Xcel Energy/SPS's Summary Comments on SPS EHV Study
The Quanta Technology Study

Southwestern Public Service Company, an Xcel Energy company, has completed a study of future transmission enhancements that may be necessary to move wind energy to marketplaces outside of our region. Particular focus is on what SPS system upgrades could be needed to integrate an SPP EHV overlay plan into the area system.

This summary will provide an overview of wind developments and associated transmission impacts in the region and the realities of moving wind energy to market. The recently conducted study is designed to show what transmission facilities may likely be needed, based on certain assumptions. It is not an announcement of firm construction plans by SPS or Xcel Energy. Many months of additional planning work must be done, and these plans are likely to change over time.

Overview: Power Grids

SPS is the primary owner and provider of electric transmission in the Panhandle-Plains region of northwest Texas, eastern and southeastern New Mexico, the Oklahoma Panhandle and a small portion of southwestern Kansas. The regional electrical grid is part of the Eastern Interconnection, and SPS is a member of the Southwest Power Pool (SPP). The SPP is a regional transmission organization charged with maintaining the reliability of the transmission system for a large portion of the south-central United States.

Rural electrical cooperatives and municipal-owned utilities lie within the SPS service area, and much of their power is produced by SPS generating plants and transported over SPS transmission lines. For this reason, SPS controls the flow of power in the area through a vehicle known as the SPS Balancing Authority.

The SPS region has some of the best wind resources in the nation, but is sparsely populated. Significant wind resources already have been developed in the region, and area customers are consuming most of the existing wind energy. Many more wind facilities are planned in the region, but developers will need to tap new markets in order to sell most of the wind energy they plan to produce. And in order to move that energy to new markets, additional transmission lines and new interconnections will be necessary.

Under federal law, the transmission system is open to all qualified generators of electricity, even though the lines are owned by SPS. Outside power generators pay for access to these lines under federally approved rates, and all requests to connect to the SPS transmission system are studied by and approved at the SPP.

Dozens of wind developers have submitted proposals to the SPP to connect to regional transmission lines, and their proposals have been placed in a queue. The new wind energy is approved to connect to the transmission system once

the SPP determines the system can absorb it without affecting reliability. The regional system is fast approaching the point to where it cannot take on additional wind energy without significant capacity expansion.

Some 16,000 megawatts of additional wind energy are currently in the SPP queue. For some perspective on that number, power demand within the SPS area has never risen above 5,500 megawatts.

The Electric Reliability Council of Texas (ERCOT) oversees a separate power grid to the south of the SPS region, and has laid plans to build a $5 billion transmission network from north and central Texas into wind-rich regions of West Texas and the Texas Panhandle. Wind energy gathered on these lines will be transported on the new lines into densely populated regions of Texas. The cost of these improvements will be borne by electricity customers in those areas.

ERCOT seeks to move about 18,000 megawatts of wind energy from West Texas to markets downstate – some 4,000 megawatts from the SPS region alone. This power is in addition to the 16,000 megawatts in the SPP queue.

SPP Plans

The SPP coordinates the transmission planning processes of its members, including SPS. This coordination is through the generation interconnection process and also through other study processes. Some of these processes address the transfer of power through the SPP system and what transmission upgrades may be necessary for a power generator to transfer power to a buyer either within or outside the SPP.

Other planning processes focus on ensuring that adequate transmission is in place to reliably serve all SPP customers. Additional SPP planning processes are designed to examine long-term transmission expansion, such as transmission plans for large-scale wind exports from the SPP regions to potential markets in the eastern United States. An example of this type of study was SPP's EHV (Extra High Voltage) Study that considered moving large amounts of wind energy into eastern markets and markets in the upper Midwest.

SPS Study

SPS has further fleshed out SPP plans to account for the significant amount of "underbuild" that will be necessary to connect far-flung wind facilities to new lines.

In late 2008, the company commissioned the services of Quanta Technologies to paint a more detailed picture of what this enhanced transmission system could look like, when it could be achieved, and at what cost. The study offered several

alternatives, and SPS has settled on one alternative as the most cost-effective blueprint.

The purpose of this study was to quantify the transmission infrastructure needed to realize significant wind energy potential in the SPS area and to better understand the impact of exporting wind energy on SPS customers and this region. To do this, potential wind energy facilities were modeled on a county-by-county basis to provide higher resolution in determining the necessary transmission facilities required to move the power outside the SPS region.

The findings are considered "scoping level," meaning they are a first look at a complex challenge. Additional work is needed to gain a better understanding, and further studies may provide guidance on how to better optimize the system and the costs required to build it.

The key findings of the study are:

- Southeastern New Mexico has significant resources that will require major transmission investment to move to eastern markets.
- At least $4 billion in new infrastructure will be needed in order to move most of the wind energy already in the queue to markets outside of the SPS area.
- Significant transmission will be needed in neighboring states, such as Oklahoma, Kansas, and Missouri, to allow wind energy to reach eastern markets.
- Speed of construction in neighboring states will affect how fast wind resources can be brought online in the SPS area and exported to eastern markets. This is more important than the rate of transmission construction in the SPS region.

SPS believes that while this study shows that 765 kilovolt transmission is required to move this large amount of wind energy out of the SPS area, similar emphasis should be placed on the lower voltage transmission network (the "underlay"). This would allow us to develop an infrastructure that provides load serving and reliability for customers before determining how best to use 765 kilovolt technology for energy export.

The set of results obtained in this study are applicable only to this study. Different assumptions as to generation locations, generation levels, and load forecasts will produce different study results and estimated transmission costs. This study should not be used to extrapolate far-reaching conclusions, but should be used as a tool to further the discussion of EHV and lower voltage transmission requirements in SPS and SPP.