PJM Generator Interconnection Request
Queue # O31
Fries 12kV
Feasibility/Impact Study

November 2005
346364
version #2

General

Aquenergy Systems, Inc, a subsidiary of Enel North America, Inc, proposes to participate in the PJM market with their existing 5.21 MW Fries Hydroelectric Plant in Fries, VA via the American Electric Power Company transmission connection. The Fries Hydroelectric Plant is comprised of four hydroelectric units and is located in southwest Virginia on the New River (Figure 1). It is connected to the AEP transmission system via the Fries 69/12 kV Station, tapped between Byllesby and Galax 69 kV stations (Fig 2).

The intent of the feasibility / impact study is to determine system reinforcements and associated costs and construction time estimates required to facilitate the addition of the new generating plant to the transmission system. The reinforcements include the direct connection of the generator to the system and any network upgrades necessary to maintain the reliability of the transmission system.

Direct Connection

Metering

The Fries Hydroelectric Plant is presently connected to the AEP transmission system via the Fries 69/12 kV Station. Its participation in the PJM market will not change the power flow pattern in the vicinity of Fries Station. However, metering changes must be made in order to accommodate Aquenergy's request to join the PJM market.

An additional 12 kV PT needs to be installed to the current revenue metering point, which is a pole structure outside of the Fries Station.

Estimated Cost: **$2700**

Network Impacts

The #O31 project was studied as an injection of 5.21 MW into the Fries 12kV substation. Project #O31 was evaluated for compliance with reliability criteria for summer peak conditions in 2008. Potential network impacts were as follows:

Normal System
No problems identified.

Single Contingency
No problems identified.

Short Circuit Analysis
No problems identified.

Stability Analysis
Stability studies were not performed as it is an existing connection. No adverse affect is anticipated.

Fries Hydroelectric is an existing generating facility connected to the AEP system. No problems were identified.

New System Reinforcements
None

Contribution to Previously Identified System Reinforcements
None

Cost Allocation
The O31 project is responsible for 100% of the cost of the attachment facilities estimated to be **$2700**.

