

# THE COLUMBIA RIVER TREATY'S CANADIAN ENTITLEMENT: THE ROLE OF LIBERALIZED AND INTEGRATED NORTH AMERICAN ELECTRICITY MARKETS IN A NEW CALCULATION

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ABSTRACT: The Columbia River Treaty between the United States and Canada may be terminated unilaterally by either nation beginning next year; this has brought attention within the Pacific Northwest and beyond to the 1964 agreement on river flows. Much of the discussion about updating the accord highlights important goals such as bettering the protection of fish and increasing public participation in ecosystem governance, but often neglects analysis of how electricity markets have changed over the past fifty years. This Comment, through an examination of key developments in utilities law and application of economic theory, attempts to parse principles that may prove helpful in finding a solution to the agreement's most contentious element—the “Canadian Entitlement” payments from the U.S. to British Columbia—from the puzzle of the Columbia River Treaty's electricity piece.

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## I. INTRODUCTION

In 1964, the U.S. and Canada put into force the Columbia River Treaty (Treaty) to coordinate hydroelectric power

generation and flood control on the largest river flowing through the Pacific Northwest.<sup>1</sup> The Treaty increasingly draws the attention of legal scholars both because it can be unilaterally terminated by either nation as soon as 2014 and because many regard its focus as too narrow to accurately reflect how North American rivers are now managed.<sup>2</sup> Commentators in the fields of law and policy have pointed out that the regulatory regime governing the Columbia has changed greatly since the TREATY took effect and have argued that any new agreement needs to consider environmental goals as well as governance arrangements that were not in place in the 1960s.<sup>3</sup> On the American side of the 49th Parallel, for instance, transformative federal laws like the Endangered Species Act and Northwest Power Act did not even come into existence until years after Treaty ratification.<sup>4</sup>

Much less scholarship is available, however, about another important regulatory trend that during the past half-century reshaped the North American utilities industry: the integration and liberalization<sup>5</sup> of American and Canadian wholesale electricity markets. This Comment begins to fill that gap, arguing that keeping in mind changes to both the physical and legal infrastructure of power supply in the U.S. and Canada in the past half-century is important to addressing one

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1. Treaty Between the United States of America and Canada Relating to Cooperative Development of the Water Resources of the Columbia River Basin, U.S.-Can., Sept. 16, 1964, 15 U.S.T. 1555 [hereinafter Treaty]; *FEDERAL COLUMBIA RIVER POWER SYSTEM* (BONNEVILLE POWER ADMINISTRATION, U.S. BUREAU OF RECLAMATION, AND U.S. ARMY CORPS OF ENGINEERS), THE COLUMBIA RIVER SYSTEM INSIDE STORY 4 (2001) [hereinafter *FEDERAL COLUMBIA RIVER POWER SYSTEM*].

2. See, e.g., Nigel Bankes, *The Flood Control Regime of the Columbia River Treaty: Before and After 2024*, 2 WASH. J. ENVTL. L. & POL'Y 1, 7 (2012).

3. See, e.g., Rachael Paschal Osborn, *Climate Change and the Columbia River Treaty*, 2 WASH. J. ENVTL. L. & POL'Y 75, 78-79 (2012).

4. A. Paul Firuz, *Looking Forward: The Columbia River Treaty*, 2 WASH. J. ENVTL. L. & POL'Y 170 (2012).

5. The term "liberalization" is used here, though "restructuring" is another word that appears in some scholarship referring to the same general lessening government control in a specific sector of the economy in favor of more market-oriented approaches. In the U.S. and Canadian power and utilities industries, "deregulation" is more common than either "liberalization" or "restructuring" but it is not used interchangeably with those two words in this Comment since "deregulation" does not necessarily encompass related changes like free trade agreements that "liberalization" does. "Liberalization" for the purposes of this Comment, however, does not include privatization, though that is a connotation that sometimes comes with the word in the U.K.

of the Treaty's most thorny issues, the calculation of the "Canadian Entitlement" downstream power benefits paid each year to British Columbia by the U.S.

As the Bonneville Power Administration (BPA) and U.S. Army Corps of Engineers (USACE) prepare to jointly deliver to the U.S. Department of State a final recommendation on a new Treaty in December 2013,<sup>6</sup> discussing not only what Columbia hydropower is worth in 2013 but why its value is so different from what treaty negotiators predicted in the 1960s can potentially help with this piece of a new agreement. Looking at the problem through the lens of one major trend in utilities law lends support to some of the principles laid out by the BPA and USACE in their draft recommendation while underscoring the fact that continuing an inflexible and un-adaptable calculation is unlikely to help the price tag of a new agreement approximate the reality of its rewards over the long term.

## II. HISTORY: HOW THE TREATY CAME TO BE

Detailed, well-written accounts of the origins, operations, and governance of the Treaty system are readily available elsewhere<sup>7</sup> so this Comment will strive to be brief in orienting the reader with the system's historical, physical, and legal dimensions. Still, a few pertinent points about the Treaty's origins and how it functions today bear mention here.

Many identify the 1948 catastrophic flooding of the riverside cities of Vanport, Oregon and Trail, British Columbia as a primary catalyst for the creation of the Treaty.<sup>8</sup> Others draw

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6. U.S. Entity (Bonneville Power Administration and U.S. Army Corps of Engineers [hereinafter U.S. Entity]), *Columbia River Treaty Review Working Draft of a Regional Recommendation: Improving the Columbia River Treaty*, June 27, 2013, available at <http://www.crt2014-2024review.gov/Files/CRTR%20working%20draft%20recommendation,%20June%2027%202013.pdf>; U.S. Entity, Sept. 20, 2013, *Columbia River Treaty Review Draft Regional Recommendation*, available at <http://www.crt2014-2024review.gov/DraftRegionalRecommendation.aspx>.

7. See generally, e.g., Paul W. Hirt and Adam M. Sowards, *The Past and Future of the Columbia River* 115; Jeremy Mouat, *The Columbia Exchange: A Canadian Perspective on the Negotiation of the Columbia River Treaty, 1944-1964*, in *THE COLUMBIA RIVER TREATY REVISITED: TRANSBOUNDARY RIVER GOVERNANCE IN THE FACE OF UNCERTAINTY* 14 (Barbara Cosens ed., 2012) [hereinafter *THE COLUMBIA RIVER TREATY REVISITED*].

8. See, e.g., James D. Barton and Kelvin Ketchum, *The Columbia River Treaty: Managing for Uncertainty*, in *THE COLUMBIA RIVER TREATY REVISITED*, *supra* note 7, at 43.

attention to the strong interest of the U.S. in the 1950s and 1960s in developing a large hydroelectric dam in Libby, Montana and its corresponding need for Canadian consent to create a trans-border reservoir and interfere with BC Hydro's plans to divert part of the Columbia into the Fraser River.<sup>9</sup> Still others emphasize that, at the time of Treaty negotiations, the Social Credit government of British Columbia Premier W.A.C. Bennett was seeking to build dams on several tributaries of the Columbia but lacked the capital to start those projects. Unable to secure that funding in Canada, according to this analysis, Bennett in effect used the Treaty as a means of gaining access to American government financing when the U.S. prepaid the estimated present value of the first thirty years of Canada's share of the downstream power benefits.<sup>10</sup>

Regardless of the precise historical causes of the Treaty's creation, it was signed in 1961 and took effect following ratification in 1964.

