



Abstract

NovaTech designed, assembled, tested and commissioned substation Remote Terminal Units (RTUs) for Potomac Electric Power Company (Pepco). This fast-track project included eight RTU assemblies, two of which were installed and commissioned just eight weeks after contract award. This award established the initial phase of Pepco's Smart Community RTU Replacement project.

Customer

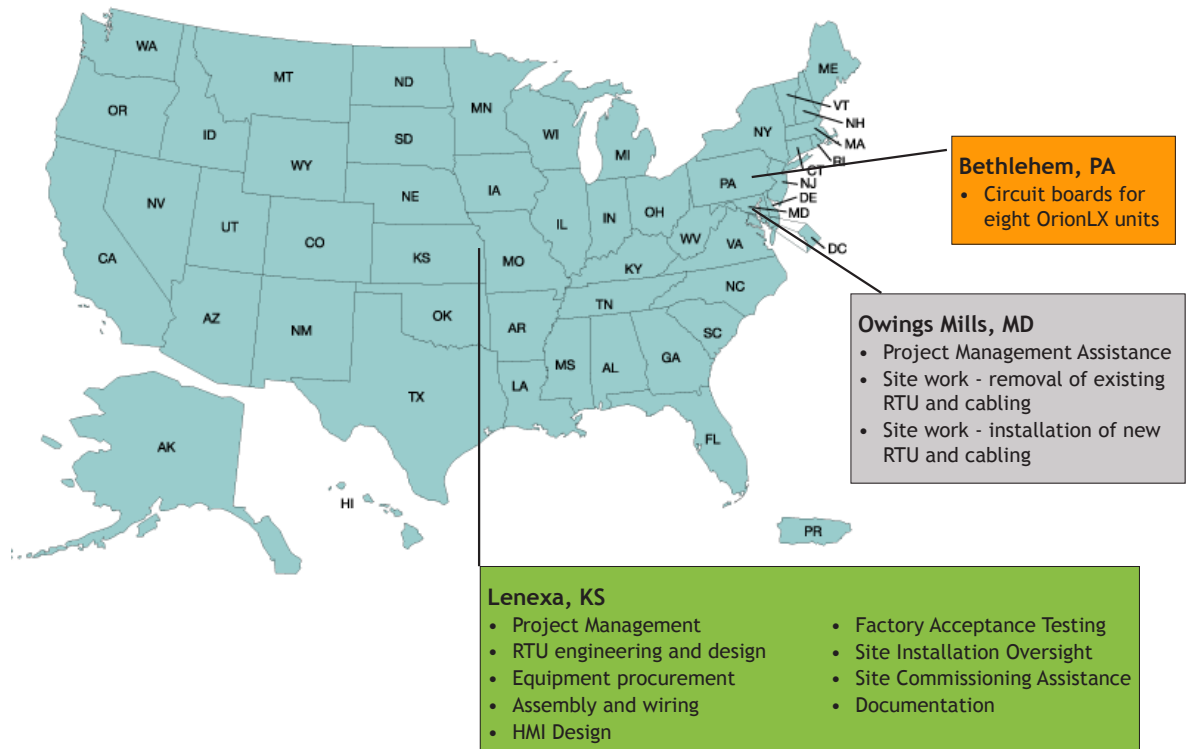
Pepco Holdings, Inc. (PHI), a Delaware corporation, is a public utility holding company that provides energy delivery services in the Mid-Atlantic region through its three wholly-owned regulated utilities, Potomac Electric Power Company (Pepco), Delmarva Power & Light Company (Delmarva Power) and Atlantic City Electric Company (Atlantic City Electric). PHI's service territory is comprised of the District of Columbia and the suburban Maryland counties of Montgomery and Prince Georges (Pepco), Delaware and the Eastern Shore portions of Maryland and Virginia (Delmarva Power), and southern New Jersey (Atlantic City Electric).

Project Scope

Pepco issued a Request For Proposal seeking a proven solution to replace existing legacy RTUs at eight Pepco substations throughout the suburbs of Washington, D.C. The project was deemed "Turn-Key" by Pepco because they required the RTU solution provider to also deliver HMI programming, on-site installation, wiring and commissioning of all required equipment and hardware.

Challenges

- **Meeting tight eight-week schedule to have all RTU assemblies tested and shipped** – accelerating processes for parts procurement, design and assembly, and coordinating resources from multiple facilities
- **Assembling a multi-location project team**
- **Substation access requiring special rigging for RTU installation**



Three NovaTech operations - in Kansas, Pennsylvania, and Maryland - worked together to meet the tight schedule and to improve local response.

NovaTech Hardware and Software Provided

OrionLX Automation Platform with:

- RS-485 Serial Ports to Meters
- Ethernet to Protective Relays
- DNP serial and TCP protocols
- Math and Logic Software Module
- LogicPak Software Module
- Alias Point Renaming Software Module
- Alarm/Archive/Retentive Software Module
- NovaTech Communication Director (NCD) Configuration Software

NovaTech Services Provided

- Procurement of third-party equipment , including industrial PCs, Ethernet switches, automation controllers, and raw panel assemblies
- RTU cabinet layout and design
- RTU cabinet assembly and wiring
- OrionLX configuration
- Human Machine Interface (HMI) application design and configuration
- Factory Acceptance Testing
- Removal of existing RTUs
- Installation of new RTUs, including interconnecting wiring
- Assistance for Pepco commissioning activities with new RTUs, including point-to-point checkout with both existing and new SCADA master
- Complete product and application documentation
- In-depth product and applications training



NovaTech software engineer Brock Haas checking out the RTU HMI in Lenexa, KS prior to factory acceptance test. NovaTech was responsible for procurement, assembly and screen engineering of the industrial PC-based HMI.

