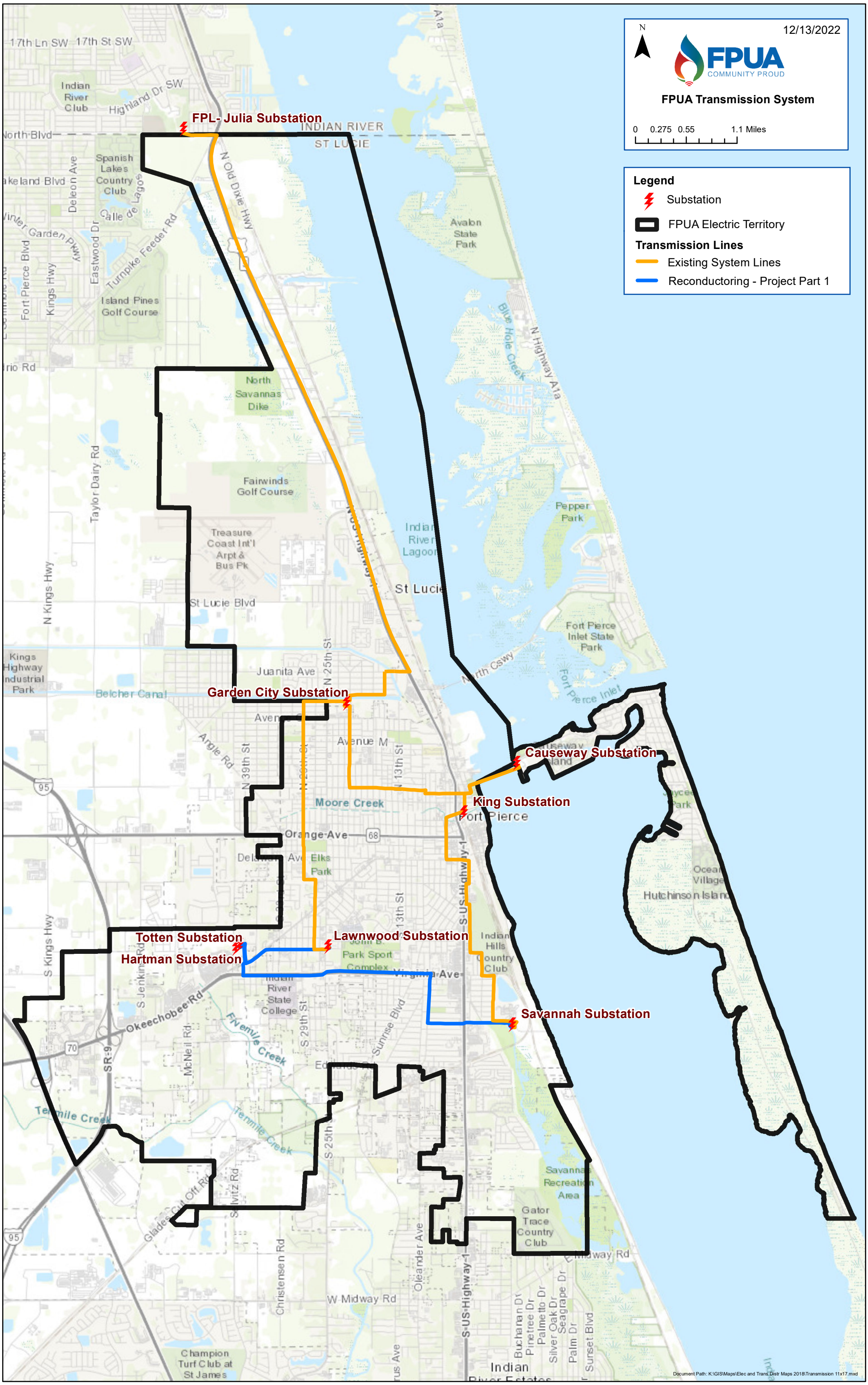
Due to the projects proposed exceeding our anticipated limit for construction costs on Design/Build Services, FPUA will need to go out for bid or Request For Proposal (RFP) for these projects. The bidding timeline has been included in the project narrative and anticipated timeline to activity completion. FPUA utilizes a rigorous bidding process where candidates who send in proposals are screened for their competitive prices and ability to perform the project as specified. Candidate contractors who do not meet the terms of the bid are disqualified. FPUA plans on using the manufacturer's services to perform device activities.