#### A. *Structures: What the Treaty Built and Why*

There are four dams that were constructed through the Treaty—Duncan, Keenleyside/Arrow, and Mica in British Columbia, plus Libby in Montana—and each was built mostly for storage rather than on-site electricity generation.<sup>11</sup> The dams have always been capable of generating electricity but their intended primary function at the time of construction was to hold water so that the Columbia's flow could be controlled to better synchronize demand for electricity with power generation at other facilities downstream.<sup>12</sup> Electricity is not like many other commodities in that it cannot easily be stored for future use even though its reliability is evidently essential to the functioning of an industrialized society and

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9. A. Dan Tarlock and Patricia Wouters, *Are Shared Benefits of International Waters an Equitable Apportionment?*, 18 COLO. J. INT'L ENVTL. L. & POL'Y at 523, 529-30 (2007).

10. John Shurts, *Rethinking the Columbia River Treaty*, in THE COLUMBIA RIVER TREATY REVISITED *supra* note 7, at 194.

11. *Id.* at 196.

12. Richard White, THE ORGANIC MACHINE: THE REMAKING OF THE COLUMBIA RIVER 77 (1995).

economy.<sup>13</sup> An estimated 45 percent of the Columbia's present storage comes from water held back by the four "Treaty dams"; without them, there would be a mismatch between when the Columbia's flow naturally peaks in late spring and the winter months when demand for electricity (and by extension water flowing through hydroelectric dams) is at its highest in the Pacific Northwest.<sup>14</sup>

B. *Stakeholders and Governance: Who Decides How the Columbia is Managed?*

The four Treaty dams were added to a river already being used by other humans. The people and organizations who are affected by the Columbia but who were not invited to participate in Treaty negotiations have gained influence on its governance through several subsequent federal, state, and provincial acts but they are still officially not parties to the Treaty.<sup>15</sup> Tribes who historically fished on the river, farmers who rely heavily on its water for irrigation and transportation of crops, the American and Canadian towns located near the Columbia's banks, and—importantly for a comment about the electricity industry—owners of non-Treaty dams, have no real seat at the table alongside the official Treaty "Entities" of BC Hydro, USACE, and BPA designated by the American and Canadian federal governments.<sup>16</sup> Several commentators have noted the absence of a public process in the Treaty system's governance configuration as something that needs revision to conform to contemporary ideas about fairness and democratic process.<sup>17</sup> Other observers, not necessarily disagreeing with such calls for change, have pointed out that the Treaty's origins—in an era when concerns about environmental and social impacts were considerably different than they are

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13. Leonard S., Andrew S., and Richard C. Hyman, *AMERICA'S ELECTRIC UTILITIES: PAST, PRESENT AND FUTURE* 26 (2000).

14. Shurts, *supra* note 10, at 197.

15. Barbara Cosens, *Changes in Empowerment: Rising Voices in Columbia Basin Resource Management*, in *THE COLUMBIA RIVER TREATY REVISITED*, *supra* note 7, at 61.

16. See *Figure 1*, Anthony G. White, *The Columbia River: Operation Under the 1964 Treaty*, in *THE COLUMBIA RIVER TREATY REVISITED*, *supra* note 7, at 54-55.

17. See, e.g., Eve Vogel, *Can an International Treaty Strengthen a Region and Further Social and Environmental Inclusion? Lessons from the Columbia River Treaty*, in *THE COLUMBIA RIVER TREATY REVISITED*, *supra* note 7, at 281, 290.

today—likely enabled the creation of a system that would probably not prove feasible in 2013.<sup>18</sup>

Members of the official Entities counter claims that they do not give enough voice to non-official parties by noting that BPA, USACE, and BC Hydro are all public agencies that have already incorporated many concerns into Treaty operations; the system is not operated or governed in 2013 exactly as it was in 1964.<sup>19</sup> Indeed, although only BC Hydro, USACE, and the BPA are Treaty entities with ultimate decision-making authority, several other international and domestic agreements—namely the Pacific Northwest Coordination Act and the Northwest Power Act in the U.S. and the Columbia Basin Trust Act in British Columbia—give influence to non-Entity groups and may lend them a role in shaping any changes to a downstream hydropower benefits recalculation.<sup>20</sup>

The scope of this Comment, focused on that benefits recalculation, does not allow for a direct discussion of most of the Treaty system’s “non-official” stakeholders or how they should or should not be included in ongoing decision-making other than to note their presence and underline that within the hydropower industry, the Treaty dams were neither the first nor the largest on the Columbia.<sup>21</sup>

### III. IS THE TREATY BROKEN? IF SO, WHAT ARE THE OPTIONS TO FIX IT?

Not everyone agrees that the Treaty system as it currently exists needs fixing. Some argue that though the Treaty itself deals only with power and floods, the U.S. and Canadian Treaty Entities have over the years together developed a complex international scheme of subsequent protocols and operating agreements that address goals like fish protection.<sup>22</sup>

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18. *I.e.*, “The United States and Canada would never negotiate this particular treaty today,” Shurts, *supra* note 10, at 226.

19. *See* Anthony G. White, *supra* note 16, at 59.

20. *See* Vogel, *supra* note 17, at 290.

21. The first hydroelectric project on the river was Rock Island Dam near Wenatchee. Completed in 1933, it is owned and operated by the Chelan County Public Utilities District. The largest in terms of generating capacity is Grand Coulee Dam, opened in 1941 by the U.S. Bureau of Reclamation with a capacity of 6,809 megawatts. *See* Anthony G. White, *supra* note 16, at 56.

22. *I.e.*, “[M]anagement of the Columbia River is as much about international relations as it is about public administration within the U.S.,” Anthony G. White,

If the Treaty as-is largely works, this line of thinking continues, complete renegotiation in place of a continuing evolution of the river's management through existing channels may ultimately end up doing more harm than good to consumers and producers of electricity as well as to wildlife. Writers in this group argue that, however imperfect the Treaty, it is better than what preceded it and what would replace it upon termination: a system for settling border disputes based on the 1909 Boundary Waters Treaty supplemented by a bare bones flood control regime.<sup>23</sup>

Many in both the electricity and wildlife camps, however, argue (for different reasons) that the Treaty is no longer workable long-term. Perhaps the most radical view is that the river should be returned to its natural state, but few even among those generally most in favor of decommissioning dams see widespread removal of projects on the Columbia main stem as a likely option given the importance of hydropower to the Pacific Northwest.<sup>24</sup> As one commentator has noted, "[W]hat we are dealing with here is a biological river that is also a key component in a western North American electrical energy system."<sup>25</sup> A more pragmatic understanding of the value of fish vis-à-vis hydropower would not seek removal of the Columbia's dams but would consider either terminating or modifying the Treaty and the elaborate structure of international coordination that developed around it. Advocates of change in this vein note that such an approach could also mean lower rates for power consumers.<sup>26</sup>

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*supra* note 16, at 54.

23. Lance Dickie, Roll On With an Updated Columbia River Pact, SEATTLE TIMES, July 4, 2013, available at [http://seattletimes.com/html/opinion/2020956392\\_columndickiecolumbiarivertreatyxml.html](http://seattletimes.com/html/opinion/2020956392_columndickiecolumbiarivertreatyxml.html); Chris W. Sanderson, *The Columbia River Treaty After 2024*, in THE COLUMBIA RIVER TREATY REVISITED, *supra* note 7, at 249, 263.

24. Dam removal advocates in the Pacific Northwest, for example, focus mostly on small-scale projects, none on the Columbia main stem. See generally, Michael C. Blumm and Andrew B. Erickson, *Dam Removal in the Pacific Northwest: Lessons for the Nation*, 42 ENVTL. L. 1043 (2012).

