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## DISCUSSION PAPER: THE COLUMBIA RIVER TREATY

### ISSUE

Treaty terms requiring BPA to deliver electrical power to Canada have an impact on the function of the electrical transmission grid in the greater Puget Sound region.

### THE COLUMBIA RIVER TREATY

The “Treaty between Canada and the United States of America relating to Cooperative Development of the Water Resources of the Columbia River Basin” (“Columbia River Treaty” or “Treaty”) was signed by the parties in 1961 and ratified in 1964. The Treaty provided for the construction of three storage dams in Canada to provide increased reservoir capacity in the Canadian reaches of the Columbia River to enhance power generation and flood control in both countries.

The Bonneville Power Administration (“BPA”) is the entity designated to act for the United States for the purposes of the Treaty (the “U.S. Entity”), and the British Columbia Hydro and Power Authority (“BC Hydro”) is the designated “Canadian Entity.”

### THE CANADIAN ENTITLEMENT

Regulation of river flows by the Canadian dams enables six federal and five non-federal dams downstream in the United States to generate more usable energy than they would otherwise, creating significant downstream benefits. Under the Treaty, these downstream power benefits are shared equally between the two countries. Canada’s portion of the downstream power benefits is known as the “Canadian Entitlement,” and the United States is obligated to return this Canadian Entitlement to Canada.

Each year, the amount of the Canadian Entitlement is calculated in advance according to the provisions of Treaty Article VII and Treaty Annex B. At the present time the annual Canadian Entitlement is approximately 550 MW with a peak of 1440 MW.<sup>1</sup> The United States Entity must have available transmission capacity to make this delivery until at least September 15, 2024, the earliest date the Treaty can be terminated.<sup>2</sup>

Under the Treaty, Canada has the option to take delivery of the Canadian Entitlement either at the U.S.-Canada (British Columbia) border or at points within the United States. At this time, by mutual agreement BPA delivers 11/14 of the Canadian Entitlement to the 500 kV interconnection line between BPA’s Custer Substation and BC Hydro’s Ingledow Substation,

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<sup>1</sup> Testimony of Anthony G. White, *In re Application No. 99-1*, Washington Energy Facility and Site Evaluation Council, dated June 27, 2000 (“White Testimony”) at 4.

<sup>2</sup> *Id.*; see also Treaty.

both near Blaine, Washington. The remaining 3/14 is delivered near Nelway, in eastern British Columbia.<sup>3</sup>

## THE GRID IN THE GREATER PUGET SOUND REGION IS CONGESTED

Transmission paths in the greater Puget Sound region, including for the purposes of this memorandum the Blaine Intertie between Washington and British Columbia, are chronically congested.<sup>4</sup> This situation is expected to only get worse.<sup>5</sup> There are many reasons, but a short list includes: regional growth in population and economic activity, new generation sources coming on line and gaining access to the grid; tightened standards for system reliability; constraints on hydropower operations mandated by the need to protect species listed under the Endangered Species Act; growth in the market for energy, especially “green” energy; and the transmission of energy through this region to markets outside it.<sup>6</sup>

Congestion can lead to system instability, especially when transmission levels are relatively high, and it makes the system vulnerable to cascading catastrophic outages.<sup>7</sup> Measures to control excessive power flows include curtailing flows through redispatching generation or rescheduling transmissions.<sup>8</sup> However, there are limitations on the effectiveness of such tools, and they come at a price.<sup>9</sup> Adding or upgrading physical transmission infrastructure to increase capacity is another approach that BPA and others have adopted where appropriate,<sup>10</sup> but this is not regarded as a cost-effective remedy for occasional congestion.<sup>11</sup>

## THE CANADIAN ENTITLEMENT AND CONGESTION

BPA recognizes that deliveries of the Canadian Entitlement contribute to congestion in the greater Puget Sound region, along with other steady increases in transmission.<sup>12</sup> During the

<sup>3</sup> Columbia River Treaty Entity Agreement on Aspects of the Delivery of the Canadian Entitlement for April 1, 1998 Through September 15, 2024 (“1999 Entity Agreement”); Attachment A to 1999 Entity Agreement.

