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By Electronic Submission

Office of Electric Delivery and Energy Reliability (OE-20)
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, DC 20585
Congestionstudy2012@hq.doe.gov

Re: Plan for Conduct of 2012 Electric Transmission Congestion Study
Comments of San Diego Gas & Electric Company

San Diego Gas and Electric Company ("SDG&E") is submitting the following comments in response to questions posed in the Notice for Plan for Conduct of the 2012 National Electric Transmission Congestion Study ("2012 Congestion Study") issued by the United States Department of Energy ("Department" or "DOE") Office of Electricity Delivery and Energy Reliability. 76 Fed. Reg. 70122 (November 10, 2011) ("Notice"). SDG&E supports DOE in its efforts to conduct a study of electric transmission congestion and appreciates the opportunity to provide these comments to the Department as it prepares the 2012 Congestion Study.

Background

Pursuant to the Federal Power Act Section 216(a), as amended by the Energy Policy Act of 2005 (EPAct), DOE is required to conduct a study of electric transmission congestion every three years to identify congestion and constraints within the Eastern and Western interconnection that adversely affects consumers and designate National Interest Transmission Corridors (National Corridors), as needed that could utilize Federal backstop siting authority.

The 2012 Congestion Study will be the third congestion study to be conducted by the Department. The first congestion study, conducted in 2006, identified the Southern California region as one of two regions in the country that were critically congested. Findings in the 2006 Congestion Study were based on an examination of historical studies of transmission conditions, existing studies of transmission expansion needs, and unprecedented region-wide modeling of both the Eastern and Western Interconnections. Factors influencing the Department's identification of Southern California as a Critical Congestion Area included the area's growing electric demand, the region's persistent transmission congestion problems, the region's heavy dependence upon electricity imports, and difficulty in building new power plants and transmission lines and southern California's important economic role within the nation.

Like the 2006 Congestion Study, the Department reviewed historical congestion data, data obtained from existing studies prepared by regional reliability councils, regional transmission organizations and independent system operators and regional planning groups for the 2009 Congestion Study. Unlike 2006, DOE did not conduct or support studies of projected congestion. Based on its review of the data, the Department concluded that the Southern California region should retain its status as a Critical Congestion Area. The Department found that, despite California having shown national leadership in moderating electric load growth and increasing distributed

generation, the reality was that few of the generation and transmission projects in the planning or regulatory approval stages actually become operational on schedule. The Department found that this supported retention of the Critical Congestion Area designation.

Developments in the Southern California area since the issuance of the 2009 Congestion Study may no longer support a Critical Congestion area designation. Since 2009, two major new transmission lines, Tehachapi Transmission Project and the Sunrise Powerlink were approved and are currently under construction. Portions of the Tehachapi Transmission Project are already in service. The Sunrise Powerlink is scheduled to go in service in 2012. A third major new transmission line, the Colorado River-Devers-Valley #2 has been approved by the CAISO and CPUC. This line is under construction and expected to be in service in 2013. Moreover, recent CAISO studies indicate that with the addition of Balancing Authority (BA)-approved transmission, remaining congestion in southern California is not economic to mitigate. Finally, studies conducted by the California Transmission Planning Group (CTPG)¹, suggest existing West of River transfer capability is adequate to accommodate significant renewable resource injections in southern Nevada and central Arizona. With the addition of the new transmission lines and increased ability to accommodate the importation of renewable resources, congestion in the Southern California area has decreased. Given this, SDG&E believes it is appropriate to study the congestion in this region to determine if a designation of Critical Congestion is still appropriate.

With these developments in mind, SDG&E offers the following responses to the questions posed in the Notice.

Comments

Question:

- 1) In its 2009 Congestion Study, DOE found that Southern California constitutes a Critical Congestion Area, that the Portland-Seattle region and the San Francisco Bay Area were congestion areas of concern, and that the Phoenix-Tucson area was no longer a congestion area of concern. The study also identified parts of the West with rich renewable resource development potential as conditional congestion areas. Do you think that the 2009 study came to the appropriate conclusions regarding congestion in this region in 2009-10? Based on current conditions, analyses and recent developments in your region, do you think your area has become more or less congested, and why?