25. See Shurts, *supra* note 10, at 192.

26. Annette Cary, *Better Power Rates Possible for Mid-Columbia Customers if Columbia River Treaty Changes*, TRI-CITY HERALD, 7 MAY 2013, available at <http://www.tri-cityherald.com/2013/05/07/2386456/better-power-rates-possible-for.html>; see also, Editorial, *Columbia River Treaty Warrants Revisions That Are Balanced*, YAKIMA HERALD-REPUBLIC, 8 OCT. 2013, available at <http://www.yakimaherald.com/news/yhr/tuesday/1564629-14/columbia-river-treaty-warrants-revisions-that-are-balanced>.

Some commentators back unilateral termination because they believe that getting rid of the Treaty would mean an end to management for electricity generation but not for flood control. Flood control as it currently operates will change in 2024 but cannot be unilaterally terminated as can power generation; even if the Treaty ends, Canada is still obligated to provide “called-upon” flood benefits to the U.S.<sup>27</sup> This stance, which may seem extreme at first glance, is in fact advocated by a group saying operations would change little. Such writers argue that BC Hydro may make as much or more profit by controlling its own dams than by getting a check from the U.S. and say that little will change upon termination because the province cannot significantly alter the way it operates Treaty dams without substantially impairing its own ability to generate the hydropower on which it has become dependent.<sup>28</sup>

A final group seems to think that the solution is neither to keep the Treaty intact nor to terminate it but to craft a new system that better reflects social, political, and economic concerns of 2014 and beyond. One scholar has identified six means of implementing broad modification:

- A. Renegotiate the treaty
- B. Negotiate a “partner treaty”
- C. Negotiate formal amendments
- D. Negotiate and implement protocols
- E. Incorporate new “Entities” or advisors
- F. Adjust annual operating plans.<sup>29</sup>

#### IV. PAYING BRITISH COLUMBIA: WHAT IS THE “CANADIAN ENTITLEMENT” AND HOW DOES IT AFFECTS A NEW TREATY?

The Canadian Entitlement is the annual share of the electricity generated in the U.S. that is given back to British Columbia as payment for operating the Treaty dams in

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27. “[U]pon termination Canada would no longer need to store or release water from the projects for any purpose related to generation in the United States . . . [and] the United States would no longer owe Canada any share of downstream power benefits” but “British Columbia’s responsibility to provide ‘called upon’ flood control will remain *even if* the rest of the treaty is terminated.” See Shurts, *supra* note 10, at 202-03.

28. *Id.* at 229.

29. Matthew McKinney, *Managing Transboundary Natural Resources: An Assessment of the Need to Revise and Update the Columbia River Treaty*, in THE COLUMBIA RIVER TREATY REVISITED, *supra* note 7, at 84, 92-94.

accordance with U.S. requirements. Or, as one pair of commentators phrased it in summarizing the treaty's purpose, "Canada traded hypothetical lost hydroelectric generating capacity and surplus flood control storage for money."<sup>30</sup> The Entitlement is calculated every year, six years in advance of actual operations through an "Assured Operating Plan" which takes into account water flows as if they were being managed only for flood control and power generation.<sup>31</sup> A (very) simplified equation is:

$$\text{Downstream power benefits} = \text{Hydroelectric generation in U.S. with Canadian storage} - \text{Hydroelectric generation in U.S. without Canadian storage}^{32}$$

Canada receives half of the downstream power benefits determined through this calculation, a requirement that comes from the Treaty text.<sup>33</sup>

It is worth emphasizing that because the basic calculation itself is in the Treaty, any substantial change to the Entitlement would probably require a new or modified Treaty, not just something like a supplemental operating agreement.<sup>34</sup> While any discussion of possible changes to the Entitlement calculation would need to be situated in the larger, ongoing conversation about what to do with the Treaty system in 2014 anyway, the fact that the share of benefits is embedded in the Treaty means that revising the calculation most likely goes hand in hand with a major new, international agreement. Changing the share of benefits is not really compatible with only minor, "side" modifications, though the two countries have to date proven adept at resolving similar problems posed by transnational effects of hydroelectric dams in the Pacific Northwest without new treaties.<sup>35</sup>

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30. See Tarlock and Wouters, *supra* note 9, at 529.

31. See Shurts, *supra* note 10, at 199-200.

32. *Id.* at 198.

33. See Treaty, *supra* note 1, Art. V.

34. Shurts, *supra* note 10, at 225.

35. See generally, Nigel Bankes, *Environment: Garrison Dam, Columbia River, the IJC, NGOs*, 30 CAN.-U.S. L. J. 117 (2004) (discussing resolution of the physical return of power to Canada despite Treaty language requiring delivery at a location that was unfeasible in 1998); see also, Matthew McKinney et al., *Managing Transboundary Natural Resources: An Assessment of the Need to Revise and Update the Columbia River Treaty*, 16 HASTINGS W.-NW. J. ENVTL. L. & POL'Y at 307, 346 (2010) (discussing the 2000 Libby Coordination Agreement); see generally, Paul Marshall Parker, *High Ross Dam: The International Joint Commission Takes a Hard Look at the*

How the Entitlement fits into a renegotiation option is far less clear than how it is affected by scenarios of leaving the system as-is or discarding it entirely. If nothing about the Treaty is changed, the Entitlement would stay the same. If the Treaty terminates, the Entitlement itself would disappear even if operations remain substantially the same. Mechanically, modification options A, B, and C (above) would work with a new calculation while sub-options D, E, and F would be incompatible. But this does not answer the substantive question about the Entitlement: regardless of the form a new agreement takes, if the Treaty is reworked, how do the two countries decide how to split the costs? Or, as one writer phrased it in exploring a different question about change in the U.S. electricity industry, “Who pays and how much?”<sup>36</sup> Focusing on the restructuring of North America’s electricity markets is an attempt to help tease out principles that may be useful in answering that question for the Canadian Entitlement.

A. *Does the Entitlement Calculation Still Approximate Shared Costs and Benefits; If Not, Why?*

Assuming that the Treaty is in some way renegotiated, amended, or replaced, how does one begin to determine how a system of shared power benefits might fit into a new international arrangement? One place to start is to ask if the existing means of determining the Entitlement still approximate the reality of how costs and benefits are shared by the U.S. and Canada on the Columbia River. Four major possibilities emerge from such an exercise:

1. Despite changes in the western electricity market, the calculation methodology and its fifty-fifty benefit split still roughly reflect the reality of cost and benefit sharing by the two countries; the fundamentals of the existing calculation can be incorporated into a new,

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*Environmental Consequences of Hydroelectric Power Generation—The 1982 Supplementary Order*, 58 WASH. L. REV. 445 (1983) (discussing resolution of the High Ross controversy without a treaty negotiated by the U.S. Department of State).

36. Paul Verbruggen, *Renewable Energy Integration Costs: Who Pays and How Much?*, 1 WASH. J. ENVTL. L. & POL’Y 181 (2011); see also, Editorial, *How Much for a Modern Treaty?*, WENATCHEE WORLD, July 3, 2013, available at <http://www.wenatcheeworld.com/news/2013/jul/03/how-much-for-a-modern-treaty>.

amended, or revised treaty;

2. The U.S. is paying for substantially more than it is receiving in power and flood benefits from Canada; the calculation needs to be changed;

3. The U.S. is paying for substantially less than it is receiving in power and flood benefits from Canada; the calculation needs to be changed;

4. The U.S. is paying for less than it receives in power and flood benefits but is also receiving other benefits (such as water to spill for wildlife protection) which mean the Entitlement calculation approximates the reality of shared costs and benefits by the U.S. and Canada; the calculation may or may not need to be changed.

