Clean Power Plan, Part 2 — “The Bottom Line on Reliability”  
(Read Part 1 here)

The Environmental Protection Agency (EPA) proclaims its proposed Clean Power Plan (CPP) “would achieve meaningful [carbon dioxide] emission reduction while maintaining the reliability and affordability of electricity in the U.S.” Rather than simply take the EPA at its word, SPP, as the Regional Transmission Organization with the FERC-delegated responsibility to maintain reliability within its region, decided to perform its own assessment of the CPP’s impacts on reliability. Unlike the EPA models used in its assessments, we used a model that included a detailed representation of the transmission system.

Our assessment looked at the reliability impacts of fossil-fueled generator retirements in and around SPP that the EPA projects to be an early outcome of the CPP.

We have filed comments with the EPA so that the rule can be proactively shaped in a way that supports reliability.
Transmission Grid Impacts

Impacts to the SPP transmission system were evaluated under two scenarios. We assumed summer peak electricity demand conditions in both scenarios.

In the first scenario, we assumed unused capacity from existing and currently planned generation in SPP’s 10-year-out power-system models would be used to replace the retired generation. This scenario reflects what will happen if sufficient replacement generation and necessary transmission infrastructure is not in place by the time CPP compliance begins. In this scenario, the reliability implications are profound. Our analysis identified large reactive power deficiencies caused by shutting down approximately 35 percent of SPP’s coal fleet and other generators in surrounding areas. The conditions revealed in this scenario are indicative of system-wide voltage collapse that would result in uncontrolled, widespread loss of load – also known as a blackout!

In the second scenario, we assumed new gas-fired and wind generation capacity would be added to the system to replace the majority of the EPA’s projected retirements, but we did not add transmission infrastructure beyond current plans. Even with more generation added to the system, we observed numerous reliability issues in the form of transmission facility overloads. Some of these overloads were so severe that cascading outages could result.

The results of our transmission-grid impact analyses indicate significant reliability risks that would threaten many of our customers with possible loss of electric service.

Reserve Margin Impacts

SPP requires its members to plan excess generating capacity, known as reserve margin, in the amount of 13.6 percent above their load-serving obligations. With the EPA’s projected retirements, SPP’s reserve margin would fall to 4.7 percent by 2020 and -4.0 percent by 2024. This means that 4,600 megawatts (MW) and 10,100 MW of net generating capability beyond that which is currently planned would need to be constructed by 2020 and 2024, respectively, in order to meet SPP’s minimum reserve margin requirements.

What Does All of This Mean?

Our assessment shows that implementing the proposed CPP before requisite generation and transmission infrastructure is installed will negatively impact reliability and cause numerous violations of NERC Reliability Standards.
While generator retirements aren’t explicitly dictated, carbon-dioxide-emission reduction goals the EPA proposes to assign to each state will be impossible to meet without severely restricting output from high carbon-emitting generators. The EPA’s proposed interim goals will force restricted operations from those generators to begin by 2020. The CPP currently has no provisions that allow for the proposed interim or final goals to be relaxed if those generators are needed to resolve transmission facility overloads or provide voltage support.

Although our transmission impact assessment modeled summer-peak conditions, the results were so severe it is apparent many existing units will need to continue to generate at levels similar to today until new generation and transmission infrastructure can be added. The exact location and amount of the new infrastructure needed will not be fully known until the states develop their CPP compliance plans and SPP conducts the necessary generator interconnection, transmission service, and transmission expansion planning studies. As it currently takes up to 8 ½ years to plan, design, and construct transmission upgrades in SPP, and since states will have as late as 2018 to develop their plans, it is simply impossible to facilitate compliance with the CPP in a reliable fashion.

I believe instituting the CPP as proposed by the EPA will cause many of our member utilities to have to choose, on numerous occasions, between complying with reliability standards and complying with environmental regulations. SPP will do its best to plan for and direct reliable operations within its region. However, a member utility receiving a reliability directive from SPP that could cause it to violate environmental requirements will be forced to make a decision. The pressure of being at odds with SPP’s reliability instructions and the EPA’s environmental requirements will not only impose reliability risks, but also increase costs.

Excessive reliability risks and unnecessary costs can all be avoided with timely implementation of the CPP and establishment of goals that are actually achievable!

Read more from Lanny on our website. Questions and comments can be emailed to communication@spp.org.