FPUA's Sustainability Department also works closely with the City of Fort Pierce staff and leadership to identify and promote projects that will benefit the underserved Fort Pierce community and the City as a whole. It is through these partnerships that our team is able to increase community involvement for our community owned utility company, as well as communicate incoming projects and grant support.

EQUIPMENT AND FACILITY ACCESS

For each project activity proposed under this grant opportunity, FPUA has the demonstrated means to oversee the activities and manage the project from start to finish. As stated above, FPUA plans on using contract services for the engineering, design, and construction of Project 1 to upgrade the transformers and reconductor the transmission lines; the contractors shall be responsible for providing their own means to perform the duties requested of them by FPUA. Per FPUA contractual policy, the contractors are not to look to FPUA for any assistance or support for the completion of the project; this will be enforced throughout the duration of the project.

Project 2, Converting Totten to Ring Bus Configuration, and Project 3, the deployment of TripSavers, will utilize FPUA equipment, such as line trucks and wiring, and FPUA staff will complete these upgrades. FPUA has a rigorous warehouse and equipment policy that tracks our existing supplies and equipment to ensure our ability to carry out maintenance as well as the projects proposed here.


12/13/2022
N
FPUA
COMMUNITY PROUD
FPUA Transmission System
0 0.275 0.55 1.1 Miles
Legend
Substation
FPUA Electric Territory
Transmission Lines
Existing System Lines
Reconductoring - Project Part 1
FPL- Julia Substation
Garden City Substation
Causeway Substation
King Substation
Totten Substation
Hartman Substation
Lawnwood Substation
Savannah Substation
INDIAN RIVER
ST LUCIE
Avalon State Park
Fort Pierce Inlet State Park
Pepper Park
Fairwinds Golf Course
Treasure Coast Int'l Arpt & Bus Pk
North Savannas Dike
Island Pines Golf Course
Spanish Lakes Country Club
Indian River Lagoon
Moore Creek
Belcher Canal
Fort Pierce
Hutchinson Island
Savannah Recreation Area
Gator Trace Country Club
Indian Hills Country Club
Champion Turf Club at St James
Document Path: K:\GIS\Maps\Elec and Trans Distr Maps 2018\Transmission 11x17.mxd

US Department of Energy Energy Information Administration Form EIA-861	ANNUAL ELECTRIC POWER INDUSTRY REPORT	Form Approved OMB No. 1905-0129 Approved Expires 05/31/2023

SCHEDULE 1. IDENTIFICATION

SURVEY CONTACTS: Persons to contact with question about this form

RESPONSE DUE DATE: Please submit by April 30th following the close of calendar year

REPORT FOR: Fort Pierce Utilities Authority 6616

REPORTING PERIOD: 2021

Contact Kiy Tran
Title: Assistant Controller

Phone: (772) 466-1600 Ext. 3270 FAX: Email: tran@fpua.com

Logged By / Date:

Logged In: ☐ Receipt Date (mm/dd/yyyy):

Supervisor Michele Harris
Title: Finance Manager

Phone: (772) 466-1600 Ext. 3279 FAX: (772) 467-2504 Email: mharris@fpua.com

1	Legal Name of Industry Participant	Fort Pierce Utilities Authority	**Submission Status/Date:**	Submitted	04/28/2022
2	Current Address of Principal Business Office	206 S. 6th Street Fort Pierce FL 34950 0000			
3	Preparer's Legal Name Operator (if different than line 1)				
4	Current Address of Preparer's Office (if different than line 2)				
5	Respondent Type (Check One)	☐ Federal ☐ Political Subdivision ☐ Municipal Marketing Authority ☐ Cooperative ☐ Independent Power Producer or Qualifying Facility	☐ State ☒ Municipal ☐ Investor-Owned ☐ Retail Power Marketer (or Energy Service Provider) ☐ Community Choice Aggregator	☐ Transmission ☐ Behind the Meter ☐ Wholesale Power Marketer ☐ DSM Administrator	