Scenario 1, despite its apparent simplicity, is not without proponents. In the view of one Canadian commentator, the fact that the U.S. and Canada jointly calculate only gross benefits and leave the potentially more contentious net benefit calculation to be done individually is critical to managing the river; the ease of not having to haggle over the value of benefits makes the system work.<sup>37</sup> In economic terms, one might summarize this argument by saying that comparative advantage<sup>38</sup> coupled with Coasian-like bargaining<sup>39</sup> results in a sort of Pareto efficiency or Nash equilibrium<sup>40</sup> outcome where both sides reach their optimal balancing of costs and benefits.<sup>41</sup> Each country, based on its own calculus, can negotiate up to the point that it is better off than it would be without engaging in the Treaty system. This is a view that has also drawn some support in the U.S. Pacific Northwest popular press among those arguing that the U.S. could turn out proverbially penny-wise and pound-foolish by terminating or

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37. Sanderson, *supra* note 23, in THE COLUMBIA RIVER TREATY REVISITED 249, 266.

38. Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations*, Book IV, Ch. II (1776).

39. R.H. Coase, *The Problem of Social Costs*, 3 J. L. ECON. 1 (1960).

40. John F. Nash, *Non-Cooperative Games*, Ph.D. diss., Mathematics Dept., Princeton Univ. (1950).

41. For a similar, related application of some of these principles to hydroelectricity trade between the U.S. and Canada, see Barbara K. Bucholtz, *Coase and the Control of Transboundary Pollution: The Sale of Hydroelectricity Under the United States-Canada Free Trade Agreement of 1988*, 18 B.C. ENVTL. AFF. L. REV. 279 (1991).

substantially reducing the Entitlement.<sup>42</sup>

There is likely some truth in this analysis, but it is at the same time problematic in that it does not account for changes in the value of benefits that cannot be remedied through the use of supplemental operating agreements. From a purely pragmatic standpoint, too, Scenario 1 (like calls to preserve the Treaty as-is) does not seem prudent since it essentially takes the position that nothing really needs to be changed, a view that on the U.S. side does not appear to align with current thinking inside the official Entities.<sup>43</sup> In fact, though they will not make an official recommendation to the U.S. State Department on what should be done with the Treaty until the end of 2013, BPA and the USACE have already publicly stated that there is a great mismatch between what Canada is paid in Entitlement energy and the net benefits the U.S. is receiving; they have estimated U.S. power benefits at as little as one tenth of what they pay through the Entitlement calculation.<sup>44</sup>

Scenarios 2, 3, and 4 at least contemplate the possibility of a changed calculation. Overlaid on these is the question of whether a disparity between benefits and costs stems from the underlying methodology of the calculation used to estimate benefits, the split of calculated benefits, or some combination of the two. Stated differently, if the Entitlement calculation is inaccurate, is this because it arrives at a totaling of benefits that does not match reality or because the U.S. and Canada split the value of those benefits equally despite the fact that

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42. Lance Dickie, *Roll On With an Updated Columbia River Pact: Update the Columbia River Treaty But Nurture a Plan That Provides Water, Power, Flood Control and Economic Opportunity For the U.S. and Canada*, SEATTLE TIMES, May 9, 2013, available at [http://seattletimes.com/html/opinion/2020956392\\_columndickiecolumbia\\_rivertreatyxml.html](http://seattletimes.com/html/opinion/2020956392_columndickiecolumbia_rivertreatyxml.html).

43. *I.e.*, BPA spokesmen Mike Hansen: "One of the things that is clear to us is that the value for the Canadian [E]ntitlement post-2024 is worth significantly less than half the current value," in Scott Learn, *Columbia River Treaty Between U.S. and Canada Under Intense Review*, OREGONIAN, May 9, 2013, available at [http://www.oregonlive.com/environment/index.ssf/2013/04/columbia\\_river\\_treaty\\_between.html](http://www.oregonlive.com/environment/index.ssf/2013/04/columbia_river_treaty_between.html).

44. U.S. ENTITY, COLUMBIA RIVER TREATY 2014/2024 REVIEW: CANADIAN ENTITLEMENT (Apr. 2013), available at <http://www.crt2014-2024review.gov/Files/Columbia%20River%20Treaty%20Review%20-%20Fact%20Sheet%20-%20Canadian%20Entitlement--FOR%20PRINT.PDF>; U.S. ENTITY, COLUMBIA RIVER TREATY REVIEW WORKING DRAFT OF A REGIONAL RECOMMENDATION: IMPROVING THE COLUMBIA RIVER TREATY (June 27, 2013), available at <http://www.crt2014-2024review.gov/Files/CRTR%20working%20draft%20recommendation,%20June%2027%202013.pdf>.

one country bears substantially more costs than the other? The fifty-fifty split likely contributes to the inaccuracy but is not as important for this Comment since a strong and relatively straightforward case can be made for the former cause. If the benefits to be divided are not correct, the division of those inaccurate benefits is unlikely to approximate reality.

There is ample evidence that major assumptions underlying the calculation are no longer sound and that the downstream power benefits are much greater than those who created the calculation predicted they would be. John Shurts of the Northwest Power and Conservation Council identifies several such suppositions held by those who helped create the Entitlement calculation, several of which he argues vary vastly from present realities.

First, those setting up the Entitlement calculation thought that the value of hydropower was expected to decrease as more thermal (coal and nuclear) plants were built in the Pacific Northwest.<sup>45</sup> Larger, more economically efficient thermal plants, the thinking went, would provide an increasingly greater proportion of the region's baseload power while hydro would eventually be phased into primarily meeting peaking and load-following demand.<sup>46</sup> These thermal plants did not, however, materialize and as a result hydropower continues to form between sixty and seventy percent of the Pacific Northwest's electricity supply.<sup>47</sup> Its value remains higher than anticipated in large part because it continues to serve as a core source of power for a region rather than a source than can be used to supplement a cheaper base of thermal electricity.<sup>48</sup> Hydro still provides firm, baseload power while other, new power sources—natural gas and wind—are used in the Pacific Northwest for the non-firm peaking and load-following functions that Treaty drafters anticipated for hydro.<sup>49</sup>

A second important assumption held by those who created the Entitlement calculation is that the Pacific Northwest's electricity system, even if connected to the rest of the west to temporarily sell surplus power, would remain in the long run

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45. See Shurts, *supra* note 10, at 206.

46. *Id.*

47. *Id.* at 210; see FEDERAL COLUMBIA RIVER POWER SYSTEM, *supra* note 1, at 45.

48. See Shurts, *supra* note 10, at 212.

49. *Id.*

mostly isolated from the rest of North America.<sup>50</sup> In hindsight, and given California's longstanding "looming presence" over the U.S. Pacific Northwest in comparison to the much weaker intra-regional economic pulls, this may seem less understandable than 1960s ideas about the potential of nuclear power.<sup>51</sup> Nevertheless, there is no question that a much larger, more integrated electricity market than that envisioned by Treaty framers evolved.<sup>52</sup>

In the physical realm, the most significant change was the Pacific Northwest-California direct current transmission intertie. In Shurts's estimation, the completion of a north-south power interconnection was not originated by the Treaty but was crucially aided by it; British Columbia, Oregon, and Washington did not have enough population to consume the amount of power generated by the new capacity but California did.<sup>53</sup> The Treaty served as a major catalyst in getting the linkage between the two Pacific regions actually built;<sup>54</sup> it was part of a broader push by the American federal government dating to the 1930s to upgrade the U.S. grid.<sup>55</sup> This interconnection in the long run has allowed the Northwest and the Southwest to trade their power supply with each other and reduce the amount of overall peak generating capacity that each needs in the winter and summer, respectively.<sup>56</sup> Shurts's case is persuasive and makes plain that the western North American electricity market became, through integration, much larger than Treaty negotiators envisioned in the 1950s and early 1960s.<sup>57</sup>

Another reason why the calculation may no longer reflect

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50. *Id.* at 205.

