backgrounder

Managing congestion on the BPA transmission grid

The Bonneville Power Administration has become increasingly concerned over congestion on its transmission grid. The issue came into urgent focus last summer when, during periods of high use, there was a sharp increase in instances when the grid was operating outside of industry standards for safety and reliability. While there were no major problems as a result of these instances, they clearly pose an increased level of risk for system outages.

Because of concerns over congestion, BPA has set a target to have a congestion management strategy developed by the end of fiscal year 2006.

The white paper

To provide the region with background on the growing problem of congestion, BPA has prepared and posted a white paper, "Challenge for the Northwest: Protecting and managing an increasingly congested transmission system." The paper describes how and why the Northwest grid has become increasingly stressed and identifies underlying causes of congestion. It also lays out very conceptually potential approaches to address congestion issues. Its goal is to engage the region in discussion and solicit input that will inform development of a congestion management strategy.

The white paper is available at *www.bpa.gov/corporate/pubs/Congestion_White_Paper_April06.pdf*.

Key findings

Highlights of the white paper include the following:

The number of times BPA's transmission system is operating outside of operating transfer capability (OTC), the industry threshold for safe reliable conditions, is increasing. For example, there were 174 occasions from June through August 2005 when flows exceeded flowgate OTC. On 20 of these occasions, dispatchers had to take actions to reduce powerflows, and for 16 of these occasions, dispatchers had to curtail schedules or redispatch federal generation.

The Northwest grid is being used in ways today that were not envisioned when the system was built. Some of the most basic developments are growing loads, changing composition of loads, new generation resources connecting to the system and decreased flexibility to dispatch federal generation because of hydro constraints. All of these developments, as well as other changes, contribute to congestion at times in certain parts of the network.

Currently, network congestion is not managed so it can be avoided; it is reacted to when it happens, often with blunt and disruptive tools. Because schedulers and dispatchers do not have tools and processes to predict congestion ahead of time, they are unaware of congestion until an alarm goes off indicating a transmission flowgate is overloaded. This forces them to address the problem in real time, which compromises their ability to

deal with any contingency that could occur. During such times, the system is vulnerable to one or possibly more unpredictable contingencies that could expose the system to a catastrophic cascading outage.

The primary underlying cause of most congestion on BPA's network is the unlimited dispatch of generation by the market using nonfirm transmission. BPA allows unlimited access to hourly firm and nonfirm transmission service within its network because it does not have the processes and tools in place to reasonably forecast use of the network and to limit use prior to real time. Historically, BPA could accept all transmission schedules because excess capacity was available, but today this practice puts the system at risk because there are times when excess capacity is not available.

The consequences of congestion include: 1) reliability put at risk, 2) non-compliance with tariffs and reliability standards, and 3) reduced economic efficiency.

Getting involved

The white paper lays out some conceptual approaches for addressing congestion. BPA seeks customer and other stakeholder input to flesh them out and/or expand the alternatives. BPA is interested in which approaches or which combination of approaches will be most effective? Are there other feasible approaches that have not been included? And are there other questions that have not been raised?

BPA wants to know what principles and criteria should be used in evaluating potential solutions? BPA also is specifically interested in views on the cost and impacts to BPA, customers and others of individual approaches and how such impacts might be mitigated.

Schedule

BPA will be taking comment through Friday, May 12, on the issues and proposed approaches to congestion outlined in the white paper. Comments may be submitted online at comments@bpa.gov or mailed to the Bonneville Power Administration, PO Box 14428, Portland, OR 97293-4428. You may also call 1-800-622-4519.

There also will be a congestion management workshop April 18 from 8:30 a.m. to 2:30 p.m. in the Rates Hearing Room at BPA headquarters in Portland to discuss issues raised in the white paper and to answer questions. The phone bridge is: (503) 230-5566, passcode 8633#.

Based on regional comment on issues and approaches raised in the white paper, BPA will work with the region to prepare a proposed strategy for dealing with congestion management. This strategy will go out as a draft for regional comment.