For questions or additional information about the Form EIA-861 contact the Survey Manager: Fax: (202) 287 - 1938 Email: EIA-861@eia.gov
Stephen Scott Phone: (202) 586-5140 Email: stephen.scott@eia.gov

REPORT FOR: Fort Pierce Utilities Authority 6616

REPORT PERIOD ENDING: 2021

SCHEDULE 2. PART A. GENERAL INFORMATION

LINE NO.		
1	Regional North American Electric Reliability Council (Not applicable for power marketers)	[ ] TRE (formerly ERCOT) [ ] NPCC [ ] SPP [ ] FRCC [ ] RFC (formerly ECAR, MAIN. MAAC) [ ] WECC [ ] MRO [x] SERC
2	Name of RTO or ISO	[ ] California ISO [ ] Southwest Power Pool [ ] Electric Reliability Council of Texas [ ] Midwest ISO [ ] PJM Interconnection [ ] ISO New England [ ] New York ISO [X] None
3	(For EIA Use Only) Identify the North American Electric Reliability Council where you are physically located	SERC
4	Did Your Company Operate Generating Plants(s)?	[x] Yes [ ] No
5	Identify The Activities Your Company Was Engaged In During The Year (Check appropriate activities)	[ ] Generation from company owned plant [ ] Buying distribution on other electrical system [x] Transmission [ ] Wholesale power marketing [ ] Buying transmission services on other electrical system [ ] Retail power marketing [x] Distribution using owned/leased electric wires [ ] Bundled Services (electricity plus other services such as gas, water, etc. in addition to electric service))
6	Highest Hourly Electrical Peak System Demand	Summer (Megawatts) 115.0 Prior Year 116.0 Winter (Megawatts) 96.0 Prior Year 96.0
7	Did Your Company Operate Alternative-Fueled Vehicles During the Year?	[x] Yes [ ] No
	Does Your Company Plan to Operate Such Vehicles During the Coming Year?	[x] Yes [ ] No
	If "Yes", Please Provide Additional Contact Information	Name: Rick Clevinger Title: Fleet Management Administrator Telephone: 772 - 466 - 1600 Fax: - - Email: rclevinger@fpua.com

REPORT FOR: Fort Pierce Utilities Authority 6616

REPORT PERIOD ENDING: 2021

SCHEDULE 2. PART B. ENERGY SOURCES AND DISPOSITION

	SOURCE OF ENERGY	MEGAWATTHOURS		DISPOSITION OF ENERGY	MEGAWATTHOURS
1	Net Generation		11	Sales to Ultimate Consumers	571,148
2	Purchases from Electricity Suppliers	589,666	12	Sales For Resale	
3	Exchanged Received (In)		13	Energy Furnished Without Charge	
4	Exchanged Delivered (Out)		14	Energy Consumed By Respondent Without Charge	843
5	Exchanged Net				
6	Wheeled Received (In)				
7	Wheeled Delivered (Out)		15	Total Energy Losses (positive number)	17,675
8	Wheeled Net				
9	Transmission by Others Losses (Negative Number)				
10	Total Sources (sum of lines 1, 2, 5, 8 & 9)	589,666	16	Total Disposition (sum of lines 11, 12, 13, 14, & 15)	589,666