51. Carl Abbott, *That Long Western Border: Canada, the United States, and a Century of Economic Change*, in *PARALLEL DESTINIES: CANADIAN-AMERICAN RELATIONS WEST OF THE ROCKIES*, at 203, 212-13 (John M. Findlay and Ken S. Coats eds., 2002).

52. *See*, Shurts, *supra* note 10, at 204-06, 213.

53. *Id.* at 204.

54. *Id.* at 205.

55. Peter Z. Grossman, *The Zenith of the Natural Monopoly System*, in *THE END OF A NATURAL MONOPOLY: DEREGULATION AND COMPETITION IN THE ELECTRIC POWER INDUSTRY* 100 (Peter Z. Grossman and Daniel H. Cole eds., 2006); *accord* Shelly P. Battram and Reiner H. Lock, *The Canada/United States Free-Trade Agreement and Trade in Energy*, 9 *ENERGY L. J.* 327, 329 (1988).

56. Shurts, *supra* note 10, at 205.

57. *Id.* at 213.

the reality of how benefits and costs are shared—and which bolsters Shurts’s argument even if he makes mentions of it only in passing<sup>58</sup>—is the fact that such markets are also now not only integrated but liberalized. It is physically possible for power generated in rural British Columbia to be consumed in suburban San Diego and such a sale is protected by an international legal infrastructure of cross-border contracts<sup>59</sup> and multilateral trade agreements, discussed below. The facilitation of this trade by these laws may also have helped push the value of the Entitlement benefits higher than Treaty framers imagined.<sup>60</sup>

Post-World War II British Columbia wanted the ability to sell power in American electricity markets and got it through the Treaty.<sup>61</sup> But, because of the 1994 North American Free Trade Agreement (NAFTA) and other changes in U.S. and Canadian utilities law, the province can still sell that power in the U.S. even if either the U.S. or Canadian federal government decides to terminate the Treaty. NAFTA, and the 1987 Canada-U.S. Free Trade Agreement and 1994 General Agreement on Tariffs and Trade it incorporated, guarantees utilities in the U.S. and Canada the ability to sell into each other’s markets.<sup>62</sup> A U.S. desire for an integrated energy market was a driving force behind North American Free Trade Agreement (NAFTA) in the wake of the 1970s oil crisis<sup>63</sup> and, as a result, its Chapter Six requires national treatment for energy and prohibits minimum or maximum import or export prices.<sup>64</sup>

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58. *Id.* at 210.

59. *Id.* at 213.

60. Unfortunately, a precise quantification of how much of the increase in value of the Entitlement is attributable to these new laws is not possible here. Much evidence exists, however, that there is usually a strong positive relationship between economic growth and the rule of law. That correlation is applicable here where the market became both bigger and safer for participants because contracts are given the extra enforcement protection of international trade agreements. *See, e.g.*, Kenneth W. Dam, THE LAW-GROWTH NEXUS: THE RULE OF LAW AND ECONOMIC DEVELOPMENT 5 (2006); *Order in the Jungle: Economics and the Rule of Law*, ECONOMIST, March 13, 2008.

61. Shurts, *supra* note 10, at 194.

62. Yulia Selivanova, *Managing the Patchwork of Agreements in Trade and Investment*, in GLOBAL ENERGY GOVERNANCE: THE NEW RULES OF THE GAME 49, 66 (Andreas Goldthau and Jan Martin Witte eds., 2010).

63. John N. McDougall, DRIFTING TOGETHER: THE POLITICAL ECONOMY OF CANADA-U.S. INTEGRATION 144-45 (2006).

64. Selivanova, *supra* note 62.

Just how far the limits of these protections extend is not yet clear. Academic commentators have pointed out that state renewable energy portfolio standards may not meet NAFTA obligations<sup>65</sup> while private and public sector energy players on both sides of the 49th Parallel are proving increasingly willing to use the agreement to challenge regulations which they say discriminate against hydropower.<sup>66</sup> What is apparent is that electricity itself, whether produced by a government or investor-owned utility, cannot be refused entry to either the U.S. or Canadian market based solely on the country, state, or province where it is generated. British Columbia no longer needs the Treaty to sell electricity in the U.S., and in fact makes this plain in its treaty review documents intended for the general public.<sup>67</sup>

NAFTA, however, is by no means the only measure that creates a legal hedge around liberalized wholesale electricity markets and reinforces the increased value of power capable of being traded across western North America. Indeed, early commentators noted that NAFTA was in some ways redundant with the deregulation of North American electricity markets that started in the mid-1980s both between the U.S. and Canada and within each country.<sup>68</sup> In the U.S., where the Federal Energy Regulatory Commission (FERC) and its predecessors have had authority over interstate wholesale sale of electricity since passage of the 1935 Federal Power Act,

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65. Joe Walsh, *NAFTA Ramifications of Hydropower Restrictions in the Waxman-Markey Bill's Proposed Renewable Portfolio Standard* (Suffolk U. L. School Working Paper Series, 2010), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1417042](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1417042); Thomas Alcorn, *The Constitutionality of California's Cap-and-Trade Program and Recommendations for Design of Future State Programs*, 3 MICH. J. ENVTL. & ADMIN. L. 2, 29 (2013), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2135956](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2135956).

66. See, e.g., Nicole Mordant, *Boone Pickens Challenges Canada on Green Power Law*, REUTERS, Jul. 14, 2011, available at <http://ca.reuters.com/article/domesticNews/idCATRE76D65T20110714>; *BC Hydro Plays NAFTA Card in Bid to Win Green Status in California*, VANCOUVER SUN, Oct. 21, 2011, [http://www.canada.com/story\\_print.html?id=6fe2c88a-304f-47dd-afd4-8f8d48145a40](http://www.canada.com/story_print.html?id=6fe2c88a-304f-47dd-afd4-8f8d48145a40); Gordon Hamilton, *Mercer International Seeks NAFTA Ruling on BC Hydro's Electricity Policies*, VANCOUVER SUN, May 2, 2012, available at <http://www.vancouversun.com/business/Mercer+International+seeks+NAFTA+ruling+Hydro+electricity+pricing/6548987/story.html>

67. COLUMBIA BASIN TRUST, COLUMBIA RIVER TREATY FREQUENTLY ASKED QUESTIONS (July 2013), available at <http://www.cbt.org/crt/FAQ.html>.

68. G.C. Watkins, *NAFTA and the Energy Sector: A Bridge Not Far Enough?*, in *ASSESSING NAFTA: A TRINATIONAL ANALYSIS* 191, 213 (Steven Globerman and Michael Walker eds., 1993).

liberalization was driven largely by Washington, D.C.<sup>69</sup> The 1978 Public Utility Regulatory Policies Act (PURPA) “jump-started” wholesale competition and the growth of a new class of independent electricity generating firms through mandatory “wheeling.”<sup>70</sup> This trend was furthered by Congress’s broadening of authority for FERC to require open-access transmission in the 1992 Energy Policy Act and 2005 amendments to both that act and to PURPA.<sup>71</sup> Deregulation was not exclusive to (or perhaps most successful in) the electricity industry, nor was it pioneered by the Carter and Reagan administrations that adopted Alfred Kahn’s ideas on changing the airline industry and eventually extended them to telecommunications, railroads, and energy.<sup>72</sup> Margaret Thatcher’s government in the U.K. is generally regarded as the first to experiment in earnest with injecting competition into traditional natural monopoly industries (as well as to aggressively privatize government-owned enterprises, a trend that was not as widely attempted in North America).<sup>73</sup>

In Canada, where individual provinces own their natural resources, Brian Mulroney’s federal government aggressively attempted energy deregulation starting in 1984.<sup>74</sup> While this proved successful with petroleum, in the electricity sector it was the FERC’s gate-keeping of the U.S. market that ultimately compelled provincial deregulation of wholesale electricity. FERC’s Order No. 888 required liberalization of all utilities joining regional transmission organizations and selling into American markets, something that apparently proved more persuasive than Ottawa’s attempts to negotiate nationwide electricity deregulation.<sup>75</sup> While this pattern did not play out in the Pacific Northwest as it did in other parts of North America,<sup>76</sup> within the province, BC Hydro now allows

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69. Fred Bosselman et al., *ENERGY, ECONOMICS, AND THE ENVIRONMENT* 13 (2006).