<sup>4</sup> Challenge for the Northwest: Protecting and managing an increasingly congested transmission system, BPA, April 2006 (“BPA Congestion White Paper”) at 1-2, accessed at

[http://www.bpa.gov/corporate/pubs/Congestion\\_White\\_Paper\\_April06.pdf](http://www.bpa.gov/corporate/pubs/Congestion_White_Paper_April06.pdf) on June 11, 2009; National Electric Transmission Congestion Study, U.S. Dept. of Energy, August 2006 (“DOE Congestion Study”) at 31-35; White Testimony at 4; 2006 Annual Report at 13, 15-16, BPA, accessed at

[http://www.bpa.gov/corporate/Finance/a\\_report/06/AR2006.pdf](http://www.bpa.gov/corporate/Finance/a_report/06/AR2006.pdf) on June 11, 2009.

<sup>5</sup> BPA Congestion White Paper at 7-10; 2006 Annual Report at 13, 15-16.

<sup>6</sup> BPA Congestion White Paper at 7-10.

<sup>7</sup> BPA Congestion White Paper at 4-5.

<sup>8</sup> BPA Congestion White Paper at 11-15.

<sup>9</sup> BPA Congestion White Paper at 13-17.

<sup>10</sup> See Final Draft - 2009 Biennial Transmission Expansion Plan, Rev. 2, ColumbiaGrid, February 2009 (“ColumbiaGrid Biennial Plan”); 2008 BPA Plan - Draft - Transmission Services, BPA, July 2008 (“2008 BPA Transmission Plan”) at 5-6.

<sup>11</sup> BPA Congestion White Paper at 21-22.

<sup>12</sup> BPA Congestion White Paper at 7-10; BPA Fact Sheet - BPA to automate transmission curtailment procedure for the Puget Sound Area, September 2007 (“BPA Fact Sheet”) accessed on June 23, 2009 at

[http://www.bpa.gov/corporate/pubs/fact\\_sheets/07fs/fs092607.pdf](http://www.bpa.gov/corporate/pubs/fact_sheets/07fs/fs092607.pdf); letter dated September 15, 2004 from Puget Sound Energy, Seattle City Light, and Snohomish County PUD No. 1 submitting comments to BPA re potential solutions to obviate BPA Northern Intertie transmission reliability curtailments and disputes (“Utilities’ Comments”), accessed on June 23, 2009 at

[http://www.transmission.bpa.gov/Business/Customer\\_Forums\\_and\\_Feedback/Programs\\_in\\_Review/documents/PS](http://www.transmission.bpa.gov/Business/Customer_Forums_and_Feedback/Programs_in_Review/documents/PS)

winter, returning the Canadian Entitlement to British Columbia is the predominant stress on the grid in the Puget Sound region.<sup>13</sup> The need to remedy congestion due, in part, to Canadian Entitlement deliveries has led to curtailments of service to area utilities.<sup>14</sup> At times, Canadian Entitlement deliveries must be curtailed due to inadequate transmission capacity on the U.S. side of the border.<sup>15</sup> BPA knows about these problems, and so do the major utilities serving the region, who have called on BPA to augment its transmission infrastructure in order to relieve this congestion and reduce their exposure to curtailments.<sup>16</sup>

## CONCLUSION

Any increase in south-north transmission capacity in the greater Puget Sound region can only help relieve congestion due in part to Canadian Entitlement deliveries. The terms of the 1999 Entity Agreement and its Attachment A, which are products of extensive negotiation, define the Ingledow Substation as the west-side point of delivery of the Canadian Entitlement. While Attachment A specifies a particular pathway into Ingledow Substation, that was in fact the only such pathway available at the time. If the Canadian Entity's primary goal is to receive the Canadian Entitlement at Ingledow, and an alternative solution is offered that satisfies that goal while reducing system congestion and simultaneously meeting other needs recognized by both Entities, it should be possible for the Entities to agree on an alternative pathway into that same receiving substation. Even if such agreement cannot be reached, routing other transmission schedules via an alternative link should help relieve congestion in this corridor.

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[ANI091504 TBL PIR Comments.pdf](#).

<sup>13</sup> ColumbiaGrid Biennial Plan at 57.

<sup>14</sup> BPA Fact Sheet; Utilities' Comments.

<sup>15</sup> White Testimony at 4; BPA Fact Sheet.

<sup>16</sup> Utilities' Comments.