Merchant Generation Site Selection
On the AEP Transmission System

Pursuant to the Federal Energy Regulatory Commission's Order of November 20, 2001, in AEP Power Marketing, Inc., et al, 97 FERC 61,219, American Electric Power Service Corporation, on behalf of the utility operating companies of the American Electric Power System ("AEP"), provides the following information concerning optimum areas on the AEP transmission system for locating prospective generating facilities. The information is provided separately for the systems in "AEP East" (generally consisting of the facilities of Appalachian Power Company, Columbus Southern Power Company, Indiana Michigan Power Company, Kentucky Power Company, and Ohio Power Company); "AEP West/SPP" (generally consisting of the facilities of Public Service Company of Oklahoma and Southwestern Electric Power Company); and "AEP West/ERCOT" (generally consisting of the facilities of AEP Texas Central Company and AEP Texas North Company).

As a result of AEP's geographical location and expanse, relative location of generation and load centers, and its numerous transmission interconnections, the AEP transmission system has unique characteristics that must be considered when locating generation on the AEP transmission system. The considerations listed below for each of the three AEP areas address only the electrical characteristics of locating generation on the AEP transmission system, as potential environmental issues, water or fuel availability, or siting/zoning issues associated with a specific location are beyond the scope of this posting. Note that the need for system upgrades is highly dependant upon exact location and the magnitude of the generation.

A. The AEP East Transmission System

- Factors Affecting Connection of Generation to AEP East Transmission System

  Generally, generation facilities greater than approximately 300 MW should be connected to facilities that operate above 200 kV. The 230 kV, 345 kV, 500 kV and 765 kV network facilities have greater capacity than the 161 kV, 138 kV and sub-transmission networks. Therefore, generation facilities of 300 MW or greater will typically be more compatible with the capability of the higher voltage networks.

  New generation should be located remote from existing generating sites. Generally, transmission interconnections for existing generating facilities were designed and built to accommodate existing generation levels and may not have the additional capacity to facilitate additional generation without significant system additions or changes.

  New generation sites 'downstream' or remote from existing transmission constraints tend to be more favorable. The addition of generation that would relieve transmission facility loadings would tend to minimize the need for transmission modifications and would generally be expected to accommodate greater amounts of merchant generation.

  To minimize the need to construct additional transmission circuits, or increase the capacity of existing transmission circuits, locating generation at sites adjacent to stations that currently have three or more circuits, or at intersecting rights-of-way of existing circuits is encouraged. Generation sites in or near urban centers are generally favorable. Locating generation near load centers will typically tend to reduce transmission loadings, minimizing the need for significant transmission additions or modifications. At many locations on the AEP East transmission system, the addition of new generation resources will significantly increase the fault-duty on existing circuit breakers, which may require replacement.

  The AEP East transmission system in the Southern Indiana area, as well as neighboring systems, already has many generation facilities connected to the EHV transmission system. As a result, the transmission system in this area is typically heavily loaded much of the time. During transmission contingencies, the area transmission network may be subjected to significant thermal, voltage, and stability constraints. Any additional generation in the area will typically exacerbate these thermal, voltage, and stability conditions. All proposed generation facilities in this area would

require a detailed stability study to: assess the ability of the proposed generation facility to remain in synchronism following credible system events including faults; assess the adequacy of damping of generation/transmission oscillations; and evaluate the impact on stability performance of existing generators in the vicinity. This area will likely require major transmission facility additions to accommodate any significant generation additions in the area.

Based upon the above observations and previous system studies and analyses, the following general locations would appear likely to require minimal system upgrades to connect additional generation to the eastern AEP transmission system.

Fort Wayne Transmission Region

1. Elkhart/Fort Wayne, Indiana area
2. Marion/Muncie, Indiana area
3. Fostoria/Lima, Ohio area

Columbus Transmission Region

4. North Columbus, Ohio
5. Northern Canton, Ohio

Roanoke Transmission Region

6. Logan-Inez-Sprigg area
7. East of a North-South line approximately intersecting the Counties of Giles, Bland, and Smyth in Virginia.

B. The AEP West/SPP Transmission System

- Factors Affecting Connection of Generation to AEP West/SPP Transmission System

Generally, generation facilities greater than approximately 300 MW should be connected to facilities that operate at 345 kV. The 345 kV network facilities have greater capacity than the 230 kV, 161 kV, 138 kV and sub-transmission networks. Therefore, generation facilities of 300 MW or greater will typically be more compatible with the capability of the higher voltage networks. Generation switching stations should have three or more transmission outlets. This is determined by Loadflow and Stability studies and is dependent upon size and location.

New generation sites should be located remote from existing generating sites. Generally, transmission at existing generating sites does not have the capacity for additional generation. Generation sites in or near urban centers are generally favorable depending on size.

New generation sites 'downstream' from existing transmission constraints tend to be more favorable.

The addition of new generation resources will significantly increase the fault-duty on existing circuit breakers. Underrated circuit breakers would require replacement.

Based upon the above observations and previous related system studies and analyses, the following general locations would appear likely to require minimal system upgrades to connect additional generation to the portion of the AEP West/SPP transmission system.

Tulsa Transmission Region

PSO Northern Transmission Region (Tulsa Metropolitan area)
SWEPCO Northwest Arkansas Region
SWEPCO Southern Region (Shreveport Metropolitan area)
SPP 345 kV Network (depends upon size and location).

C. The AEP West/ ERCOT Transmission System

- Factors Affecting Connection of Generation to AEP West/ERCOT Transmission System

  Generally, generation facilities greater than approximately 300 MW should be connected to facilities that operate at 345 kV, which have greater capacity than the 138 kV and sub-transmission networks. Therefore, generation facilities of 300 MW or greater will typically be more compatible with the capability of the higher voltage networks.

  To minimize the need to construct additional transmission circuits, or increase the capacity of existing transmission circuits, locating generation at sites adjacent to stations that currently have three or more circuits, or at intersecting rights-of-way of existing circuits is encouraged. The addition of new generation resources will significantly increase the fault-duty on existing circuit breakers, which may require replacement.

  New generation sites 'downstream' or remote from existing transmission constraints tend to be more favorable. However, the AEP West/ ERCOT transmission system is 'upstream' of all Commercially Significant Constraints (CSC) in ERCOT. These CSCs are the Graham-to-Parker 345 kV line, the Sandow-to-Temple 345 kV line, and the STP-to-WAP 345 kV line (see the ERCOT web site at http://mospublic.ercot.com/ercot/jsp/commercially_significant_constraints.jsp). The addition of generation on the AEP West/ERCOT transmission system would not relieve these transmission facility loadings, and would tend to increase the need for transmission modifications that would generally be expected to accommodate greater amounts of generation.

  Based upon the above observations and previous system studies and analyses, any additions of generation on the AEP West/ERCOT transmission system likely will be constrained. The completion of the ERCOT Constraint Relief projects (i.e., the Morgan Creek-to-Comanche Switch 345 kV line and the Coleto Creek-to-San Miguel 345 kV line) has enhanced transmission capacity to handle existing generation, but additional generation connected to the AEP West/ ERCOT transmission system would exacerbate existing transmission constraints.