Response:

The 2009 study correctly identified that much of the western United States is a “conditional congestion” area given the vast amount of renewable resource development potential in this area. This designation, however, is not particularly useful because the renewable development potential far exceeds the amount of renewable energy that load serving entities in the west will need to meet their renewable resource requirements for the foreseeable future. The DOE needs to refine its conditional congestion analysis such that the quantities and general locations of likely-to-be-developed renewable resources are limited to the amount of renewable resources that load serving entities are required to procure over the next ten to fifteen years.

¹ Formed in 2009, CTPG is a coalition comprised of all the entities within California responsible for transmission planning for the intrastate and interstate grids. The coalition includes: Publicly Owned Utilities, the California ISO, Investor Owned Utilities and other planning organizations, e.g., WAPA, TANC, and SCPA. CTPG's role is to coordinate transmission planning studies and to develop a statewide conceptual transmission plan.

At a more discrete level—i.e., within California Balancing Authority (BA) areas—there is similar evidence of renewable generation potential that greatly exceeds the needs of California load serving entities. For example, the CAISO's current generator interconnection queue contains over 70,000 MW of proposed renewable generation. This generation is in addition to 13,000 MW of existing renewable resources in California and compares to peak load requirements in the CAISO BA of roughly 50,000 MW. On paper it would appear that California has a higher level of conditional congestion. But as noted for the western United States as a whole, the amount of generation in the CAISO generation interconnection queue needs to be scaled-down to an amount which approximates what California load serving entities are expected to require in order to satisfy their Renewable Portfolio Standard (RPS) requirements.

Question:

- 2) What factors should DOE look at when evaluating congestion and identifying congestion areas in this region? How might each factor affect future congestion in this region?

Response:

Some of the factors DOE needs to look at include:

- Renewable integration requirements. The CAISO has preliminarily estimated that if all of the existing coastal generators in California that use ocean or estuary water for cooling are shut-down in response to the California State Water Board's adopted policy on the use of such water for cooling, approximately 4600 MW of new dispatchable generating capacity will need to be built by year 2020 in order to accommodate the intermittent renewable resources expected to be added in order to meet California's 33% RPS requirement.
- Each state's renewable resource requirements or goals and the timing of those requirements and goals. These requirements and goals place an upper bound on the amount of renewable resources that are likely to be added over time.
- The cost competitiveness of renewable resources relative to fossil-fired generation options. There are indications that the life-cycle costs of some renewable resource technologies are approaching the life-cycle costs of combined cycle technology. If renewable resources become more cost competitive than fossil-fired generation, each state's renewable resource requirements or goals might no longer represent an upper bound on the amount of renewable resources likely to be added over time.
- The displacement of existing fossil-fired generation by renewable generation. Depending on where this displacement occurs, there may be significant departures from historical power flow patterns. Work by the California Transmission Planning Group, for example, suggests that on an economic merit-order basis, about 50% of the fossil-fired generation that will be displaced upon attainment of California's 33% RPS requirement in year 2020 will be located outside of California. The reduction in output from generators outside of California tends to unload interties into the state, allowing the existing interties to accommodate higher levels of out-of-state renewable resources.
- The impact of increasing levels of distribution-level renewable resources. Renewable resources that are located closer to load tend to alleviate the need to upgrade the bulk transmission system. (Depending on the amounts and

locations, increased distribution-level renewable generation can impose burdens on local transmission facilities.)

Question:

- 3) Is there current or conditional congestion in your area or region today? What evidence -- quantitative or qualitative -- supports your conclusions regarding current or conditional congestion in your area or region today? (Please provide such evidence, or direct us to appropriate source materials.) To the extent that you believe your region has conditional congestion of national significance, what are the factors or conditions upon which that conclusion rests and how likely are these conditions likely to materialize?

Response:

In its December, 2009 *"National Electric Transmission Congestion Study,"* DOE concluded that "Southern California remains congested, and that it should retain its status as a Critical Congestion Area." (page xii) While SDG&E believes this determination was appropriate at the time, progress in adding major new transmission facilities in southern California, in addition to study work conducted by the CAISO and other planning entities, may make it appropriate for the Department to review its earlier determination.