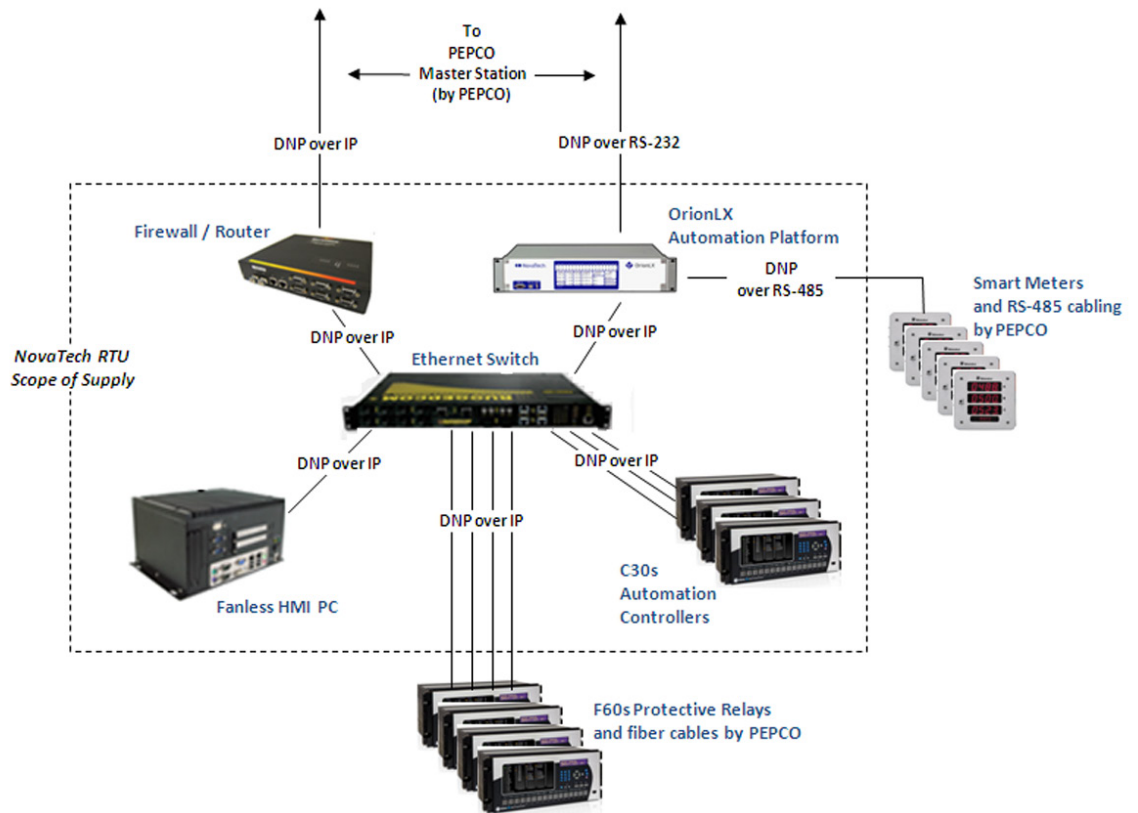
Inside rear view of RTU panel assembly showing network connections and wiring to HMI PC, Automation Controllers and supy/local control switch.





RTU Solution Description

The new RTUs, designed around the NovaTech OrionLX automation platform, replace existing hard-wired RTUs of 30+ year-old vintage with a modern substation LAN-based distributed RTU. Three different types of intelligent electronic devices (IEDs) are integrated, via DNP serial and DNP IP communications links – meters, relays and automation controllers - and interrogated by the OrionLX in each RTU. The IED data is then concentrated in the OrionLX and served to a local HMI, running on a solid-state, fanless PC, and to Pepco’s SCADA control center via DNP serial and DNP IP. The system is designed with full accommodations for NERC CIP compliance, with the ability to serve DNP data over an encrypted link to the SCADA host.

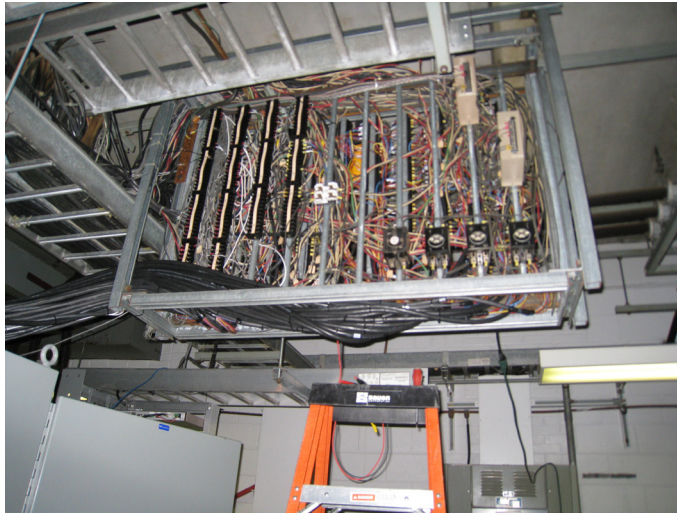


Interconnection diagram for equipment provided In the RTU system.

Results

Met tight eight-week schedule to have all RTU assemblies tested and shipped to site, and the first two RTU assemblies were installed and commissioned including point-to-point testing back to SCADA to emulate the legacy RTU.

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Photographs from the installation and commissioning of the first two RTU assemblies, the first requiring four days and the second requiring three days. Note overhead interconnection wiring.

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