February 23, 2016

To: Western Planning Regions

From: Fred Heutte, Senior Policy Associate, NW Energy Coalition
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Conceptual Solution for Consideration: Pacific DC Intertie Upgrade

I am writing to request a discussion of a concept to address potential interregional transmission needs and solutions during the annual Interregional Coordination meeting this week. I won't be able to attend in person but will participate via phone/webinar.

Our proposed conceptual solution is to study the potential upgrade of the Pacific DC Intertie from 3220 to 3820 MW. This concept has been assessed in previous years within the region, but has not yet been reviewed within the Order 1000 context.

In early February, along with Renewable Northwest and NRDC, we submitted the concept to ColumbiaGrid within their Order 1000 Potential Needs process. That proposal is attached and is now under consideration. We believe the 600 MW upgrade to the DC Intertie is feasible and would provide economic, reliability and public purpose requirements benefits. Please see our proposal for details.

The potential upgrade of the DC Intertie would be inherently an interregional transmission project under the Order 1000 interregional coordination procedures adopted by the four western planning regions and included in the compliance filings approved by FERC.

In this case, project ownership and physical interconnection involves three of the regions -- ColumbiaGrid, the California ISO and WestConnect. The Bonneville Power Administration is a member of ColumbiaGrid, Southern California Edison and Pasadena are Participating Transmission Owners in the CAISO, and the LA Department of Water & Power is becoming a full WestConnect member and also operates transmission for the other two owners, Burbank and Glendale.

We are in the process of contacting the existing DC Intertie owners and also conferring with CAISO and WestConnect about proposing concepts or study requests similar to our submission to ColumbiaGrid.

With respect to the interregional coordination process, our conceptual proposal for the potential DC Intertie upgrade could be considered alongside the "Suggested ‘Conceptual Solutions’ for Consideration by the Western Planning Regions" presented by San Diego Gas & Electric.

In summary, our hope at this point is to have a discussion of our concept during the annual Interregional Coordination meeting and receive guidance on next steps.

Thank you for considering this request, and please let me know if there are any questions.

February 4, 2016

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To: ColumbiaGrid

Public Policy Study Request to ColumbiaGrid: Upgrade of the Pacific DC Intertie to 3820 MW

Introduction

The Bonneville Power Administration, a member of ColumbiaGrid, is the owner of the Pacific DC Intertie (WECC Path 65) from Celilo to Nevada-Oregon Border (NOB). It is currently estimated to have a total capacity of 3220 MW at Celilo. Bonneville submitted a request for an uprate of the DC Intertie from 3100 MW to 3220 MW into the WECC path rating process in October 2014. The modernization project at Celilo allowing for the uprate to 3220 MW has been completed and the DC Intertie was re-energized in January 2016.

The progress made at Celilo now opens the way to the next upgrade phase to 3820 MW, which would be achieved by raising the voltage and current on the DC Intertie to their limits given the capability of the converter facilities at Celilo and Sylmar. This would also require facility and line upgrades, mostly in the California section of the DC Intertie south of NOB to Sylmar, including increasing some transmission tower heights to achieve required ground clearance of the line at the higher capacity, and other measures, as well as some potential enhancements to associated resources in the AC system near the southern terminal at Sylmar.

The potential DC Intertie upgrade to 3820 MW has been extensively studied in previous years. Project owners considered this in 2009-2011 and it was also included in an overall DC Intertie review by ColumbiaGrid in 2013.

Completion of the modernization project at Celilo, ongoing reliability concerns relating to the heavy loading of Path 65, and the potential for increased flows both North-South and South-North related to the new California 50% Renewable Portfolio Standard, along with the requirements of FERC Order 1000 and the planning processes adopted by the relevant planning regions, provide significant rationale for our study request.

Pacific DC Intertie Upgrade: a Conceptual Transmission Solution for Public Policy Requirement, Economic and Reliability Needs

The proposed study is intended to assess the contribution of this possible 600 MW DC Intertie upgrade to meet existing and new public policy requirements, as well as economic and reliability needs, and whether the upgrade would provide a more efficient or cost effective solution for those transmission needs in the relevant planning regions under the requirements and standards of Order 1000.

In particular, the relevant public policy requirements include the California 50% Renewable Portfolio Standard, and the potential of the DC Intertie upgrade to provide renewable energy to meet those requirements. In addition, the upgrade could provide additional access to renewable energy flows that

will help meet other Clean Air Act requirements by reducing the use of other generation facilities that have emissions regulated by the Clean Air Act generally, and specifically the Western Haze Rule and Clean Power Plan.

Concerning reliability, Path 65 is heavily loaded, and all the current capacity is contractually committed. The DC Intertie upgrade could provide additional capacity to reduce the occurrence of path saturation and enable more flexible operation of the bulk power system, providing reliability benefits in all relevant planning regions and, considering the pivotal role played by the DC Intertie, the Western Interconnection as a whole.

Discussion

As a result of previous review processes, the California owners of the DC Intertie, including Los Angeles Department of Water & Power (the operator of the California section and Sylmar terminal), Southern California Edison, and the municipal utilities of Burbank, Glendale and Pasadena, have until now indicated that the expected costs of the upgrade to 3820 MW were not justified by the potential benefits.

However, in the intervening time, the state of California has increased its renewable portfolio standard from 33% in 2020 to 50% in 2030, opening up new needs for renewable energy from adjacent regions as well as within California, which will require additional transmission capacity.

Furthermore, the falling cost of renewable resources, and in particular solar photovoltaic energy, has resulted in dramatic uptake of both utility-scale and local distributed ("rooftop") solar PV, and raised concerns about daily mid-day solar oversupply, an effect that is already being noted in southern California and will only grow in the coming years, an effect further driven by the 50% RPS.

Thus, under the 50% RPS mandate, the California owners of the DC Intertie now have new reasons to consider the DC Intertie upgrade from 3220 to 3820 MW, both to acquire additional high-value, low-cost renewable resources from the Northwest and to export their own solar oversupply to the Northwest as a sale or sale-for-return, effectively using access to Bonneville and other Northwest hydro resources that can provide value-added service as a "virtual battery" to the benefit of both areas.

From the perspective of the Bonneville Power Administration and ColumbiaGrid, the DC Intertie upgrade could help clear transmission request queues, provide operating flexibility and additional capacity for imports to meet peak system conditions.

Finally, all of the planning regions in the Western Interconnection are now operating fully under FERC Order No. 1000. The DC Intertie upgrade is inherently an interregional project because it has physical connections to three Order 1000 planning regions: ColumbiaGrid, the California Independent System Operator (by virtue of its scheduling and operating responsibilities for the DC Intertie on behalf of SCE and Pasadena), and WestConnect (whose members include LADWP which also serves as transmission operator for Burbank and Glendale).

To be considered for interregional coordination under Order 1000, an interregional project must first be considered and included in the regional transmission plans of each affected planning region.

For that reason, we intend to submit this study request to all three affected regions, ColumbiaGrid, CAISO and WestConnect; to identify and engage in preliminary discussion of this potential conceptual

interregional solution at the annual interregional coordination meeting on February 25, 2016; and if successfully included in regional plans, to have the DC Intertie upgrade considered in Order 1000 interregional coordination thereafter.

Otherwise, the opportunity to do an initial study of the potential value of the 600 MW DC Intertie upgrade to all affected regions could be delayed until at least the next two year planning cycle, that is, until 2018-19, or even beyond, significantly reducing the potential future benefits.

We look forward to further discussion with ColumbiaGrid concerning our proposed study request.