As indicated by the CAISO's recent annual reports, current congestion on CAISO-controlled transmission facilities is quite modest. Significant renewable resource additions within California have been expected for several years now, so conditional congestion within the CAISO Balancing Authority has been anticipated. Modeling indicates that major transmission projects already approved by the CAISO will support attainment of California's 33% RPS requirement and result in conditional congestion that, with a few possible exceptions, appears uneconomic to eliminate. These major transmission projects include segments 1 through 11 of the Tehachapi Transmission Project (now under construction), the Sunrise Powerlink project (now under construction), and the Colorado River-Devers-Valley #2 project (which has been approved by both the CAISO and the California Public Utilities Commission).

The CAISO's December 8, 2011 presentations (referenced below in response to Question 6) point to several locations on the grid where it may be economical to pursue new transmission that would reduce or eliminate conditional congestion under the CAISO's "Base" renewable resource development portfolio. However, these locations are outside of Southern California which supports SDG&E's view that it may be time for DOE to re-evaluate Southern California's designation as a Critical Congestion Area.

A location outside of Southern California where it may make sense to pursue transmission to reduce or eliminate conditional congestion is the existing transmission system between the Phoenix area and the Colorado River substation. (See the presentation slides at pages 11, 12 and 13 of the CAISO's December 8, 2011 *"Economic Planning Study (Part 4 of 4), Evaluation of Study Requests from the Request Window"*.) These slides indicate that the proposed 500 kV Delany-Colorado River project (which would add a second 500 kV line between the Phoenix area and the Colorado River substation) "has a potential to deliver a net benefit."

Another location is the local transmission system within New Mexico. (See the presentation slides at pages 7, 8, 9, 10 and 11 of the CAISO's December 8, 2011 *"Economic Planning Study (Part 2 of 4), Analysis of Policy-Driven Renewable Transmission"*.) According to the presentation slides, the "transmission system cannot [] take" 947 MW of installed solar capacity in New Mexico; however, if this solar capacity is "modeled...in a distributed manner" impacts to transmission are "minimize[d]."

Given (i) the CAISO's economic assessment of the proposed 500 kV Delany-Colorado River project indicates the project could have net savings of between -\$119 and \$81 per year, and (ii) the CAISO's analysis of 947 MW of installed solar capacity in New Mexico estimates solar curtailments in year 2021 (102,938 MWh) would result in an annual capacity factor of 27.8% versus 29.0% if there were no curtailments, SDG&E concludes that the available evidence may not yet support designating the New Mexico/Phoenix/Colorado River area as a Critical Congestion Area.

Question:

- 4) If current or conditional congestion exists in your area, what are its consequences in terms of reliability, resource options, wholesale competition and market power, cost of electricity to consumers, environmental quality, or other? Are these consequences so significant that this congestion should be mitigated?

Response:

See response to question 1. It does not make sense to develop transmission plans to accommodate more renewable generation than is unlikely to get built or needed. The challenge is to identify the amount, locations and renewable resource technologies that are most likely to get built given the states' renewable resource requirements and goals and the timing of those requirements and goals.

While there is uncertainty in this renewable resource portfolio, SDG&E does not believe the creation of multiple renewable resource portfolios and multiple transmission study scenarios (what DOE's 2009 congestion study called "a broad portfolio of possible electricity supply futures" (page xiv)) is especially helpful. The creation of different renewable resource portfolios and different study scenarios may appease competing interests to build renewable resources and transmission facilities in different locations, but it does not lead to timely and efficient decision-making.

Question:

- 5) Assuming that it would not be economic or practical to mitigate all congestion, what is the range of options for mitigating severe congestion?

Response:

SDG&E believes the concept of "severe congestion" is ambiguous and needs further clarification or definition. The decision to add new transmission may be based on an economic or reliability need. Such a determination needs to be made on a life-cycle basis and needs to account for all of the benefits that new transmission provides relative to a reasonable range of feasible alternatives for meeting public policy requirements and goals.

For example, California has a 33% RPS requirement as well as Local Capacity Requirements (LCR) within certain transmission-constrained load pockets. These requirements could be met with local renewables and local gas turbine additions, or they could be met with lower cost central-station renewables outside the load pocket and new transmission that allows the LCR to be met with cheaper sources of capacity from outside the load pocket. The new transmission might also reduce congestion costs and losses that would otherwise exist if the requirements were met with local renewables and local gas turbine additions. A life-cycle economic analysis is required to determine which of the two alternatives is most likely to meet the public policy requirements at the lowest cost to the ratepayers who will pay for the cost of the transmission.

