Statement of Work for Amos – to – Kemptown HVDC Conceptual Study

1.0 Project Information

A new 765 kV AC overhead transmission circuit with 5000 MW thermal capacity is being proposed in the PJM operating territory by AEP and Allegheny Power to interconnect the Amos and Kemptown substations.

The circuit length is approximately 275 miles total with approximately 224 miles in West Virginia, 31 miles in Virginia, and 20 miles in Maryland. The transmission circuit will also interconnect into a new substation named Welton Springs which will be installed at approximately the West Virginia/Virginia interface. The transmission circuit length is approximately 224 miles from Amos-to-Welton Springs, and 51 miles from Welton Springs-to-Kemptown.

PJM has requested Black & Veatch (B&V) to perform a conceptual study to use HVDC transmission with overhead or underground cable systems as an alternate solution to the proposed 765 kV AC overhead transmission.

2.0 Schedule

The following schedule has been assumed for the work:

- Purchase Order Received to Start Work – April 22, 2009
- Kickoff Meeting – w/c April 27, 2009*
- Final Report – August 14, 2009
  * TBA by PJM

3.0 Project Scope

B&V will prepare two Draft Reports. One for the Welton Springs-to-Kemptown portion of the transmission system, and one for the Amos-to-Welton Springs portion of the transmission system, for PJM review in accordance with the Schedule. A Final Report will be submitted with PJM comments incorporated in accordance with the Schedule. The Report will generally have the following content:

1.0 Executive Summary

2.0 Introduction

3.0 HVDC Converter Station
   3.1 Technology Comparison/Evaluation
      3.1.1 LCC vs. VSC
      3.1.2 Multi-terminal Configuration
      3.1.3 Future Expansion
   3.2 Conceptual Design
   3.3 Maintenance Considerations
   3.4 Permitting Considerations
   3.5 System Impacts
   3.6 Estimated Cost

4.0 HVDC Underground Cable System
   4.1 Welton Springs to Kemptown
      4.1.1 Technology Comparison/Evaluation
         4.1.1.1 HPFF
         4.1.1.2 SCFF
         4.1.1.3 MI
         4.1.1.4 XLPE

Revision: April 16, 2009
4.0 Clarifications and Assumptions

1. Permitting or land acquisition costs will be estimated by others.
2. PJM will provide the route map and both the overhead and the underground transmission system will follow the same route map.
3. B&V will consult with one or more HVDC equipment and underground cable suppliers to obtain indicative costs estimates for the HVDC equipment.
4. The HVDC interconnection points have a sufficient short circuit ratio to utilize conventional Line Commutated Converter technology.
5. A Draft copy of the report will be submitted for review. After comments are received and incorporated, a Final copy of the report will be submitted.
Statement of Work for Amos – to – Kemptown HVDC Conceptual Study

Engineering Fee Estimate

REDACTED

This Statement of Work is governed by PJM Interconnection L.L.C. General Terms and Conditions for Consulting or Professional Services between PJM and Black & Veatch Corporation dated 1/26/09.

ACCEPTED AND AGREED TO:

Black & Veatch Corporation

By ________________________________

Name _____________________________

Title _______________________________

Date _______________________________

PJM Interconnection, L.L.C.

By ________________________________

Name _____________________________

Title _______________________________

Date _______________________________