REPORT FOR: Fort Pierce Utilities Authority 6616

REPORT PERIOD ENDING: 2021

SCHEDULE 2. PART C. ELECTRIC OPERATING REVENUE

LINE NO.	TYPE OF OPERATING REVENUE		(THOUSAND DOLLARS to the nearest 0.1)
1	Electrical Operating Revenue From Sales to Ultimate Customers (Schedule 4: Parts A, B, and D)	$	66,417.0
2	Revenue From Unbundled (Delivery) Customers (Schedule 4: Part C)	$	
3	Electric Operating Revenue from Sales for Resale	$	
4	Electric Credits/Other Adjustments	$	
5	Revenue from Transmission	$	
6	Other Electric Operating Revenue	$	996.0
7	Total Electric Operating Revenue (sum of lines 1, 2, 3, 4, 5 and 6)	$	67,413.0

REPORT FOR: Fort Pierce Utilities Authority 6616

REPORT PERIOD ENDING: 2021

SCHEDULE 3. PART A.
DISTRIBUTION SYSTEM RELIABILITY DATA

INSTRUCTIONS: For the purpose of this schedule, a distribution circuit is any circuit with a voltage of 34kV or below that emanate from a substation and that serves end use customers.

State/Territory **FL**

1	Total Number of Distribution Circuits	36.0
2	Number of Distribution Circuits that employ voltage/VAR optimization (VVO)	28.0

REPORT FOR: Fort Pierce Utilities Authority

REPORT PERIOD ENDING:

SCHEDULE 3. PART B.
DISTRIBUTION SYSTEM RELIABILITY DATA

Who is required to complete this schedule?

This schedule collects System Average Interruption Frequency Index (SAIFI) and System Average Interruption Duration Index (SAIDI) statistics. If your organization does not compute these indexes, answer 'no' to Question 1 and then skip to Schedule 4A. You do not have to complete any other part of this schedule 3B or 3C.

Should you complete Part B or Part C?

If your organization computes the SAIFI and SAIDI indexes and determines Major Event Days using the IEEE 1366-2003 or the IEEE 1366-2012 standard, answer 'YES' to Questions 1 and 2, and complete Part B. Then skip to Schedule 4A. (You do not complete Schedule 3, Part C.)

If your organization does not use the IEEE 1366-2003 or the IEEE 1366-2012 standard but calculates SAIDI and SAIFI indexes via other method, answer 'yes' to question 1 and 'no' to question 2 and complete Part C. Then go to Schedule 4A.

1	Do you calculate SAIDI and SAIFI by any method? If Yes, go to Question 2. If No, go to Schedule 4, Part A.	[x] Yes	[ ] No
2	Do you calculate SAIDI and SAIFI and determine Major Event Days using the IEEE1366-2003 standard or IEEEE-2012 standard? If Yes, complete Part B. If No, go to complete Part C.	[ ] Yes	[x] No

Part B: SAIDI and SAIFI in accordance with IEEE 1366-2003 standard or IEEE 1366-2012 standard

		State
3a.	SAIDI value including Major Event days	
3b.	SAIDI value excluding Major Event days	
4	SAIDI value including Major Event days minus loss of supply	
5a.	SAIFI value including Major Event days	
5b.	SAIFI value excluding Major Event days	
6.	SAIFI value including Major Event days minus loss of supply	
7.	Total number of customers used in these calculations	
8.	What is the highest voltage that you consider part of the distribution system, as opposed to the supply system? (kV)	
9.	Do you receive information about a customer outage in advance of a customer reporting it?	[ ] Yes [ ] No

Thank You for completing this part. Skip Part C and go directly to Schedule 4 Part A.