70. *Id.* at 819, 821.

71. *Id.* at 832-33.

72. Richard F. Hirsh, *POWER LOSS: THE ORIGINS OF DEREGULATION AND RESTRUCTURING IN THE AMERICAN ELECTRIC UTILITY SYSTEM*, 226-27 (1999).

73. *See generally*, Clint Bolick, *Thatcher’s Revolution: Deregulation and Political Transformation*, 12 *YALE J. ON REG.* 527 (1995).

74. G. Bruce Doern and Monica Gattinger, *POWER SWITCH: ENERGY REGULATORY GOVERNANCE IN THE TWENTY-FIRST CENTURY* 32-34 (2003).

75. *Id.* at 84-88.

76. Walter R. Hall II et al., *History, Objectives, and Mechanics of Competitive*

wholesale access to all producers and choice of electricity supplier to industrial-size customers.<sup>77</sup>

What does all this mean for a new Treaty? Most obviously, the changes affect what the U.S. and Canada want out of a new agreement and the value of what they realize under the existing one. Coupled with physical integration of British Columbia's grid with the entire U.S. West Coast, legal protection of BC Hydro's ability to sell electricity into the U.S. (and vice versa of U.S. electricity into British Columbia) makes the downstream power benefits more valuable than originally anticipated.

Quantifying precisely the change in the value of the downstream power benefits from what was expected in the 1960s to what they actually have evolved to in 2013 is less important than noting the direction and general magnitude of the change. Both seem to be up, though perhaps this is counterintuitive on first glance. Given that one of deregulation's goals is to lower electricity prices,<sup>78</sup> one might ask why deregulation has not lessened the value of Northwest hydropower. One reason is that western markets are larger not just because of population growth but also because they are both physically integrated and legally liberalized. A 2001 study, for instance, found that NAFTA was not the only catalyst of change in the North American electricity industry but that NAFTA did have "significant and discernible effects on trade and investment flows in the electricity sector."<sup>79</sup> Another reason is that in a liberalized wholesale market, responsive sources of electricity are more valuable than less responsive sources and hydropower is just such a responsive source.<sup>80</sup>

The integration of western North America into a single

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*Electricity Markets*, in CAPTURING THE POWER OF ELECTRIC RESTRUCTURING 1, 27 (Joey Lee Miranda ed., 2009).

77. INTERNATIONAL ENERGY AGENCY/OECD, ENERGY POLICIES OF IEA COUNTRIES: CANADA 2009 REVIEW 198 (2010).

78. Paul L. Joskow, *The Difficult Transition to Competitive Electricity Markets in the United States*, in ELECTRICITY DEREGULATION: CHOICES AND CHALLENGES 31, 36 (James M. Griffin and Steven L. Puller eds., 2005).

79. Mary E. Kelly and Cyrus Reed, *The CEC's Trade and Environment Program: Cutting-Edge Analysis But Untapped Potential*, in GREENING NAFTA: THE NORTH AMERICAN COMMISSION FOR ENVIRONMENTAL COOPERATION 101, 106 (David L. Markell and John H. Knox eds., 2003).

80. Shurts, *supra* note 10, at 210.

wholesale electricity market makes hydropower more valuable. The liberalization of the international market through NAFTA and federal deregulation in both the U.S. and Canada at once enhance the value of this electricity and make protection of Canadian access to U.S. power markets in a new Columbia River Treaty superfluous. Both illustrate the importance of trends that could not be predicted a half century in the future and support the argument for a system that can be adapted more easily and more frequently.

## V. WHAT THEN SHOULD THE NEW CALCULATION BE?

This Comment discusses principles that should be incorporated into a calculation, not a new equation methodology. There are several reasons. Mainly, the sort of elaborate, finely-tuned blend of scenario, sensitivity, and cost-benefit analyses one can imagine using to choose a new Entitlement calculation methodology does not seem appropriate here. The BPA and USACE are already working on such an analysis and the value that a Comment of this scope can add seems limited; the report they already produced on how the Canadian portion of the Columbia hydropower system would function if the Treaty is terminated, for example, employs modeling at a level of specificity and sophistication that simply cannot be matched here.<sup>81</sup>

Indeed, if this Comment were able to incorporate such a highly technical analysis, there would be a strong risk of losing sight of the proverbial forest for the trees. As one scholar discussing the relationship between environmental protection and electricity deregulation notes, the best “formula” for solving environmental law issues rooted in the economic problem of the commons requires not only calculations, but a “big picture” check to make sure that incentives are correctly aligned.<sup>82</sup> BPA and USACE have done good, necessary work

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81. BONNEVILLE POWER ADMINISTRATION, ASSESSING THE CANADIAN HYDRO OPERATION POST-2024 IN THE ABSENCE OF A TREATY (Jan. 2012), *available at* [http://www.crt2014-2024review.gov/Files/Final\\_Report\\_No\\_Treaty\\_Canadian\\_Operations.pdf](http://www.crt2014-2024review.gov/Files/Final_Report_No_Treaty_Canadian_Operations.pdf).

82. Victor B. Flatt, *What Is the Best Formula to Protect the Environment in Electricity Restructuring? Comment on the Environmental Impacts of Electricity Restructuring* by Karen Palmer and Dallas Burtraw, 1 ENVTL. & ENERGY L. POL'Y J. 225, 232-33 (2005).

but one also needs to keep perspective. The calculation methodology set up in the Treaty has itself, after all, always been complex yet it does not seem to produce durable accuracy.<sup>83</sup>

Thus, the focus for this final section is on the principles and assumptions that should underpin any new methodology rather than steps on how to calculate it. Ultimately, given the way western electricity markets have changed in the past sixty years, it seems the best solution may be one that can employ flexibility to mimic the exchange between the U.S. and Canada in the market for water storage and coordination.

It seems plain that both countries understand some sort of change to the Treaty system is coming, most likely including a downward revision in Entitlement payments. While some Canadians to date have hailed a new treaty as an opportunity to collaboratively work toward salmon restoration in British Columbia, for example, others bluntly predict the end of an annual fiscal windfall for the Province.<sup>84</sup>

That the downstream energy distributed back to British Columbia to either consume itself or resell elsewhere in North America does not approximate the value of the energy actually generated in the U.S. is not really in dispute; the calculations are based on a hypothetical, optimal amount of generation that by law cannot include non-power and non-flood control considerations. There is disagreement on the value of the Entitlement itself, though this appears a smaller issue in large part because both the U.S. and Canada acknowledge that any estimate for future values depends in part on energy prices, which change by the minute. British Columbia quotes “Entitlement Revenue to B.C.” as between \$100 million and \$320 million annually from 2002 to 2012 while the BPA and USACE estimate annual “value to Canada” at between \$200

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83. Jonathan A. Lesser, *Resale of the Columbia River Treaty Downstream Benefits: One Road from Here to There*, 30 NAT. RES. J. 609, 614 (1990).

