

Transmission Update

February 2010

Summary

- ✓ Welcome to the Twenty Sixth National Wind Coordinating Collaborative (NWCC) Transmission Update! Kevin Porter of Exeter Associates, Inc. led the February 16, 2010, Transmission Update conference call. As always, this written brief is being distributed after the call to conference call participants, other NWCC members and participants, and to interested NWCC observers.
- ✓ This update features an introduction to the proposed Tres Amigas superstation in New Mexico and an overview of the California ISO's Renewable Energy Transmission Planning Process.
- ✓ Frank Barbera, the Director for Reliability Assurance at Tres Amigas LLC, was on the call to discuss the proposed Tres Amigas superstation. Cynthia Hinman, a Senior Market Design and Policy Specialist from the California ISO, joined the call to explain the Renewable Energy Transmission Planning Process.

Tres Amigas

Background

Tres Amigas is a proposed multi-terminal AC/DC transmission superstation located in Clovis, New Mexico, that will interconnect to America's three main power grids – the Eastern, Western, and Texas Interconnections. Mr. Barbera stated that the station would cover 22.5 square miles of land near the border between Texas and New Mexico. The proposed station is comprised of three converter stations with two miles of buried superconductor lines between each station, for a total of six miles of superconductor lines. The site is located adjacent to areas rich in renewable energy resources: Eastern New Mexico and the panhandle of Texas.

Mr. Barbera explained that the Tres Amigas station is considered a superstation because it will be connecting three asynchronous grids through a DC hub that is able to regulate the magnitude and direction of power flows. As a result, Tres Amigas will increase overall transmission system efficiency and provide opportunities for transactions between market regions that are currently inaccessible. Tres Amigas also will help facilitate the buying, selling, and delivery of renewable energy generation between participants in three interconnections. Tres Amigas will also facilitate the integration of renewable energy resources by providing the capability to manage real-time power

fluctuations that could otherwise exceed the capability of many existing balancing authorities.

Technology

With its own DC grid containing six miles of superconductor lines, the expectation is that transmission from the three interconnections will be connected to Tres Amigas. The Voltage Source Converter (VSC) technology can control the direction, flow and magnitude of power flows in and out of each connection. Tres Amigas will have black start capability and can provide voltage support and reactive power. Mr. Barbera noted that Tres Amigas will also offer emergency exports and imports of energy between the three interconnections.

Tres Amigas is partnering with the American Superconductor Corporation (AMSC). AMSC's superconductor HVDC cable can handle multi-gigawatt power without sustaining electrical losses in the cable. It will be designed to carry five gigawatts of power per cable, with the potential for future expansion.

Tres Amigas will also use energy storage batteries, together with the VSCs, to potentially provide ancillary services to the control areas surrounding Tres Amigas. Mr. Barbera said that this will allow for a fast dynamic response to system changes. The battery technology also offers the ability to handle a large number of discharge cycles associated with variable energy sources. Tres Amigas will also have the capability to provide reactive support to each interconnection.

Benefits

Mr. Barbera stated that there were numerous potential transmission projects in the Western Electric Coordinating Council (WECC) that could benefit from Tres Amigas, including the proposed High Plains Express, New Mexico Wind Collector, and SunZia transmission projects. He also said that ERCOT stands to benefit from the Tres Amigas project, as there are CREZ transmission lines being planned that are very close to where Tres Amigas will be located. The Southwest Power Pool (SPP) is also considering transmission projects near Tres Amigas.

Mr. Barbera stated that the benefits of Tres Amigas are not limited to specific regions, saying that the project will increase overall grid reliability. By sourcing energy from three grids, Tres Amigas will also provide economic benefits to generators, customers, and load serving entities.

Discussion

A caller inquired about the Tres Amigas request to FERC asking that FERC disclaim jurisdiction over transmission lines that link ERCOT to the station. Mr. Barbera stated that there had been such a FERC filing but he could not discuss it on advice from his legal counsel. The caller posed a follow-up question, asking about a second FERC filing for market-based rates. Mr. Barbera answered that there are some issues subject to litigation that could not be discussed presently; however, he confirmed that a request had been made to FERC for approval to charge market-based rates.