REPORT FOR: Fort Pierce Utilities Authority 6616

REPORT PERIOD ENDING: 2021

Part C: SAIDI and SAIFI calculated by other methods

	State	FL
10a. SAIDI value including Major Events		66.7
10b. SAIDI value excluding Major Events		66.7
11a. SAIFI value including Major Events		1.1
11b. SAIFI value excluding Major Events		1.1
12. Total number of customers used in these calculations		28,868.0
13. Do you include inactive accounts?		[x] Yes [ ] No
14. How do you define momentary interruptions	[x] Less than 1 min.	[ ] Less than 5 min. [ ] Other
15. What is the highest voltage that you consider part of the distribution system, as opposed to the supply system?		15.0 kv
16. Is information about customer outages recorded automatically?		[x] Yes [ ] No

REPORT FOR: Fort Pierce Utilities Authority 6616

REPORT PERIOD ENDING: 2021

SCHEDULE 4. PART A. SALES TO ULTIMATE CUSTOMERS. FULL SERVICE - ENERGY AND DELIVERY SERVICE (BUNDLED)

	RESIDENTIAL (a)	COMMERCIAL (b)	INDUSTRIAL (c)	TRANSPORTATION (d)	TOTAL (e)
State FL **Balancing Authority**	14610				
Revenue (thousand dollars)	30,082.0	36,335.0			66,417.0
Megawatthours	250,486	320,662			571,148
Number of Customers	23,726	5,180			28,906
Are your rates decoupled?	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No	
If the answer is YES, is the revenue adjustment automatic or does it require a rate-making proceeding?	N automatic	N automatic	N automatic	N automatic	
	N proceeding	N proceeding	N proceeding	N proceeding	
Cents/Kwh	12.009	11.331			11.629
State					
Revenue (thousand dollars)					
Megawatthours					
Number of Customers					
Are your rates decoupled?					
If the answer is YES, is the revenue adjustment automatic or does it require a rate-making proceeding?					
Cents/Kwh					

Total			
Revenue (thousand dollars)	30,082.0	36,335.0	66,417.0
Megawatthours	250,486	320,662	571,148
Number of Customers	23,726	5,180	28,906

REPORT FOR: Fort Pierce Utilities Authority 6616

REPORT PERIOD ENDING: 2021

SCHEDULE 4. PART B. SALES TO ULTIMATE CUSTOMERS. ENERGY -- ONLY SERVICE (WITHOUT DELIVERY SERVICE)

	RESIDENTIAL (a)	COMMERCIAL (b)	INDUSTRIAL (c)	TRANSPORTATION (d)	TOTAL (e)
State	**Balancing Authority**				
Revenue (thousand dollars)					
Megawatthours					
Number of Customers					
Cents/Kwh					
State					
Revenue (thousand dollars)					
Megawatthours					
Number of Customers					
Cents/Kwh					
Total					
Revenue (thousand dollars)					
Megawatthours					
Number of Customers					

REPORT FOR: Fort Pierce Utilities Authority 6616

REPORT PERIOD ENDING: 2021

SCHEDULE 4. PART C. SALES TO ULTIMATE CUSTOMERS. DELIVERY -- ONLY SERVICE (AND OTHER RELATED CHARGES)

	RESIDENTIAL (a)	COMMERCIAL (b)	INDUSTRIAL (c)	TRANSPORTATION (d)	TOTAL (e)
State	**Balancing Authority**				
Revenue (thousand dollars)					
Megawatthours					
Number of Customers					
Cents/Kwh					
State					
Revenue (thousand dollars)					
Megawatthours					
Number of Customers					
Cents/Kwh					

Total	
Revenue (thousand dollars)	
Megawatthours	
Number of Customers	

REPORT FOR: Fort Pierce Utilities Authority 6616

REPORT PERIOD ENDING: 2021

SCHEDULE 4. PART D. BUNDLED SERVICE BY RETAIL ENERGY PROVIDERS AND POWER MARKETERS

	RESIDENTIAL (a)	COMMERCIAL (b)	INDUSTRIAL (c)	TRANSPORTATION (d)	TOTAL (e)
State	**Balancing Authority**				
Revenue (thousand dollars)					
Megawatthours					
Number of Customers					
Cents/Kwh					
State					
Revenue (thousand dollars)					
Megawatthours					
Number of Customers					
Cents/Kwh					
Total					
Revenue (thousand dollars)					
Megawatthours					
Number of Customers					

REPORT FOR: Fort Pierce Utilities Authority 6616

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SCHEDULE 5. MERGERS and/or ACQUISITIONS

Mergers and/or acquisitions during the reporting month

If Yes, Provide:

Date of Merger or Acquisition

Company merged with or acquired

Name of new parent company

Address

City

State, Zip

New Contact Name

Telephone No.

