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Texas Public Utility Commission Opens Investigation into Transmission Upgrades and Grid Stability Related to Renewable Generation

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Building on ongoing efforts to strengthen Texas Panhandle transmission system stability and redesign ERCOT-area ancillary service markets, the Public Utility Commission of Texas (PUCT) on May 30, 2014, considered Chairman Donna Nelson's proposal to "open a project to look at ERCOT's prospective system upgrades, ancillary services, and the transmission planning process related to renewable resources, as well as problems that have arisen as part of the CREZ build-out." The PUCT decided to move forward with this project which, along with these ongoing initiatives, raises the prospect that cost responsibility and transmission planning processes for renewable resource-driven transmission upgrades could change significantly, thereby altering ERCOT-area wind generation and utility investment expectations.

Background

The PUCT's transmission service rules governing ERCOT-region transmission service require transmission utilities to interconnect all eligible generating sources, and where needed, install system upgrades to preserve reliability.[1] Since the inception of ERCOT-area open access transmission, utilities (and therefore loads) have borne all transmission-level interconnection and upgrade costs, not generators. Additionally, ancillary services required to maintain system stability are also allocated to loads.

The current ancillary services construct was "fork-lifted from the market design developed in the late 1990's and did not necessarily anticipate some of

the changes that have taken place and the changes likely to occur in the near future."[2] These changes include dramatic intermittent renewable resource growth. ERCOT's approximately 11,000 MW of installed wind generation exceeds that of any other state. In 2012, wind power accounted for 13% of ERCOT's generation capacity and 9.2% of its energy use.[3] Wind generation poses unique transmission system challenges, arising from a variety of sources such as wind facility ramping rates, wind resource unpredictability (with changing wind patterns), reactive power characteristics, and relatively lower price offers made possible by the Production Tax Credit afforded to wind generation, thereby reducing long-term incentives to invest in dispatchable thermal generation.[4]

These challenges are becoming particularly acute in the Panhandle region. ERCOT's Competitive Renewable Energy Zone (CREZ) transmission lines that interconnect much of this wind generation have begun to experience particular voltage stability and grid strength challenges. Increasing wind capacity on the CREZ lines have led ERCOT to declare in a recent study report that "[s]tability challenges and weak system strength are expected to be significant constraints for Panhandle export."

In response, ERCOT has issued its Panhandle Renewable Energy Zone (PREZ) study identifying a number of grid upgrade projects to address the wind buildout and stresses caused by increasing West Texas loads. The PUCT has not approved any of these projects, however. ERCOT has also launched an initiative to redesign its ancillary services markets to support the additional transmission system needs.

Discussion

Chairman Nelson raises the question whether ERCOT should allocate any portion of wind generation-related upgrade and ancillary service costs to wind generators. Nelson also proposes to study other related concepts, including the production cost test by which ERCOT evaluates proposed transmission projects.

Chairman Nelson's proposal observes that wind generation represents a "mature industry," but continues to receive federal tax support that distorts the competitive wholesale market. This expansion and subsidization also threatens the viability of existing baseload generation. Continued wind generation expansion has stressed the new CREZ transmission system, particularly in respect of sub-synchronous oscillation on the lengthy series compensated transmission lines that bring West Texas wind power to load centers further east. These difficulties contribute to voltage deviations and cause voltage stability issues, ultimately threatening overall system strength which ERCOT must address through additional infrastructure and expense.

Writing that the CREZ legislative history demonstrates that wind generators should "have skin in the game," Nelson proposed that the PUCT "explore the costs of system upgrades, the costs to maintain and operate the current system, and the allocation of those costs specifically related to renewable

resources." She states that "[g]iven ERCOT's changing resource mix, I would like to look at whether there are ancillary services costs that are incurred specifically because of the unique nature of renewable resources." The Chairman also proposed to examine ERCOT's production cost savings test, the methodology ERCOT utilizes to evaluate whether proposed transmission projects fulfill the Protocols' requirements to meet reliability criteria in a cost-efficient manner. She particularly identified the need to focus on projects that address transmission limitations and voltage stability mitigation in a system heavily weighted with wind.

The other commissioners agreed to open such a project and examine these issues. Commissioner Anderson suggested reviewing the scheduling of imports and exports over the three direct current (DC) ties connecting ERCOT to other interconnects, to which the others agreed. Commissioner Anderson also suggested considering how some "support technologies" are classified as "transmission," as opposed to "generation," with corresponding cost allocation and construction implications. The Chairman acknowledged the breadth of issues potentially considered in the review, but counseled that Texas should not add to the issue of "wind subsidization."

The Chairman advised that staff would issue notice of the project and present the commissioners with procedural and substantive proposals, and guidance on how to move forward in each area.

What This Means to You

Depending upon the PUCT's ultimate direction, this project could revise previously settled cost responsibility decisions concerning transmission facility upgrades. The PUCT could allocate some or all of these costs to wind generators. The project could also consider regulating siting decisions, and implementing interconnection process changes. These could impact renewable generation investment economics. For utilities, potential impacts may include transmission planning process and upgrade facility responsibility changes.

Opportunities to Participate

If you would like to participate in the PUCT project when the opportunity arises, or if you have additional questions, please contact Chris Reeder at 512.479.1154, Chris Hughes at 512.479.1173 or a member of the Husch Blackwell Energy & Natural Resources team for more information.