A caller asked what the major obstacles were to the Tres Amigas project. Mr. Barbera replied that it is important that transmission be built to interconnect with Tres Amigas in order to import and export energy between the three interconnections. The caller posed a follow-up question, asking if there had been any opposition to the project. Mr. Barbera answered that there had been three letters of opposition in the filings at FERC, but there had also been fifty-three letters of support.

A caller inquired about the status of planned transmission projects that are located near Tres Amigas. Mr. Barbera stated that High Plains Express is currently under study and that the SPP is studying new transmission in eastern New Mexico. Mr. Barbera further said that the SunZia project is under discussion and there is no current status report.

A caller asked if construction of Tres Amigas was set for 2010. Mr. Barbera answered that it will break ground in late 2010, and is expected to be online in late 2013 or early 2014.

A caller asked if the Tres Amigas project would proceed if FERC does not disclaim jurisdiction over transmission lines that link ERCOT to Tres Amigas. Mr. Barbera replied that he believes if only two of the three grids remain interested, the project might continue pending the results of any studies and due diligence by Tres Amigas.

A caller inquired if there had been any feasibility studies for Tres Amigas. Mr. Barbera stated that Tres Amigas had done a preliminary in-house analysis, and the conclusions support the feasibility of the project.

A caller asked for further details regarding the battery technology Tres Amigas intends to use. Mr. Barbera explained that the battery technology is expensive, and Tres Amigas is looking into different battery sizes and technologies, and investigating what the market interest may be. An RFP is expected to be released in the near future, but at present, a particular battery technology has not been selected.

A caller asked what losses are expected in the converters. Mr. Barbera said that the losses are expected to be around three percent, but this will not be finalized until a vendor has been selected. Tres Amigas is currently preparing an RFP.

A caller wanted to know if any potential overlap with the CREZ lines in Texas raised concerns about redundancy. Mr. Barbera replied that CREZ can be built to Tres Amigas, which will provide more options to all of the interconnections, including ERCOT. He specified that Tres Amigas will be holding user meetings in the future, as the project progresses, in order to answer questions and obtain input from end-users.

California ISO's Renewable Energy Transmission Planning Process

Background The California ISO's Renewable Energy Transmission Planning Process (RETTP) is the result of a stakeholder process launched in September 2009 regarding the actions necessary to meet a 33% RPS requirement in California. Ms. Hinman stated that RETTP is in response to the need for a comprehensive transmission planning process to achieve this goal. The draft final proposal of the RETTP was released in January 2010, but will be updated in the near future. A revised draft proposal is expected to be presented to the California ISO's Board of Governors in May 2010, and then submitted to FERC.

Planning Process The goals of RETTP are as follows:

- (1) develop a statewide conceptual transmission plan through collaboration among all transmission providers and owners in California;
- (2) finalize the transmission plan for the California ISO balancing authority area with enough detail to establish needs and to elicit specific proposals to build the needed transmission;
- (3) establish, in the California ISO tariff, access to renewable supply resources as a formal criterion for assessing need for specific transmission upgrades and approving their cost recovery through regulated rates;
- (4) enable transmission infrastructure development to move forward and support the state's environmental goals;
- (5) coordinate RETTP activities and milestones with ongoing activities of the California ISO's existing Order 890 transmission planning process and the generation interconnection process; and
- (6) provide opportunities for stakeholder participation and input.

Ms. Hinman explained that RETTP consists of three phases. In Phase 1, the California ISO and the California Transmission Planning Group (CTPG) will, with the support of state agencies and stakeholders, build on the work of the Renewable Energy Transmission Initiative (RETI) to create a conceptual statewide transmission plan. In Phase 2, stakeholders will provide input and the California ISO will refine sections of the plan that relates to its balancing authority area (the California ISO serves 80% of the load in California). A final plan will be presented to the Board of Governors in December 2010. In Phase 3, the California ISO will receive proposals to build specific elements of the plan. These will be presented to the Board of Governors starting in March 2011. After that, the RETTP process starts over.

Ms. Hinman addressed three common questions concerning RETTP: its relation to RETI, the role of Location Constrained Resource Interconnection (LCRI), and the right of first refusal. First, Ms. Hinman clarified the relationship between the

RETTP and RETI, stating that RETTP is using information provided in RETI's September 2009 report. Second, Ms. Hinman said that LCRI would be included under Phase 2 of the RETTP. Finally, Ms. Hinman, in response to concerns regarding the right of first refusal, explained that the current California ISO transmission tariff provides Participating Transmission Owners (PTOs) the right of first refusal to build transmission projects that are needed to maintain reliability. The debate surrounds how right of first refusal fits into the RETTP. Various independent and merchant transmission providers have expressed concern that they would have fewer opportunities to build transmission under the RETTP if the PTOs have the right of first refusal. The California ISO has postponed consideration of the right of first refusal issue pending further consultation with stakeholders.