Email address

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SCHEDULE 6. PART A. ENERGY EFFICIENCY PROGRAMS
Adjusted Gross Energy and Demand Savings -- Energy Efficiency

If you have a non utility DSM administrator that reports your DSM activity for you please select them from the list

State/Territory **FL** **Balancing Authority** **14610**

		RESIDENTIAL (a)	COMMERCIAL (b)	INDUSTRIAL (c)	TRANS (d)	Total (e)
	Reporting Year Incremental Annual Savings					
1	Energy Savings (MWh)	125.076				125.076
2	Peak Demand Savings (MW)	0.009				0.009
	Increment Life Cycle Savings					
3	Energy Savings (MWh)	2005.936				2,005.936
4	Peake Demand Savings (MW)	0.009				0.009
	Reporting Year Incremental Costs					
5	Customer Incentives	24.875				24.875
6	All other costs	7.461				7.461
	Incremental Life Sycle Costs					
7	Customer Incentives	24.875				24.875
8	All other costs	7.461				7.461
	Weighted Average Life for Portfolio (Years) - Use Spreadsheet to Calculate					
9	Weighted Average Life	16.040				16.000

Please provide website address to your energy efficiency program reports:

www.FPUA.com

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SCHEDULE 6. PART A. ENERGY EFFICIENCY PROGRAMS

DMS Administration only. List all utilities that you provide service for.

State	Utility Name

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Schedule 6. Part B. Yearly Energy and Demand Savings - Demand Response

Reporting Year Savings

		(a) Residential	(b) Commercial	(c) Industrial	(d) Transportation	(e) Total
State/Territory	**Balancing Authority**					
1	Number of Customers Enrolled					
2	Energy Savings (Mwh)					
3	Potential Peak Demand Savings (MW)					
4	Actual Peak Demand Savings (MW)					

Schedule 6. Part B. Program Cost -- Demand Response (Thousand Dollars)

Reporting Year Costs

5	Customer Incentives
6	All other costs
7	If you have a demand side management (DMS) program for grid-interactive water heaters (as defined by DOE), how many grid interactive water heaters were added to your program this year?

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SCHEDULE 6. PART C. DYNAMIC PRICING PROGRAMS

Number of Customers

INSTRUCTIONS: Report the number of customers participating in dynamic pricing programs, e.g. Time-of-Use-Pricing, Real-Time-Pricing, Variable Peak Pricing, Critical Peak Pricing Programs.

State/Territory **Balancing Authority**

		Residential (a)	Commercial (b)	Industrial (c)	Transportatio (d)	Total (e)
1	Number of Customers enrolled in dynamic pricing programs, by customer class					

Types of Dynamic Pricing Programs

INSTRUCTIONS: For each customer class, mark the types of dynamic pricing programs in which the customers are participating.

		Residential (a)	Commercial (b)	Industrial (c)	Transportatio (d)
2	Time-of-Use Pricing	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No
3	Real-Time Pricing	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No
4	Variable Peak Pricing	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No
5	Critical Peak Pricing	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No
6	Critical Peak Rebate	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No

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SCHEDULE 6. PART D. ADVANCED METERING

Only customers from schedule 4A and 4C need to be reported on this schedule.
AMR- data transmitted one-way, to the utility.
AMI- data transmitted in both directions, to the utility and customer

State **FL** **Balancing Authority** **14610**

		Residential (a)	Commercial (b)	Industrial (c)	Transportation (d)	Total (e)
1	Number of AMR Meters	5,858	750			6,608
2	Number of AMI Meters	7,720	1,797			9,517
3	Number of AMI Meters with home area network (HAN) gateway enabled					
4	Number of non AMR/AMI Meters	10,148	2,633			12,781
5	Total Number of Meters (All Types), line 1+2+4	23,726	5,180			28,906
6	Energy Served Through AMI	50,487	72,056			122,543
7	Number of Customers able to access daily energy usage through a webportal or other electronic means	7,720	1,797			9,517
8	Number of customers with direct load control					

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SCHEDULE 7. PART A. NET METERING

Net Metering programs allow customers to sell excess power they generated back to the electrical grid to offset consumption. Provide the information about programs by State balancing authority, customer class, and technology for all net metering applications.

