PJM Generator Interconnection Request
Queue #M25
South Reading 69kV
Feasibility/Impact Study Report

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South Reading (M25) Feasibility/Impact Study

General

United Corrstack, LLC originally proposed installation of a single 13MW extraction/ condensing steam turbine generator at its facility at 667 S. 7th Street, Reading, Berks County, Pennsylvania. Their plans are changing and the latest is that the plan is to install a 20 to 25 MW generator. The project is proposed to be in service by the third or fourth quarter of 2007. This queue request remains as 13 MW energy request with 2 MW of that amount to be capacity.

Direct Connection

The project will be connected to the South Reading-West Reading (831) 69kV circuit via the, which supplies the radial industrial load at that site. See Figure #1.

Install a new 69 kV line tap (approximately 200') from the present United Corrstack tap to the generating unit substation. The estimated cost is **$41,000**.

Metropolitan Edison will also need to verify the United Corrstack substation design metering, SCADA and relay protection drawings and verify proper operation in the field. The estimated cost is **$13,000**.

Local Network Upgrades to Accommodate the Direct Connection

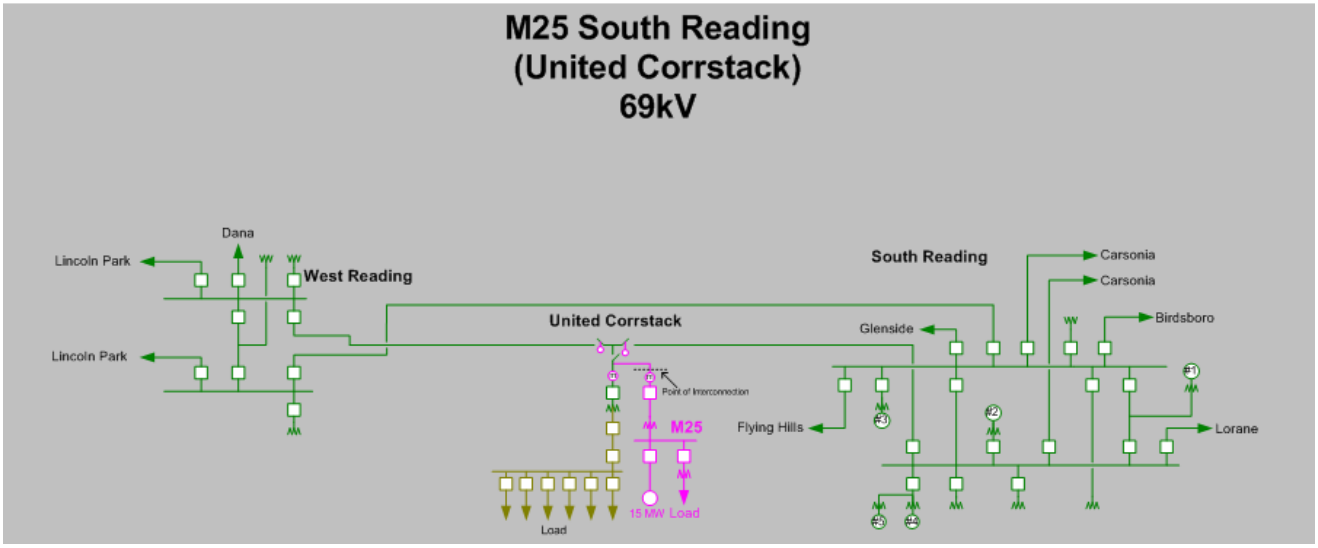
In order to accommodate the attachment, SCADA controlled motor operators will need to be installed on the existing Metropolitan Edison 69kv line disconnect switches (Network Upgrade #N0440). The estimated cost is **$75,000**.

To assure tripping of the generating plant, Direct Transfer Trip Transmitters will need to be installed at South Reading 69kV substation (Network Upgrade #N0441) and West Reading 69kV substation (Network Upgrade #N0442). Corresponding Direct Transfer Trip Receivers will be installed at the United Corrstack substation by the project developer. The estimated cost for each of the Direct Transfer Trip Transmitters is $64,000 each for a total of **$128,000**.

Total Cost and Schedule

The estimated total cost for the Metropolitan Edison direct connection requirements are **$257,000** (2205 dollars) and it is estimated it will take 9 months to design and install the equipment from the time an Interconnection /service Agreement is signed.

Figure #1



The Interconnection Customer will be responsible for the following:

- Meeting the criteria in the applicable sections of the FE "Requirements for Transmission Connected Facilities" except as modified by this study.

- Generation relaying and control generally as follows:
  - Fault duty at the United Corrstack 69 kV bus (w/o generation):

3-Phase	23,290 amps	2783 MVA
SLG	8,012 amps	

  - (2) RFL 9745 Teleprotection Channel. RFL Part No. "TSHK65500X". 2 tone audio, single I/O relay/solid state, test panel option. To be used for dual channel transfer trip from South Reading and West Reading to United Corrstack over a leased line telephone circuit. Devices to trip high side transformer breaker or generator breaker.

  - Transformer 69 kV Terminal - 3 grounded wye potential transformers or Capacitor Voltage Transformer's with dual secondary windings. Secondary winding X connected grounded wye to detect under-frequency, overfrequency, undervoltage and overvoltage conditions. Devices to trip high side transformer breaker or generator breaker after time delay. A separate time delay is to be used for abnormal frequency tripping and abnormal voltage tripping. Secondary winding Y connected Open Corner Delta for use as a ground detection scheme. Devices to trip high side transformer breaker or generator breaker.

  - Transformer 13.8 kV Terminal - Directional Time and Instantaneous Overcurrent relays and directional power relay to trip in the direction toward the Metropolitan Edison system. Devices are to trip the high side transformer breaker or generator breaker.

- Synchronizing relay to parallel the generator with the Metropolitan Edison system.

- Purchase and installation of the 69 kV interconnection metering instrument transformer. Metropolitan Edison will provide the ratio and accuracy specifications based upon the customer load and generation levels. Metropolitan Edison will provide the meter socket for installation by the customer and will supply and install the meter.

- Supervisory control and data acquisition (SCADA) equipment to provide information in a compatible format to the Metropolitan Edison System Control Center.

- Dedicated communication circuits for direct transfer trip relaying from MetEd's South Reading and West Reading Substations, for SCADA communication to the transmission system control center, and for dialup access to revenue metering.

Network Impacts

The #M25 project was studied as a total injection of 13 MW into a tap of the S. Ridge-W.Ridge 69 kV line. 2 MW of the total project output was studied as capacity injection, and the remaining 11 MW was studied as energy-only injection. Project # M25 was evaluated for compliance with reliability criteria for summer peak conditions in 2008. Potential network impacts were as follows:

Normal System
No identified problems.

Single Contingency (MAAC Criteria IIA)
No identified problems.

Second Contingency (MAAC Criteria IIB)
No identified problems.

Multiple Facility Contingency (MAAC Criteria IIC)
No identified problems.

Generator Deliverability
No identified problems.

Stability (MAAC Criteria IV)
No Analysis Required

CETO/CETL (MAAC Criteria III / VIIB)
No identified problems.

Short Circuit Analysis
Analysis to be done when actual generation data is provided by United Corrstack.

System Reinforcements

- Add SCADA controlled motor operators to two line disconnects at the United Corrstack tap. **$75,000**
- Add transfer trip transmitter at South Reading substation. **$64,000**
- Add transfer trip transmitter at West Reading substation. **$64,000**

Cost Allocation

The United Corrstack project is responsible for 100% of the Attachment Facility costs of **$54,000** and for 100% of the System Reinforcements costs of **$203,000**.