



***Facility Study for Generation  
Interconnection Request  
GEN – 2006 – 008***

***SPP Coordinated Planning  
(#GEN-2006-008)***

**March 2007**

## **Summary**

American Electric Power Southwest Transmission Planning (AEP) performed the following study at the request of the Southwest Power Pool (SPP) for SPP Generation Interconnection request Gen-2006-008. The request for interconnection was placed with SPP in accordance SPP's Open Access Transmission Tariff Attachment V, which covers new generation interconnections on SPP's transmission system.

Pursuant to the tariff, AEP was asked to perform a detailed Facility Study of the generation interconnection request to satisfy the Facility Study Agreement executed by the requesting customer and SPP.

***Generation Interconnection  
Facilities Study***

***For***

***GEN-2006-008***

***American Electric Power  
Southwest Transmission Planning***

**March 2007**

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## **Introduction**

The Southwest Power Pool (SPP) has requested a Facility Study for interconnecting a 455 MW (summer rating) or 550 MW (winter rating) power plant in Caddo Parish, Louisiana. The plant consists of two combustion turbines and one steam unit. Each combustion turbine is rated 1/3 of the total capacity and the steam unit is rated 1/3 of the total capacity. The proposed in-service date is June 2010.

The purpose of this study is to identify the facilities and their costs that are needed to interconnect the new generators with AEP's 138 kV transmission system. This facilities study is done in conjunction with SPP Feasibility and Impact Studies for Generation Interconnection Request GEN-2006-008.

The interconnection point for the new generation will be AEP's Arsenal Hill 138 kV substation. AEP will add a breaker to the existing ring bus scheme to accommodate the new interconnection. The existing AEP station includes a Control House with available room for all metering, protection and SCADA systems needed for the interconnection.

A detailed description of all costs associated with the construction of this interconnection is shown in Table 1.

## **Interconnection Facilities (See Figures 1 and 2)**

### **Arsenal Hill 138 kV Substation**

A new 138 kV terminal will be added at Arsenal Hill substation for the generation interconnection. This terminal will consist of one 138 kV circuit breaker and associated equipment. The position where the new line to the generator connects to the 138 kV ring bus will require changing out one 138 kV breaker (breaker 4200) for thermal capacity. To accommodate the new 138 kV line to the generator, the Linwood 138 kV line will be reconnected to a new position on the ring bus. In addition, motor operators will be added to each 138 kV line switch. See Figure 1 for details.

The design and construction of the new terminal will meet all AEP specifications for stations. Bus work and disconnect switches will be designed to accommodate the loading requirements, and circuit breakers will be rated to ensure adequate load and fault interrupting capability. Metering equipment will be installed to monitor the plant output and will meet the required accuracy specifications. AEP will own, operate and maintain the station.

A short 138 kV line will be required to connect the new generation to the 138 kV ring bus. The cost for this new line is part of the generation costs and is not included in this Facility Study.