The alternative with the greatest economic benefit for consumers determines whether it is economic to mitigate all congestion. In establishing the alternative that has the greatest economic benefit, a range of feasible wires and non-wires alternatives should be considered.

Question:

- 6) Are there particular data sources, analyses and organizations that DOE should look at for expertise and source material in preparing the 2012 congestion study? In particular, how should DOE best use the expertise and insight offered by the Western Governors Association (WGA) and the Western Electric Coordinating Council (WECC)? What are the most relevant results from recent work, such as that done for the Western Renewable Energy Zones project, the designation of energy corridors on federal lands under section 368 of the Energy Policy Act (2005), the programmatic environmental impact statement for solar development on federal lands, and WECC's recent 2011 10-Year Regional Transmission Plan?

Response:

The DOE should look at the following sources of information in preparing its 2012 congestion study:

- Column ten on Table 71 of the WECC Board-approved September, 2011 "*Ten Year Regional Transmission Plan, 2019 Study Report, TEPPC 2010 Study Program.*" Table 71 provides a range of cost savings for a number of proposed interstate transmission lines assuming 12,000 gWh of renewable generating potential is developed outside of California rather than inside California. The results in column ten are relevant to DOE's 2012 congestion study because they provide an economic assessment of whether the economic benefits of reducing congestion exceed the costs incurred to achieve such a reduction—i.e., the cost of building new interstate transmission.²
- The CAISO's annual reports for the last several years. The CAISO's annual reports describe where, and how often, congestion occurred on the CAISO-controlled transmission system. It also provides an assessment of the economic consequences of this congestion.
- The results of the CAISO's 2010/2011 Transmission Planning Process (TPP) as documented in the CAISO Board-approved "*2010-2011 Transmission Plan*" dated May 18, 2011. Specifically, see Chapter 7 which provides "Evaluations of the 2008/09 Request Window Project Submittals." These evaluations provide energy cost savings which reflect each studied project's effectiveness in reducing congestion costs that would otherwise be present.
- The CAISO's December 8, 2011 presentations entitled (i) "*Economic Planning Study (Part 1 of 4)*;" (ii) "*Economic Planning Study (Part 2 of 4), Analysis of Policy-Driven Renewable Transmission*;" (iii) "*Economic Planning Study (Part 3 of 4), Analysis of Economically-Driven Congestion Mitigation Measures*;" and (iv) "*Economic Planning Study (Part 4 of 4), Evaluation of Study Requests from the*

² The savings shown in column nine are less instructive because they co-mingle savings in renewable resource capital costs with the savings associated with reduced congestion. In fact the savings in column nine are overwhelmingly the result of assuming that the 12,000 gWh of renewable resource development potential would be relocated from California to other states only if the proposed interstate transmission were built; savings from reduced congestion are minor.

Request Window." These studies were conducted in connection with the CAISO's 2011/2012 TPP and provide assessments of congestion-related impacts on the CAISO system.

- Study reports prepared by the California Transmission Planning Group (CTPG). These study reports include (i) the October 26, 2011 "*CTPG 2011 Phase 2 Study Report, Draft*;" (ii) the February 9, 2011 "*2010 California Transmission Planning Group Statewide Transmission Plan, Final*;" (iii) the September 10, 2010 "*2010 Final CTPG Study Report, Phase 3*;" (iv) the May 7, 2010 "*2010 CTPG Final Study Report: Phase 2*;" and (v) the February 17, 2010 "*2010 Phase 1 CTPG 2020 Study Report, Final*." These reports document—for transmission operated by California Balancing Authorities—locations on the California grid where congestion could occur given various renewable resource development portfolios and specific system conditions. These reports are based on snapshots of the system and do not provide any assessment of the frequency with which congestion may occur nor its economic consequences. DOE may also find CTPG's responses to stakeholder comments useful. The reports and responses are posted on the CTPG website at www.ctpg.us.

Conclusion

SDG&E appreciates the opportunity to comment. For the reasons described above, DOE should review its designation of Southern California as a critical congestion area. In addition, DOE should consider the following factors when evaluating congestion: renewable integration requirements, displacement of fossil-fired generation, the amount of distribution-level generation that is likely to be added and the cost-competitiveness of new renewables versus gas-fired generation. If there is anything SDG&E can do to support DOE in its efforts, feel free to contact us.

Sincerely,



Robert Lane
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San Diego Gas & Electric