84. Mark Hume, *Revised Columbia River Treaty Could Restore Salmon Runs*, GLOBE AND MAIL, Aug. 14, 2013, available at <http://www.theglobeandmail.com/news/british-columbia/revised-columbia-river-treaty-could-restore-salmon-runs/article13749271>; Becky Kramer, *Treaty Renewal Chance to Reopen Salmon Passages*, SPOKESMAN-REVIEW, Sept. 26, 2013, available at <http://www.spokesman.com/stories/2013/sep/26/columbia-treaty-renewal-chance-to-reopen-salmon>; Vaughn Palmer, *B.C.'s Financial Honeymoon Ends With Columbia River Treaty Anniversary*, VANCOUVER SUN, June 17, 2013, available at <http://www.vancouversun.com/opinion/columnists/Vaughn+Palmer+financial+honey+moon+ends+with+Columbia/8539063/story.html>.

million and \$350 million.<sup>85</sup> The major question, then, centers on the value of those non-power, non-flood benefits to the U.S. in relation to the amount paid to British Columbia through the Entitlement system.

It may not surprise many that this is tricky to answer; several scholars have already addressed the difficulties posed by trying to use traditional cost-benefit analysis in both the electricity sector generally and the Columbia hydro system more specifically.<sup>86</sup> BPA and USACE advocate a proxy for the Entitlement's value based on the replacement cost of a gas-generating resource that could produce an equivalent amount of energy.<sup>87</sup> U.S. utilities are open to a traditional cost-benefits analysis method.<sup>88</sup> The Northwest Power and Conservation Council, created by the 1980 Northwest Power Act, tracks fish and wildlife costs in terms of direct expenditures, capital investments, and foregone hydropower revenue.<sup>89</sup>

The British Columbia (perhaps not surprisingly) argues that this value is higher than does the U.S. Entity, hinting perhaps that Entitlement payments capture the price tag that the U.S. puts on those non-power and non-flood benefits: "B.C. believes that coordinated water flows, made possible because of B.C. water storage facilities, provides a value to the U.S. whether it is used for salmon protection, power generation or other economic, social and environmental benefits."<sup>90</sup> And if one

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85. PROVINCE OF BRITISH COLUMBIA, COLUMBIA RIVER TREATY REVIEW ENEWSLETTER UPDATE - TREATY REVIEW QUESTION OF THE MONTH: DECEMBER (Dec. 2012), *available at* [https://www.eneletters.gov.bc.ca/Columbia\\_River\\_Treaty\\_Review\\_eNewsletter/December\\_2012/Canadian\\_Entitlement/article](https://www.eneletters.gov.bc.ca/Columbia_River_Treaty_Review_eNewsletter/December_2012/Canadian_Entitlement/article); U.S. ENTITY, COLUMBIA RIVER TREATY INITIAL REPORT KICKS OFF PUBLIC PROCESS (July 2010), *available at* <http://www.crt2014-2024review.gov/Files/Columbia%20River%20Treaty%20Fact%20Sheet%20-%20report%20kickoff.pdf>.

86. See Olivia Odom, Note, *Energy v. Water*, 37 *ECOLOGY L. Q.* 353 (2012); see also Nancy K. Kubasek and Chaz A. Giles, *Dammed to be Divided: Resolving the Controversy Over the Destruction of the Snake River Dams and Providing a Model for Future Decision-Making*, 25 *WM. & MARY ENVTL. L. & POL'Y R.* 675 (2001).

87. U.S. ENTITY, *supra* note 6.

88. Letter from the Columbia River Treaty Power Grp. to Stephen Oliver, U.S. Entity Coordinator, Bonneville Power Administration and to Mr. David Ponganis, U.S. Entity Coordinator, U.S. Army Corps of Engineers (Aug. 16, 2013) [hereinafter CRT Power Group Letter].

89. NORTHWEST POWER AND CONSERVATION COUNCIL, 2012 COLUMBIA RIVER BASIN FISH AND WILDLIFE PROGRAM COSTS REPORT: 12TH ANNUAL REPORT TO THE NORTHWEST GOVERNORS (May 2013), *available at* <http://www.nwcouncil.org/media/6867139/2013-04.pdf>.

90. PROVINCE OF BRITISH COLUMBIA, *supra* note 85; accord PROVINCE OF BRITISH

thinks of Canada as producer and the U.S. as consumer, from the perspective of Paul Samuelson's revealed preference theory,<sup>91</sup> there is some merit to this position: the fact that the U.S. has already chosen among alternative uses of what it buys means it has assigned a value to those non-power and non-flood control uses.

Even if one accepts Samuelson's theory of consumer behavior, however, it is probably apparent that its application to this situation quickly becomes overly simplistic. Namely, the Treaty does not conform to the conditions Samuelson established as necessary for revealed preference to work. The U.S. and Canada are not buyer and seller in a perfectly competitive market, they are two nations who signed a treaty under specific political circumstances in the 1960s and are constrained through at least 2024 by the regime set up in that document. Others who have examined hydroelectric dams on the Columbia in the context of non-power benefits point out, similarly, that there is a critical distinction in cost-benefit methodology between willingness to pay and willingness to accept,<sup>92</sup> a fact that casts more doubt on the notion that the U.S. has already assigned long-term value to non-power, non-flood control benefits of coordinated river flows by choosing to manage the Columbia as it does while paying the Entitlement.

Should, then, the U.S. and Canada attempt to hammer out a new calculation methodology that tries to estimate the value of non-power and flood benefits, acknowledging that payment from such a calculation will likely be substantially lower than the current Entitlement? That is certainly one option and something that U.S. groups most opposed to the current Entitlement calculation—the so-called “Mid-Columbia utilities”—appear willing to accept politically, provided they and their ratepayer customers are not directly saddled with

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COLUMBIA MINISTRY OF ENERGY AND MINES, U.S. BENEFITS FROM THE COLUMBIA RIVER TREATY—PAST, PRESENT, AND FUTURE: A PROVINCE OF BRITISH COLUMBIA PERSPECTIVE (June 25, 2013), available at <http://blog.gov.bc.ca/columbiarivertreaty/files/2012/07/US-Benefits-from-CRT-June-20-13-2.pdf>.

91. Paul Samuelson, *A Note on the Pure Theory of Consumers' Behaviour*, 5 *ECONOMICA* 61 (1938). The theory holds (in brief) that the best measure of a consumer's preference is the consumer's purchasing behavior.

92. Richard O. Zerbe, Jr. and Linda J. Graham, *The Role of Rights in Benefit Cost Methodology: The Example of Salmon and Hydroelectric Dams*, 74 *WASH. L. REV.* 763 (1999).

new environmental mitigation costs.<sup>93</sup> This consortium of Pacific Northwest utilities advocates either termination of the Treaty or an Entitlement based on actual incremental power benefits,<sup>94</sup> including especially the value of that power if sold outside the Pacific Northwest. A similar though less strident criticism of the Entitlement enjoys support from some with fewer direct financial interests in the formula who nonetheless see the present calculation as outmoded:

[A]ctual dam operations are now so heavily determined by non-power considerations, that to determine power benefits as if an entire project operating purpose (not present in 1960) did not now exist is silly. That does not mean the relative values realized by the countries are wrong or must change, just that the method of determining benefits is unrealistic.<sup>95</sup>

If the two countries can negotiate such a calculation, at least in the short run doing so could prove a more seamless transition than going without the Treaty “cold turkey” and risking major disruptions, forecast and unforeseen, to a system upon which so many depend.

