

## **Statement of Project Objectives (SOPO)**

### **Grid of the Future Project**

#### **A. OBJECTIVES**

The Grid of the Future Project (Project) is intended to expand PPL Electric's self-healing grid to support improved reliability and resiliency and, Distributed Energy Resources (DERs) and electric vehicle (EV) deployment in Eastern and Central Pennsylvania. The portfolio consists of \$99 million of investments that enable communities in PPL Electric Utilities Corporation's (PPL Electric or the Company) service territory to advance transportation electrification goals by improving the ability of the electric grid to avoid, mitigate, and recover from major disruptions, and, consequently, ensure reliable charging capability for school districts and communities.

Among the Project's key goals is EV adoption. The Company intends to support the transition to EVs by working with Pennsylvania and its communities to take advantage of the improvements in transportation electrification made possible by United States Department of Energy (DOE) funding. Through portfolio implementation, PPL Electric will be able to increase the operational effectiveness and reduce faults and other system disturbances of PPL Electric's transmission and distribution system. This will boost the capability of PPL Electric to work with the Commonwealth of Pennsylvania and community partners to advance fleet electrification in its service territory.

The combined portfolio of investments PPL Electric will deliver, with the support of the DOE through the Infrastructure Investment and Jobs Act funding (IIJA), the Topic Area 2 goals of improving reliability and, also hardening the grid to better withstand weather disasters. With assistance from the DOE through the IIJA funding opportunity, the Topic Area 2 portfolio will enable PPL Electric to build infrastructure that will bring increased reliability and resilient service to more communities. The investments included in this portfolio are intended to (1) support federal, state, and community clean energy and carbon reduction goals, (2) position the grid as an enabler for EV adoption, electrification, and DER, and (3) invest in infrastructure that supports economic development and advanced manufacturing in Pennsylvania.

#### **B. SCOPE OF WORK**

The OT and IT investments in this Project portfolio were purposely selected by the Project's prime applicant, PPL Electric, and team member PPL Services Corporation (PPL Services and together with PPL Electric the Project Team) together to maximize their benefits and synergies. The Project Team will tailor the specific investments made within each of the communities targeted by the Grid of the Future Project to address the specific resilience challenges in that area. The totality of investments will be incorporated into an overarching project management plan. All investment plans will proceed through a "Communicate, Design, Procure, Execute" series of tasks and subtasks. A set of milestones and go/no-go criteria support evaluating the entire project's progress and provide opportunities to assess and mitigate risks. As necessary, the project scope may be adjusted to remain within the project's constraints. Various deliverables will be created over the project to demonstrate the successful completion of tasks, facilitate the evaluation of milestones, and inform go/no-go reviews.

Projects that involve installations or upgrades will be regularly tested for both functionality of the device as well as successful installation. PPL Electric has extensive experience in delivering reliability and resilience investments and can verify that as its technologies scale, they are able to operate effectively and safely.

In aggregate, the scope of the Grid of the Future Project includes the following investments:

<b>Project</b>	<b>Overview and Purpose</b>
<b>Single Phase Reclosers</b>	250 remotely operated, telemetered single-phase reclosers to provide visibility into the 1PH system and allow for constant communication and real-time data flow
<b>Low-Tension Network</b>	Upgrading existing LTN automation with advanced technologies including fiber installation, primary circuit fault location, vault upgrades, and secondary monitoring
<b>Predictive Failure Monitoring</b>	30 circuits with sensor technology to detect and locate failing equipment, shifting repairs to a proactive approach, improving system reliability, and reducing maintenance cost
<b>Advanced Distribution Management System (ADMS)</b>	Upgrade enterprise software platform to command and control the electric distribution system including outage management, system operations, and distributed energy resource management
<b>Advanced Energy Management System (AEMS)</b>	Implement an enterprise software platform to command and control the electric transmission system and optimize line transfer capacity
<b>Digital Twin</b>	Update GIS system with an integrated and automated design toolset that creates a digital representation of the electric grid with every asset and subcomponent
<b>Asset Hub</b>	Create a centralized multi-tiered asset data platform across the enterprise that can ingest and store high-velocity and granular asset data from sensors and grid devices

## **C. TASKS TO BE PERFORMED**

### **TASK 1.0: PROJECT MANAGEMENT AND PLANNING**

#### **Subtask 1.1 – Project Management Plan (PMP):**

Within 30 days of award, the Recipient shall submit a Project Management Plan (PMP) to the designated Federal Project Officer (FPO). The Recipient shall not proceed beyond Task 1.0 until the PMP has been accepted by the FPO.

The PMP shall be revised and resubmitted as often as necessary, during the course of the project, to capture any major/significant changes to the planned approach, budget, key personnel, major resources, etc.

The Recipient shall manage and direct the project in accordance with the accepted PMP to meet all technical, schedule and budget objectives and requirements. The Recipient will coordinate activities to effectively accomplish the work. The Recipient will ensure that project plans, results, and decisions are appropriately documented, and that project reporting and briefing requirements are satisfied.

#### **Subtask 1.2 – National Environmental Policy Act (NEPA) Compliance:**

As required, the Recipient shall provide the documentation necessary for NEPA compliance.