Ms. Hinman noted that there is a role for independent transmission projects in the RETTP as a merchant project or as an economic project in Phase 3. There are also roles for independent transmission developers in the event that PTOs do not exercise their right of first refusal, or in collaboration with the PTO.

Discussion

A caller asked where municipal utilities fit into RETTP. Ms. Hinman replied that municipal utilities are included in Phase 1. They are part of CTPG and can participate in the development of the statewide conceptual plan, and throughout the process as stakeholders. A caller posed a follow-up question, asking if municipal electric utilities have a right of first refusal. Ms. Hinman answered that if they are not PTOs, they do not have the right of first refusal.

A caller noted that Phase 3 of the process had been mentioned as, potentially, an annual process and asked more detail. Ms. Hinman explained that all three phases were intended to be iterative processes, and the RETTP may be an annual process similar to the transmission planning process.

A caller asked if there would potentially be a dollar cap under the transmission process similar to that of the LCRI. Ms. Hinman replied that it is undecided, as the RETTP criteria have not yet been defined.

A caller asked if the RETTP process was "splintered off" the CAISO's regular transmission planning process, and if the two processes would run parallel to each other. Ms. Hinman answered that the aim is to eventually bring the two processes together into a single planning process. The caller posed a follow-up question, asking for clarification of the general difference between the two. Ms. Hinman replied that the transmission planning process is more project-driven, while the RETTP is a more comprehensive plan with a holistic, statewide view. She explained that in order to reach a 33% RPS, a piecemeal solution would not suffice.

A caller wanted to know if RETTP extended beyond California borders. Ms. Hinman answered that there is an opportunity for inter-state projects to be

considered in the RETPP. She clarified that if the question referred to expanding the RETPP beyond California, that had not been considered.

A caller asked if there was any connection to the Western Renewable Energy Zone (WREZ) process. Ms. Hinman answered that there was no connection that she was aware of. Another caller agreed, but suggested a small connection, as WREZ is also using the RETI work.

A caller noted that the 33% renewable energy target is headed by Governor Schwarzenegger, and asked if the RETPP project would be dropped if a future governor were to remove it. Ms. Hinman replied that it was possible, but that it is still reasonable to work toward the 33% target with the expectation that it will remain in place.

Implications

Due to its potential for connecting three interconnections that are not synchronized, and located in or near some of the best wind resource areas in the United States, Tres Amigas could be a game changer. If permitted and developed, Tres Amigas could enable electricity to flow in all three interconnections, whenever transmission capacity was available, and allow market participants to take advantage of differing market prices. Tres Amigas could also provide an outlet for the high-quality wind resources in New Mexico and Texas to find markets in any of the three interconnections.

Difficult regulatory questions will need to be addressed and resolved first. The company has filed a petition to FERC requesting that the Commission disclaim jurisdiction over any transmission lines in Texas that interconnect with Tres Amigas, which has drawn skepticism in some parts of the electric power industry over whether FERC can do that. Tres Amigas also has asked FERC for permission to charge market-based rates, raising concerns that if granted, Tres Amigas may be able to exercise market power. Still, if regulatory approval is granted and Tres Amigas is successfully developed, the project could open up new market opportunities for wind power projects and make history by linking up the three interconnections.

With RETI completed, the California ISO is taking the step of beginning a comprehensive transmission planning process. Transmission is widely seen as a key limiting factor in California meeting its 20% RPS statutory requirement, much less the 33% RPS target announced by Governor Arnold Schwarzenegger. RETPP has been somewhat derailed over whether right of first refusal for PTOs should be part of RETPP or not. Assuming that is resolved, the key question on RETPP is the same with all transmission planning exercises—whether it results in new transmission being financed and built, or whether it is another good transmission plan with little or no real market impact.

**For more
Information**

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California ISO. *Renewable Energy Transmission Planning Process*, Draft Final Proposal, January 6, 2010. <http://www.caiso.com/2716/2716106fe55da0.pdf>.