### **Short Circuit Fault Duty Evaluation**

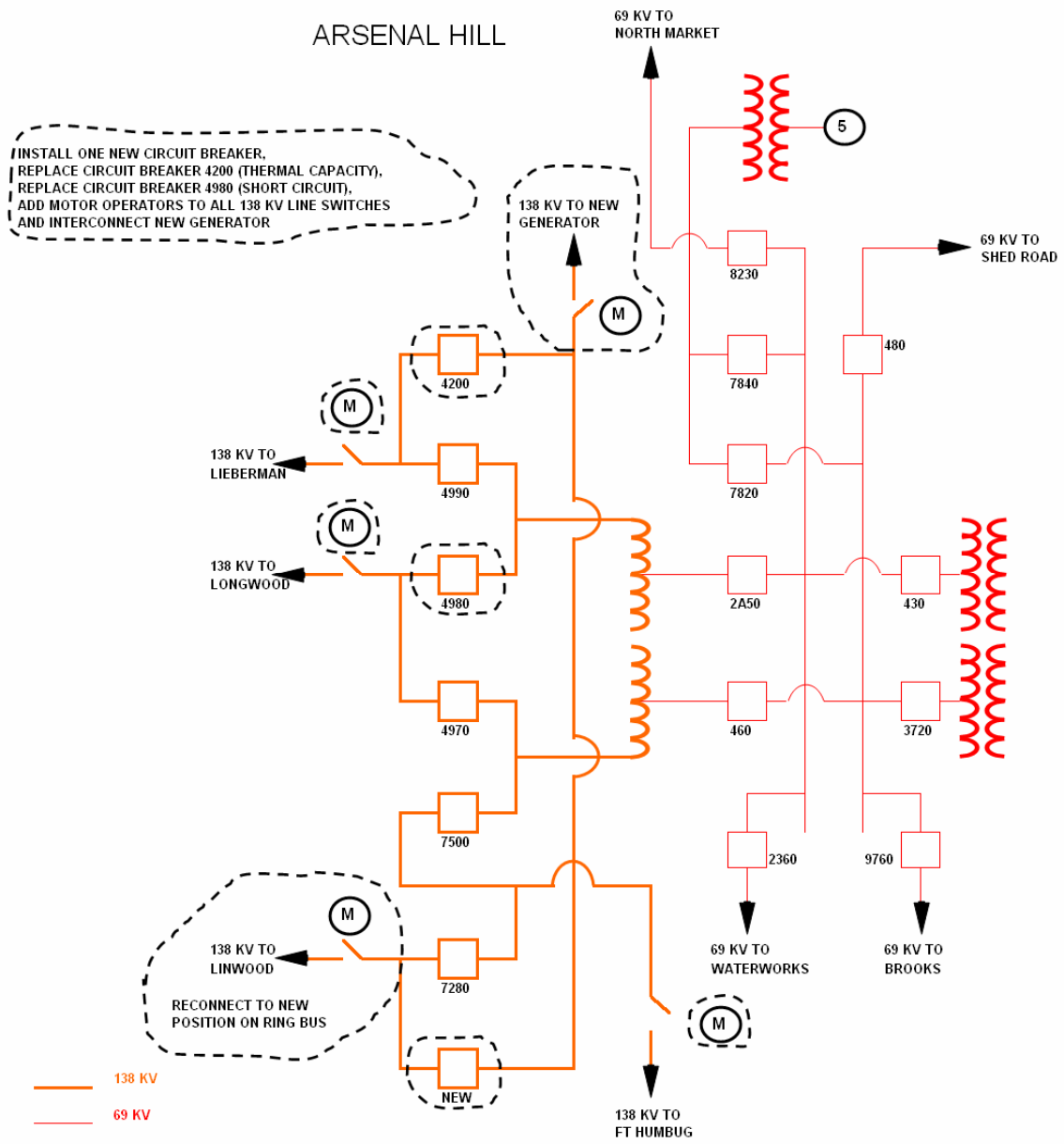
It is standard practice for AEP to recommend replacing a circuit breaker when the current through the breaker for a fault exceeds 100% of its interrupting rating with recloser de-rating applied, as determined by the ANSI/IEEE C37.5-1979, C37.010-1979 & C37.04-1979 breaker rating methods.

In the AEP system, two breakers (138 kV breaker 4980 at Arsenal Hill and 138 kV breaker 7260 at South Shreveport) were found to exceed their interrupting capability after the addition of the 550MW of generation and related facilities. The cost to replace these two breakers is included in the costs associated with the Gen-2006-0008 interconnection.

## **Interconnection Costs**

Listed below are the costs associated with interconnecting the 550 MW generation facility to the AEP transmission system.