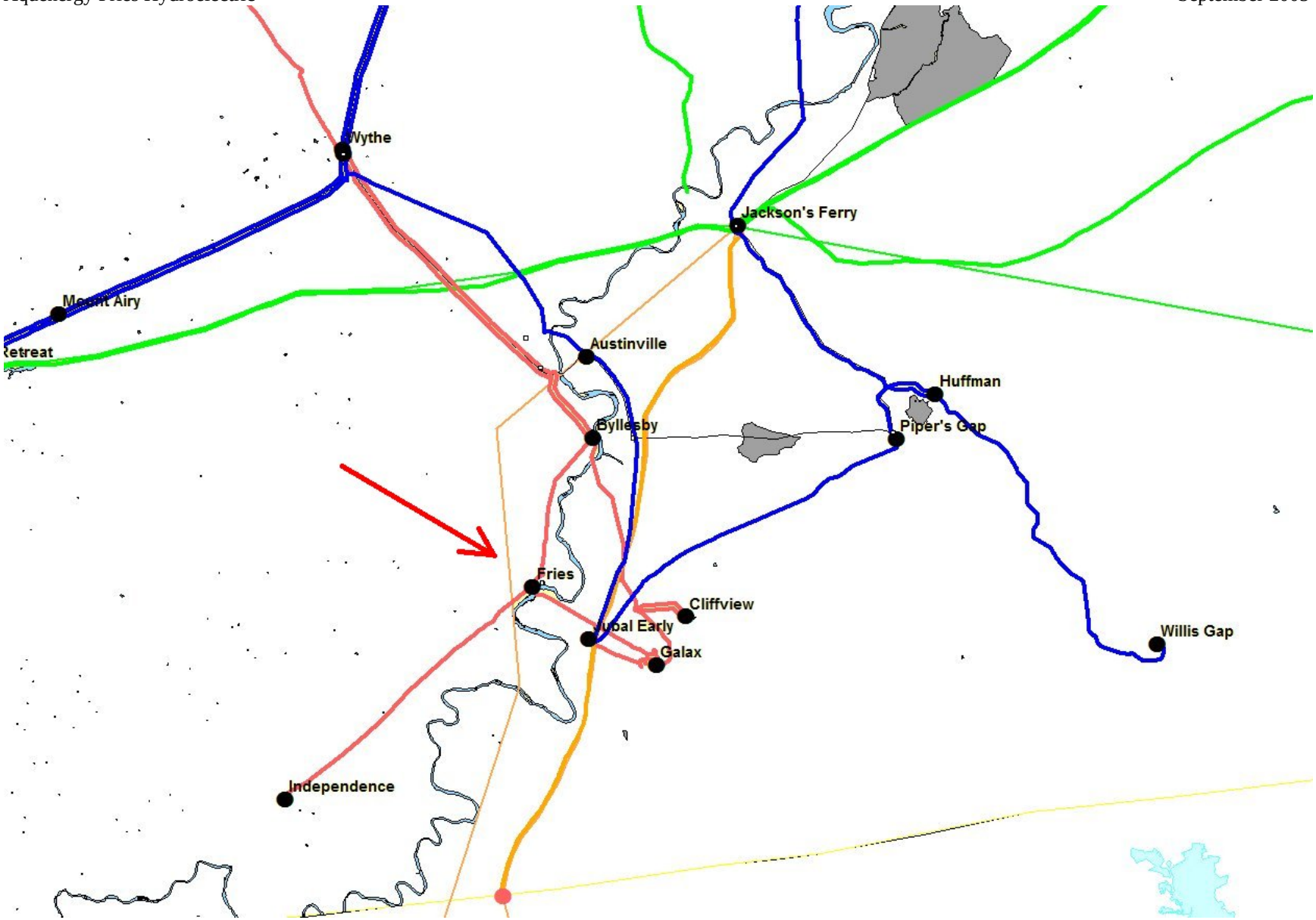

Figure 1

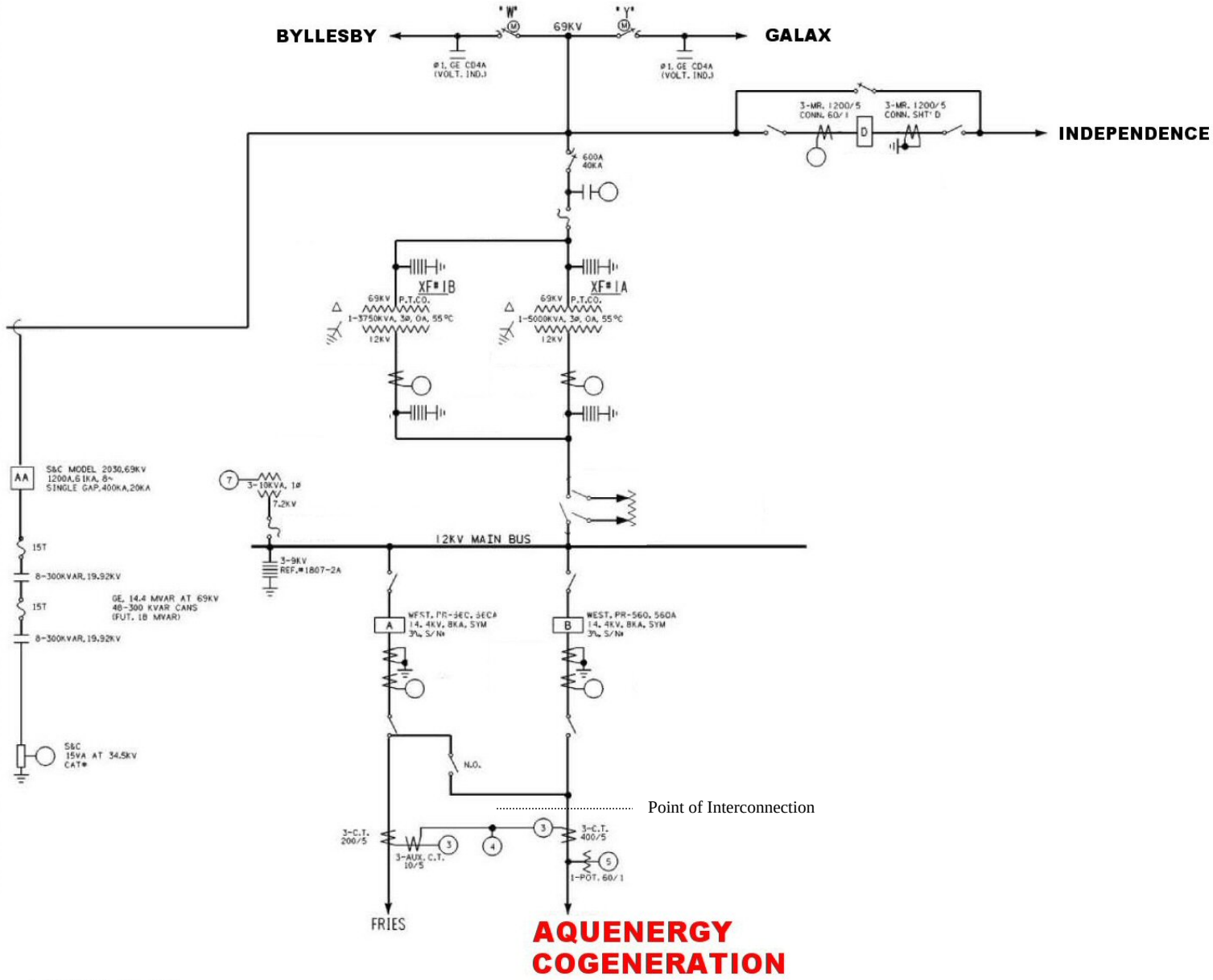

FIGURE 2

Fries Station - Simplified One-Line Diagram