#### **Subtask 1.3 - Cybersecurity Plan (CSP):**

The Recipient will submit a Cybersecurity Plan during the negotiation phase and the CSP shall be revised and resubmitted as often as necessary, during the course of the project, to capture any major/significant changes.

**Subtask 1.4 – Continuation Briefing(s):**

The Recipient will brief DOE on PMP progress and the results of the technical effort. The briefing shall also describe performance relative to project success criteria, milestones, and the Go/No-Go Decision points that are documented in the PMP.

**TASK 2.0: DESIGN**

**Subtask 2.1 – Perform Detailed Design:**

Review existing assets to determine the need to upgrade poles, substation components, and associated equipment to implement resiliency enhancements and asset modernization projects. Review locations to determine the need and feasibility of additional smart grid equipment. The substation group will develop a scope of work to solicit design quotes and receive drawing packages on a per-station basis.

**Subtask 2.2 – Create Outage Plan:**

In coordination with System Planning, Distribution Control Centers, Engineering, and Construction create a Construction Work Outage Sequence to execute the work in the field.. Thus, ensuring reliable service to customers during asset upgrades or replacement for construction and a detailed strategy for the conversion events.

**Subtask 2.3 – Acquire Right of Way and Permits:**

Determine if right of way is needed for additional substation or line locations. Acquire necessary construction and/or railroad permits.

**Subtask 2.4 – Prints to Construction:**

After the design is complete, detailed work requests and associated prints are issued for construction and reviewed prior to work.

**Subtask 2.5 – Develop and Finalize Bill of Materials (BOM):**

After design and engineering has been completed, a BOM is defined. Materials are acquired through pre-approved material agreements with vendors.

**TASK 3.0: PROCUREMENT, SCHEDULING, & CONSTRUCTION ENGAGEMENT**

**Subtask 3.1 – Complete Material Procurement:**

Once the materials are identified, purchase orders are issued with vendors for equipment being acquired for the project.

**Subtask 3.2 – Materials Delivered:**

Material delivery will be selected at issuance of purchase orders. Per project material will be transported from PPL Electric storage facilities to project site at beginning of construction.

**Subtask 3.3- Construction Planning:**

Secure resources who will be supporting work either internally or externally. For external contractors, engage with contractors of choice through bidding process.

**TASK 4.0: COMMUNITY & STAKEHOLDER ENGAGEMENT****Subtask 4.1 – Communication and Community Engagement Plan:**

Utilize a comprehensive communications plan to educate employees, customers, and community stakeholders about the project throughout its duration. Diverse employee and customer audiences and community stakeholders with varying interests make it essential to develop dynamic outreach, engagement, educational and training materials.

**TASK 5: EXECUTION & FINAL CONSTRUCTION****Subtask 5.1 – Complete Construction Activities:**

Prepare existing assets (e.g., distribution or transmission lines or substations) for new assets (e.g. transformers, necessary reconductor and associated tree trimming, new circuit ties, pole replacements, reclosers, etc.). Install new equipment and assets to upgrade impacted lines, including (as necessary) removal of old equipment, below-grade work, pouring concrete foundations, or other required activities.

**Subtask 5.2 – Perform Commissioning:**

Technician(s) will complete a commissioning form to initiate process. Protection and Control engineers will review the commissioning form and apply necessary settings for associated devices. Facility Records Technicians will map the devices in the Geographic Information System (GIS). Line technician will communicate with the Control Center to test functionality and verify accuracy of control functions. Substation technicians will complete the testing and commissioning of all major equipment installed during the substation upgrades (ex. Transformer, Breakers, Relays, etc.).

**Subtask 5.3 – Project Closeout:**

Update and provide reports including mapping system, engineering records, financial documents, and asset management systems to show equipment in-service and project complete.

**D. DELIVERABLES**

Subtask 1.1 – Project Management Plan

Subtask 1.2 – NEPA Compliance Documentation

Subtask 1.3 – Continuation Briefing Documents

Subtask 2.3 – Construction Design Prints

Subtask 3.1 – Bill of Materials

Subtask 4.1 – Communication and Community Engagement Plan

Subtask 5.3 – Project Closeout Report

## **E. BRIEFINGS/TECHNICAL PRESENTATIONS**

The Recipient shall prepare, and present periodic briefings, technical presentations and demonstrations as requested by the Federal Project Officer, which may be held at a DOE or the Recipient's facility, other mutually agreeable location, or via webinar. Such meetings may include all or a combination of the following:

**Kickoff Briefing** – Not more than 30 days after submission of the Project Management Plan, the Recipient shall prepare and present a project summary briefing as part of a Project Kickoff Meeting.

**Pre-Continuation Briefing** – Not less than 90 days prior to the planned start of a budget period, the Recipient shall brief the DOE on the results to date, and their plans for the subsequent periods of work. The DOE will consider the information from this briefing, as well as the content of deliverables submitted to date, prior to authorizing continuing the project.

**Final Project Briefing** – Not less than 30 days prior to the end of the project, the Recipient shall prepare and present a Final Project Briefing on the results and accomplishments of the entire project.

**Other Briefings** – The Recipient shall prepare and present technical, financial, and/or administrative briefings as requested by the DOE. Additionally, the DOE may require Recipients to make technical presentations at national and/or industry conferences.