PJM Generator Interconnection Request
Queue AB2-109
Reusens 34.5 kV
Feasibility/Impact Study Report

August 2016

Preface

The intent of the feasibility study is to determine a plan, with ballpark cost and construction time estimates, to connect the subject generation to the PJM network at a location specified by the Interconnection Customer. The Interconnection Customer may request the interconnection of generation as a capacity resource or as an energy-only resource. As a requirement for interconnection, the Interconnection Customer may be responsible for the cost of constructing: (1) Direct Connections, which are new facilities and/or facilities upgrades needed to connect the generator to the PJM network, and (2) Network Upgrades, which are facility additions, or upgrades to existing facilities, that are needed to maintain the reliability of the PJM system.

In some instances a generator interconnection may not be responsible for 100% of the identified network upgrade cost because other transmission network uses, e.g. another generation interconnection, may also contribute to the need for the same network reinforcement. The possibility of sharing the reinforcement costs with other projects may be identified in the feasibility study, but the actual allocation will be deferred until the impact study is performed.

The Feasibility Study estimates do not include the feasibility, cost, or time required to obtain property rights and permits for construction of the required facilities. The project developer is responsible for the right of way, real estate, and construction permit issues. For properties currently owned by Transmission Owners, the costs may be included in the study.

General

Eagle Creek Reusens Hydro, LLC has requested an interconnection study for the existing generation at Reusens Hydro plant located at 4300 Hydro Street, Lynchburg, VA (see Figures 1 & 3). AEP's Reusens substation contains 138 kV, 69 kV and 34.5 kV facilities of which the hydro generation is connected to the Reusens 34.5 kV bus no. 1 via parallel 34.5/4 kV transformers 3A and 3B (see Figure 2). For this study, the maximum facility output from generating units 1-5 totals 12.5 MW (4.0 MW Capacity). Four of the five units are original and will be refurbished, but the 5th unit may have to be replaced.

The requested Backfeed date is: November 1, 2016
The requested In Service date is: January 1, 2017

Attachment Facilities

Not Required.

Local and Network Impacts

The impact of the proposed generating facility on the AEP Transmission System was assessed for adherence with applicable reliability criteria. AEP planning criteria require that the transmission system meet performance parameters prescribed in the AEP FERC Form 715[1] and Connection Requirements for AEP Transmission System[2]. Therefore, these criterion were used to assess the impact of the proposed facility on the AEP System. The Queue Project AB2-109 was evaluated as a 12.5 MW (Capacity 4.0 MW) injection at the Reusens 34.5kV substation in the AEP area. Project AB2-109 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AB2-109 was studied with a commercial probability of 53%.

1 https://www.aep.com/about/codeofconduct/oasis/transmissionstudies/GuideLines/2014%20AEP%20PJM%20FERC%20715_Final_Part%204.pdf

2 https://www.aep.com/about/codeofconduct/OASIS/TransmissionStudies/Requirements/AEP_Interconnection_Requirements_rev1.pdf

Potential network impacts were as follows:

Summer Peak Analysis - 2020

Generator Deliverability
(Single or N-1 contingencies for the Capacity portion only of the interconnection)

None

Multiple Facility Contingency
(Double Circuit Tower Line, Fault with a Stuck Breaker, and Bus Fault contingencies for the full energy output)

None

Contribution to Previously Identified Overloads
(This project contributes to the following contingency overloads, i.e. "Network Impacts", identified for earlier generation or transmission interconnection projects in the PJM Queue)

None

Short Circuit
(Summary of impacted circuit breakers)

None

Stability Analysis

Not Required - Existing Facility

Voltage Variations

None

Delivery of Energy Portion of Interconnection Request
PJM also studied the delivery of the energy portion of this interconnection request. Any problems identified below are likely to result in operational restrictions to the project under study. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Merchant Transmission Interconnection request.
Only the most severely overloaded conditions are listed. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed, which will study all overload conditions associated with the overloaded element(s) identified.