State	FL	Balancing Authority	14610	Residential (a)	Commercial (b)	Industrial (c)	Transportation (d)	Total (e)
Photovoltaic	Net Metering Installed Capacity (MW)			0.297	0.007			0.304
	Net Metering Installations			44	3			47
	Storage Installed Capacity (MW)							
	Storage Installations							
	Virtual NM Installed Capacity (1 MW and greater)							
	Virtual NM Customers (1 MW and greater)							
	Virtual NM Installed Capacity (less than 1MW)							
	Virtual NM Customers (less than 1MW)							
	If Available, Enter the Electric Energy Sold Back to the Utility (MWh)			187.374	2.173			189.547
Wind	Installed Net Metering Capacity (MW)							0.000
	Number of Net Metering Customers							0
	If Available, Enter the Electric Energy Sold Back to the Utility (MWh)							0.000
Other	Installed Net Metering Capacity (MW)							0.000
	Number of Net Metering Customers							0
	If Available, Enter the Electric Energy Sold Back to the Utility (MWh)							0.000
Total	Installed Net Metering Capacity (MW)			0.297	0.007	0.000	0.000	0.304
	Number of Net Metering Customers			44	3	0	0	47
	If Available, Enter the Electric Energy Sold Back to the Utility (MWh)			187.374	2.173	0.000	0.000	189.547
Grand Total All States	**Net Metering Installed Capacity (MW)**			.297	.007	0	0	.304
	Net Metering Installations/customers			44	3	0	0	47
	If Available, Enter the Electric Energy Sold Back to the Utility (MWh)			187.374	2.173	0	0	189.547

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SCHEDULE 7. PART B. NON NET-METERED DISTRIBUTED GENERATORS

If your company owns and/or operates a distribution system, please report information on known distributed generation (grid connected/synchronized) capacity on the system. Such capacity must be utility or customer-owned

NUMBER AND CAPACITY

State	Balancing Authority	< 1MW

1. Number of generators
2. Total combined capacity (MW)
3. Capacity that consists of backup-only units
4. Capacity owned by respondent

Capacity by Technology and Sector (MW)

	Residential	Commercial	Industrial	Transportation	Direct Connected	Total
5. Internal combustion						
6. Combustion turbine(s)						
7. Steam turbine(s)						
8. Fuel Cell(s)						
9. Hydroelectric						
10, Photovoltaic						
11. Storage						
12. Wind turbine(s)						
13. Other						
14. Total						

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SCHEDULE 8. DISTRIBUTION SYSTEM INFORMATION

If your company owns a distribution system, please identify the names of the counties (parish, etc.) by State in which the electric wire/equipment are located.

LINE NO.	STATE (US Postal Abbreviation) (a)	COUNTY (Parish, Etc.) (b)	LINE NO.	STATE (US Postal Abbreviation) (a)	COUNTY (Parish, Etc.) (b)
1	FL - St Lucie				

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SCHEDULE 9. COMMENTS

SCHEDULE (a)	PART (b)	LINE NO. (c)	COLUMN (d)	NOTES (e)
2	A	4		FPUA does operate, under contract,the Treasue Coast Energy Center which is wholly owned by FMPA All Requirements Project.
6	D	7		FPUA Customers have the ability to access daily energy usage through FPUA website, but not all customers are signed up to view the information.

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EIA861 ERROR LOG

Part	State	BA ID	Error No.	Error Description/Override Comment	Type	Override