But one theme that emerges from much of the literature on the Treaty is the need for a much more flexible mechanism, perhaps suggesting that a reconfigured Entitlement is not the best way to determine how British Columbia should be compensated. Shurts concludes his essay by reflecting on the need for shorter forecast horizons because of uncertainty and flexibility<sup>96</sup> while others discuss uncertainty, resilience<sup>97</sup> and adaptability.<sup>98</sup> Looking more broadly at electricity networks and markets worldwide, “innovation,” one set of scholars remarks, “permeates the entire field.”<sup>99</sup> Indeed, flexibility is

93. CRT Power Group Letter, *supra* note 88.

94. *Id.*

95. Shurts, *supra* note 10, at 223; accord John M. Hyde, *Columbia River Treaty Past and Future*, HYDROVISION 1, 21 (July 2010); accord Tom Karier, *What Needs to Change in the Columbia River Treaty*, SEATTLE TIMES, Aug. 5, 2013, available at [http://seattletimes.com/html/opinion/2021546101\\_tomkarieroped06xml.html](http://seattletimes.com/html/opinion/2021546101_tomkarieroped06xml.html).

96. Shurts, *supra* note 10, at 244.

97. Gregory Hill et al., *Uncertainty, Society and Resilience: A Case Study in the Columbia River Basin*, in THE COLUMBIA RIVER TREATY REVISITED 333.

98. Craig W. Thomas, *The Impact of Institutional Design on the Adaptability of Governing Institutions: Implications for Transboundary River Governance*, in THE COLUMBIA RIVER TREATY REVISITED 398.

99. Martha M. Roggenkamp et al., *The Role of Networks in Changing Energy*

itself a principle advocated by BPA and USACE in their draft treaty recommendation,<sup>100</sup> perhaps a recognition that benefits sharing mechanism needs to be based on something other than just a traditional capital budgeting timeline for a dam.

Some have proposed that flexibility could be facilitated through a transboundary water-management organization similar to the Great Lakes Commission.<sup>101</sup> Others, however, object to the very notion of trying to coordinate ecological management internationally as an unneeded additional layer of coordination and expense.<sup>102</sup>

If one of the problems with the Entitlement calculation is that its distribution of financial costs and benefits differ greatly from those of the market, perhaps one solution is to begin thinking about how to structure a mechanism so that the U.S.-Canada buyer-seller relationship can more closely approximate the market conditions of Samuelson's theory of consumer behavior. Change is something markets (if correctly designed) manage well. It would prove foolish, of course, to try to impose such a model too literally: storage and management of water flow for wildlife protection on the Columbia is not a product that could ever be sold in a perfectly competitive spot market; the product is unique, there is only one buyer and one seller, and the two countries are not rational consumers in an economic model. While without doubt similar and closely linked culturally as well as economically and geographically,<sup>103</sup> the U.S. and Canada are two nations with their own sometimes-idiosyncratic sets of laws and politics that shape attitudes about energy management,<sup>104</sup> not generic rational

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*Markets and the Need for Innovative Solutions*, in ENERGY NETWORKS AND THE LAW: INNOVATIVE SOLUTIONS IN CHANGING MARKETS 436 (Martha M. Roggenkamp et al eds., 2012).

100. U.S. ENTITY, *supra* note 6.

101. Scott McKenzie, *A River Runs Through It: The Future of the Columbia River Treaty, Water Rights, Development, and Climate Change*, 29 GA. ST. U. L. REV. 921, 950 (2013).

102. CRT Power Group Letter, *supra* note 93.

103. See, e.g., Michael D. Behiels and Reginald C. Stuart, *Introduction: Forging a New American Continent; Transnational Theories and Studies*, in TRANSNATIONALISM: CANADA-UNITED STATES HISTORY INTO THE 21ST CENTURY 3 (Michael D. Behiels and Reginald C. Stuart eds., 2010).

104. See, e.g., Eric M. Uslaner, *Energy Policy and Federalism in the U.S. and Canada*, in THE CANADA-UNITED STATES RELATIONSHIP: THE POLITICS OF ENERGY AND ENVIRONMENTAL COORDINATION 41 (Jonathan Lemco ed., 1992).

actors in a market.

Further, one only needs to look to Enron's much-cited gaming of the deregulated California retail electricity market in 2000–2001 to understand that market mechanisms have limitations in a society dependent on electricity.<sup>105</sup> And one should not forget that market integration was made possible not just by liberalization, but also significant government investment in transmission infrastructure, a condition that some argue is essential for any restructured energy market to succeed.<sup>106</sup> Still, attempting to find a model that infuses some principles of a market scenario where buyers and sellers determine the value of goods in real time may help avoid the calcification of assumptions that nettles many under the existing Entitlement calculation. Even setting up the formula for downstream benefits sharing as something which could be revised as often as every few years could help this “market” between the U.S. and Canada better align costs and benefits in both nations.

If there is a new calculation instead of some other mechanism, it needs to incorporate costs of wildlife management, sync payments as closely as possible to an actual rather than hypothetical measurement of the energy transmitted from U.S. dams, and reflect the fact that the value of energy generated on the Columbia changes constantly in a market composed not just of Washington, Oregon and British Columbia but most of western North America. Even a solid, sophisticated approach to reforming the calculation like one proposed in the 1990s will not work if it does not incorporate the impact of energy prices outside the Pacific Northwest and the fact that this large wholesale market enjoys solid legal protections.<sup>107</sup>

Such a solution is admittedly only partially developed and leaves much out. Perhaps most glaringly, the U.S. must still face its long-standing and often heated internal conflict between optimal power generation and optimal fish

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105. Shurts, *supra* note 10, at 213; accord Jim Rossi, REGULATORY BARGAINING AND PUBLIC LAW (2005).

106. Thomas-Olivier Léautier, *Transmission Constraints and Imperfect Markets for Power*, 19 J. REGULATORY ECON. 27 (2001); accord William W. Hogan, *Electricity is a Federal Issue*, WALL ST. J., Aug. 18, 2003.

107. See Lesser, *supra* note 83, at 620.

protection;<sup>108</sup> it seems plain that there is a tradeoff between fish and power and a better downstream benefits system will probably not end the “water wars.” This Comment does not debate how different benefits should be prioritized or what their relative values are but, rather, takes the position that payment to satisfy those environmental requirements needs to be explicitly broken out and constantly reevaluated in order for payments to British Columbia to reflect what is actually driving management of the river. The U.S. should not just calculate flood and power benefits for the Pacific Northwest if what it is really buying is timing of water flows for agricultural use, recreation, navigation, fish protection, and electricity generated on the Columbia and marketed across half a continent.

If there is to be a new treaty and with it something analogous to the Entitlement, the shapers of that new mechanism ought to consider not only new environmental laws but also new realities about how electricity is regulated, managed, and marketed in the U.S. and Canada. Integration and liberalization of western electricity markets in particular helped give the Canadian Entitlement a value very different in financial terms from what drafters of the calculation envisioned. That vast divergence itself lends support to calls for a new Columbia River downstream benefits compensation system that is not only re-balanced for 2013, but flexible and adaptable for future adjustments—a system perhaps built on principles like those underlying the freer and more integrated energy markets which helped sustain and grow the Entitlement’s current value.

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108. See, e.g., Melinda Kassen and Jack E. Williams, *Energy, Water, and the Natural Environment*, in *THE WATER-ENERGY NEXUS IN THE AMERICAN WEST* 18, 27 (Douglas S. Kenney and Robert Wilkinson eds., 2011).