None

Additional Limitations of Concern

None

Local/Network Upgrades

None

Conclusion

Based upon the results of this Feasibility/System Impact Study, the injection of 12.5 MW (4.0 MW Capacity) at Reusens station would not require additional network upgrades on AEP's transmission system.

Figure 1: PJM Queue AB2-109 POI Reusens Station

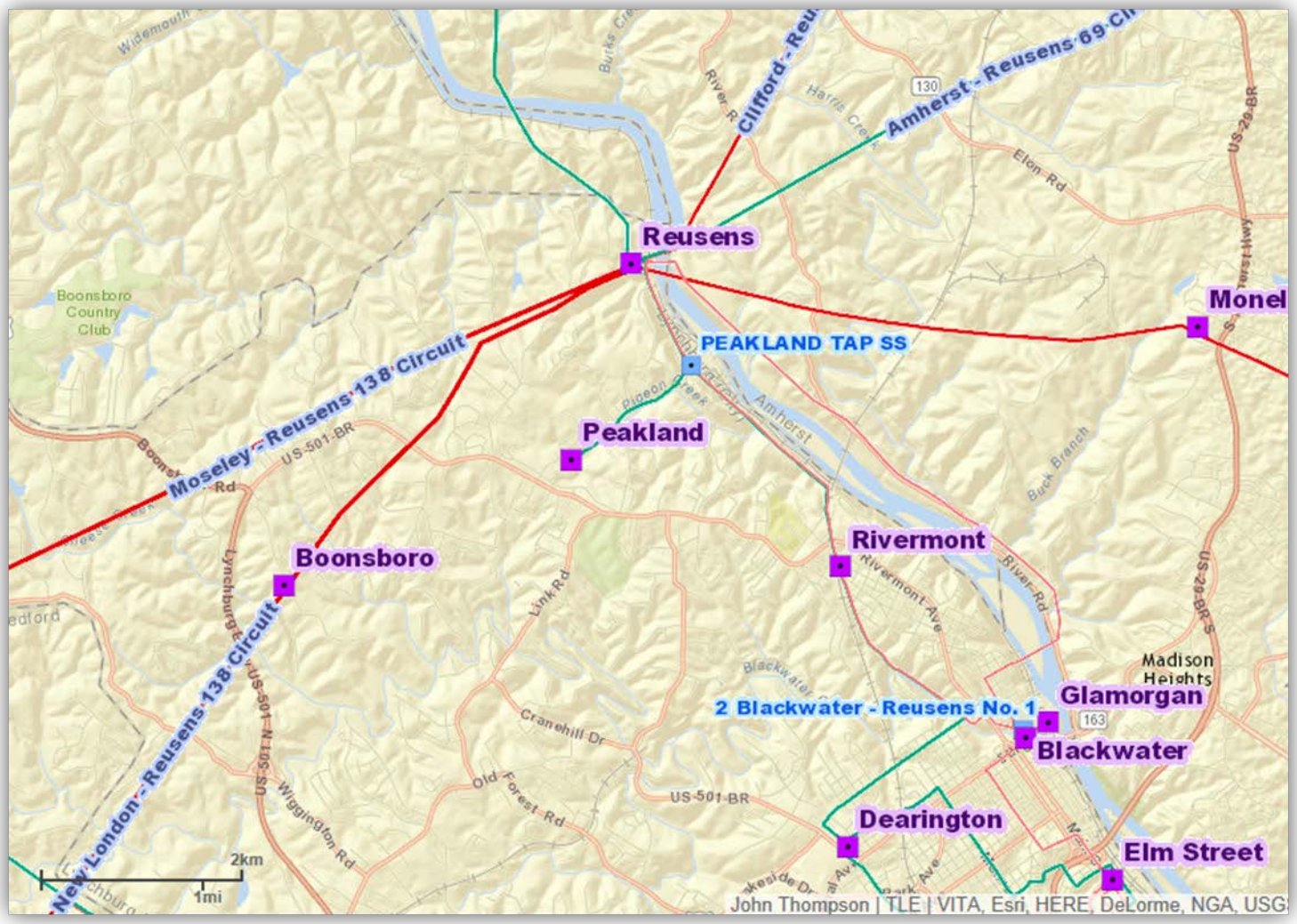

Figure 2: PJM Queue AB2-109
POI Reusens Station Simplified One-Line Diagram

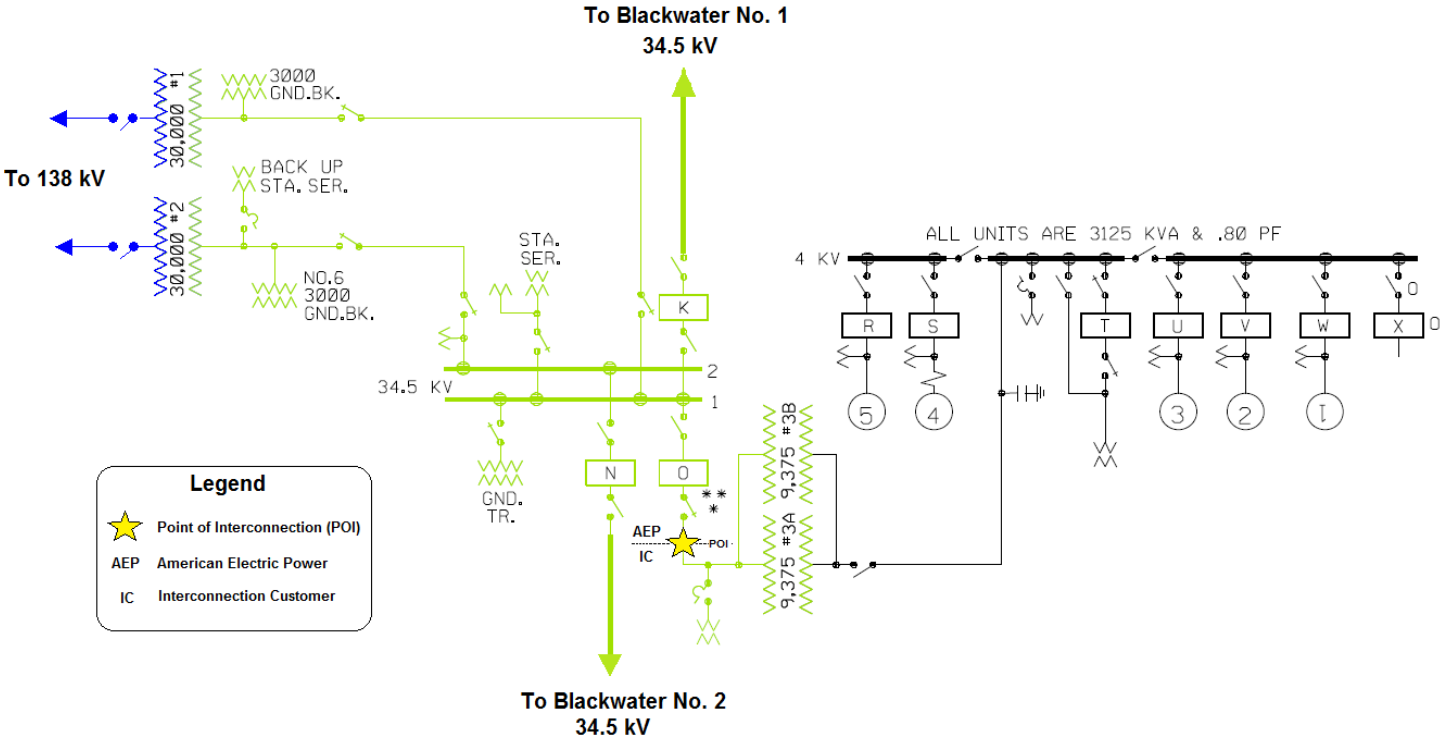

Figure 3: PJM Queue AB2-109 Reusens Station and Hydro Dam