SYSTEM IMPROVEMENT	COST (2007 DOLLARS)
New terminal at AEP's Arsenal Hill substation including one new breaker, all metering, protection, and SCADA. Replace Arsenal Hill breaker 4200 (Thermal Capacity). Replace Arsenal Hill breaker 4980 (Short Circuit). Add motor operator to all 138 kV line switches. All new 138 kV breakers will be rated 3000 A, 63 KA.	\$2,424,000
Reconnect Arsenal Hill to Linwood 138 kV line at Arsenal Hill.	\$340,000
Replace South Shreveport breaker 7260 (Short Circuit). The new 138 kV breaker will be rated 3000 A, 63 KA.	\$184,000
<b>TRANSMISSION INTERCONNECTION FACILITY TOTAL COSTS</b>	<b>\$2,948,000</b>



**FIGURE 1**  
**ARSENAL HILL 138 KV GENERATION INTERCONNECTION**



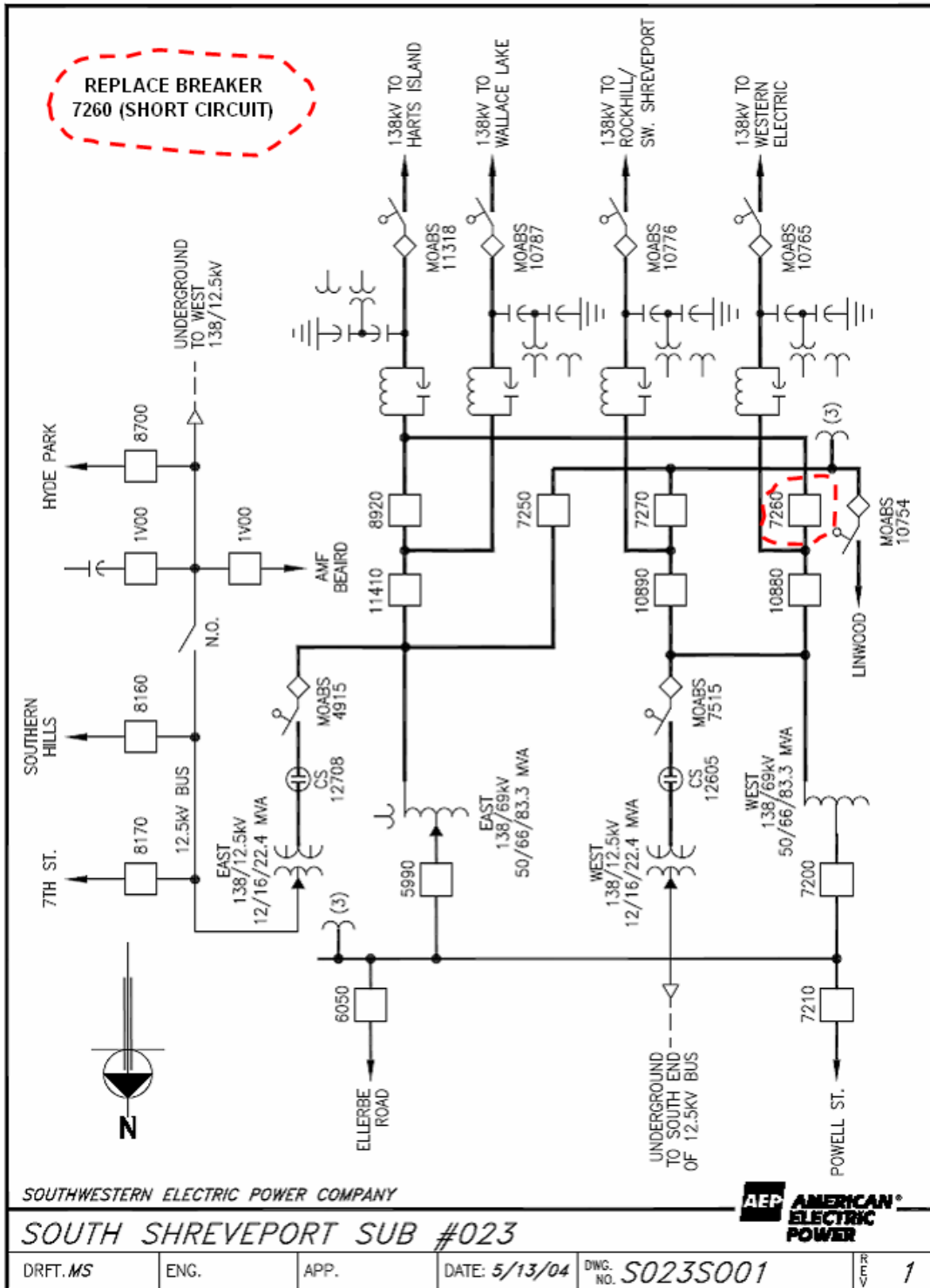


FIGURE 2  
SOUTH SHREVEPORT 138 KV STATION FACILITIES

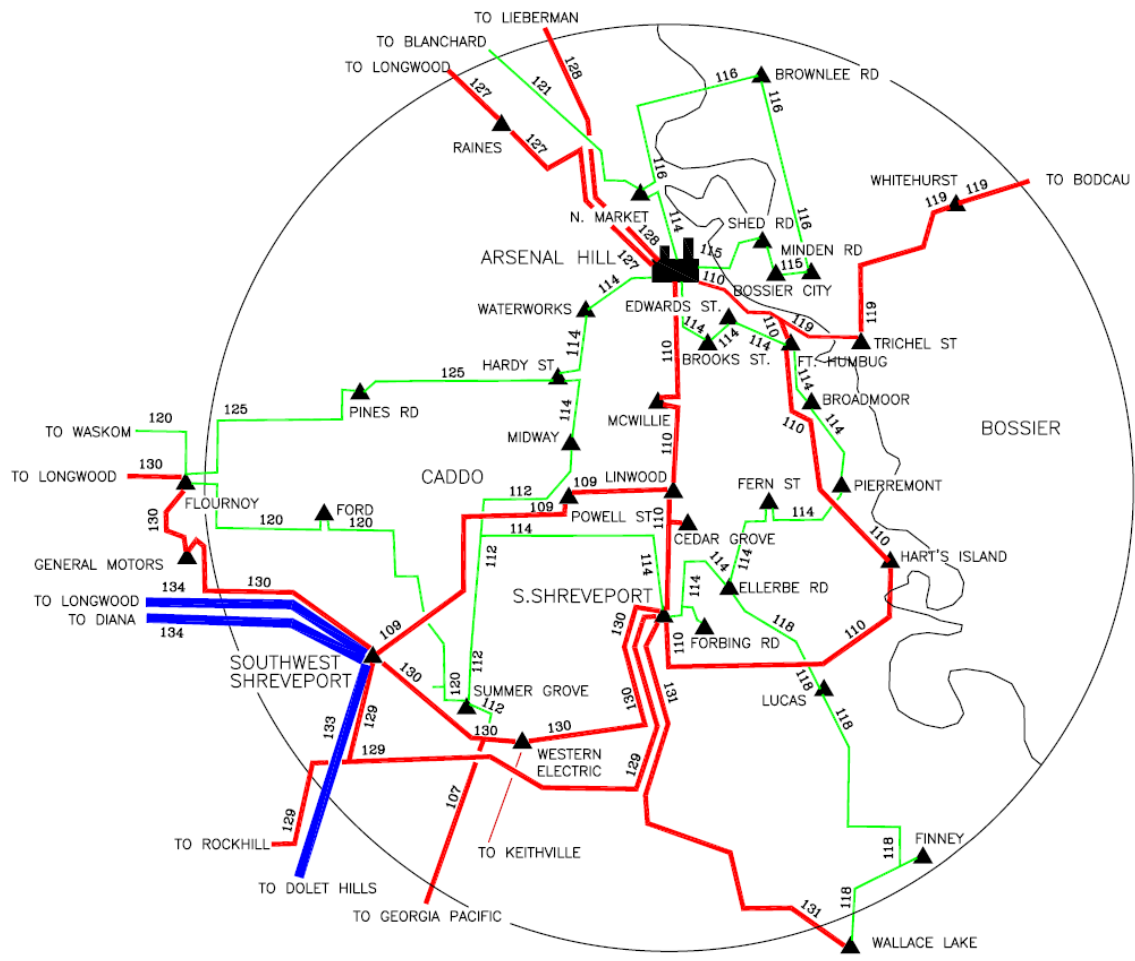


FIGURE 3 SHREVEPORT AREA TRANSMISSION SYSTEM