GORDON THOMAS HONEYWELL LLP

M E M O R A N D U M

To: Interested parties
From: James C. Waldo
Date: July 28, 2009
Re: Background Information on the Juan de Fuca Cable Project

This memorandum is intended to provide background information on the proposed Juan de Fuca Cable Project ("JDF Cable" or "Project"). It discusses some potential benefits that could accrue in the Pacific Northwest if the JDF Cable were in place and a potential timeframe. We hope you will find this information useful.

A. Description of Juan de Fuca Cable Project:

The Juan de Fuca Cable is a proposed new 30 mile, 550 megawatt HVDC Light® undersea electric transmission line connecting Port Angeles, Washington, U.S.A. with Victoria, British Columbia, Canada.[1] The line will be capable of conveying power in either direction. The Project has already received the necessary major environmental permits and approvals from both the United States and Canada. The total Project cost, including connection to the existing substations at each end, is estimated at around $350 million.

B. Benefits of Juan de Fuca Cable Project

The Juan de Fuca Cable Project offers a "shovel-ready" means of increasing the available transmission capacity on both sides of the border, improving transmission system reliability, embracing Smart Grid technology, integrating more power from renewable resources, and increasing international trade between Canada and the United States. These benefits primarily derive from the HVDC Light® technology and its ability to enhance regional power transmission by providing an additional connection between the Bonneville Power Administration ("BPA") and British Columbia Transmission Corporation ("BCTC") transmission systems in the Puget Sound and Northern Intertie ("PSANI") region.

1. Capabilities & Value of HVDC Light® Technology

HVDC Light® is state-of-the-art high voltage direct current ("HVDC") transmission technology recognized internationally for its reliability, fast and accurate power control and low environmental impact. There are currently nine HVDC Light® installations worldwide, with an additional four installations currently being developed. By its nature, HVDC Light® technology offers benefits to the functionality of an existing high-voltage alternating current ("HVAC") system in which it is embedded that go well beyond the benefits realized by adding capacity.

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[1] "HVDC Light®" is a proprietary name for a second-generation form of high voltage direct current ("HVDC") power transmission technology.

a. Conventional HVDC transmission systems support overall grid functionality

Conventional high voltage direct current transmission systems embedded within a grid can improve the overall performance of the grid over and above the additional transmission capacity that they provide. For example, modulation of power flows on an HVDC line has the potential to damp power oscillations in parallel HVAC lines, thereby increasing power transfers and system reliability.[2] The precise controllability of HVDC offers advantages when the control of real power is desirable to manage normal or post-contingency flows on the network.[3] Further, it can provide increased transfer capability through direct or indirect regulation of flows across critical transmission paths or provide voltage support to the system.[4] The whole system benefits from HVDC's increased flexibility for scheduling generation to manage congestion.[5] Finally, an HVDC line is not vulnerable to parallel path flow problems,[6] and its capacity is not affected by congestion on parallel AC systems as long as the sending and receiving ends have strong connections to AC systems.[7]

b. HVDC Light® offers additional benefits beyond conventional HVDC

HVDC Light® technology offers additional benefits to routine grid functionality.[8] It can keep voltage stable due to its ability to rapidly control both active and reactive power independently, improving utilization of the AC components of the system.[9] Further, like conventional HVDC, it can improve the transient stability of the AC system by damping power oscillations.[10] Because of its near-instantaneous controllability of phase, amplitude, and frequency parameters, it behaves within the grid like an ideal power generator with a flexible

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[2] Increasing WSCC Power System Performance With Modulation Controls on the Intermountain Power Project HVDC System, D.E. Martin, W.K. Wong, D.L. Dickmander, R.L. Lee, D.J. Melvold ("Martin") at 5, IEEE Transactions on Power Delivery (1992).

[3] Planning Issues for HVDC, M. Henderson, J. Gagnon, D. Bertagnolli ("Henderson") at 28, Power Systems Conference and Exposition, IEEE (2006).

[4] *Id.*

[5] Economic Assessment of HVDC Project in Deregulated Energy Markets, S. Wang, J. Zhu, L. Trinh, J. Pan ("Wang") at 2, Electric Utility Deregulation and Restructuring and Power Technologies Conference, IEEE (2008) ("DRPT 2008").

[6] "Parallel path flows" (also known as "loop flows") are unanticipated flows of power through an interconnected grid due to electricity's property of following the path of least resistance rather than a direct "point-to-point" path from the source to the user. An HVDC line, by contrast, is a true point-to-point link.

[7] Wang at 2.

[8] It is beyond the scope of this memorandum to provide a detailed technical description of HVDC Light® technology, its features, and its performance. Such information may be found on the Internet, e.g., http://www.abb.com/industries/us/9AAC30300394.aspx?country=US.

[9] *Id.*, Power System Stability Benefits With VSC DC-transmission Systems, S.G. Johansson, G. Asplund, E. Jansson, R. Rudervall ("Johansson") at 1, 3, Cigré Session 2004 (2004); Co-ordination of Parallel AC-DC Systems for Optimum Performance, A.D. Castro, R. Ellström, Y.-J. Häfner, C. Liljegren ("Castro"), GSEE Power Delivery Conference, University of Castilla-La Mancha (1999); Investigation on Applying HVDC Light to China Southern Power Grid, Q. Chen, Y. Zhang, Q. Guo, C. Hong ("Chen") at 1, IEEE DRPT 2008; Study of HVDC Light for Its Enhancement of AC/DC Interconnected Transmission Systems, Q. Zhong, Y. Zhang, L. Lin, Q. Chen, Z. Wu ("Zhong") at 1, IEEE (2008); The Gotland HVDC Light Project - Experiences from Trial and Commercial Operation, U. Axelsson, A. Holm, C. Liljegren, M. Åberg, K. Eriksson, O. Tollerz ("Axelsson") at 5, CIRED Conference (2001).

[10] Chen at 1; Zhong at 1; Power System Reliability and Transfer Capability Improvement by VSC-HVDC (HVDC Light®); L. Zhang, L. Harnefors, P. Rey ("Zhang") at 4, Regional Meeting on Security and Reliability of Electric Power Systems, Cigré (2007).

working point and no inertia.[11] It helps alleviate bottlenecks in the overall grid by damping oscillations in the voltage flowing through the system and by otherwise supporting system voltage within safe limits; as a result, the capacity of the system can be increased by more than the rating of the HVDC Light® system.[12] Further, HVDC Light® does not require the same connections to AC systems required by conventional HVDC.[13] In short, an HVDC Light® link enhances the capacity and reliability of the AC components of the system in which it is embedded.[14]

c. HVDC Light® offers additional benefits during system emergencies

An embedded HVDC Light® transmission system is a valuable asset during a grid restoration since it will be available almost instantly after the blackout and does not need any short circuit capacity in order to become connected to the grid.[15] An HVDC Light® system has black start capability and can energize transmission lines to establish an initial voltage, facilitating reconnection of other resources.[16]

d. The unique benefits of HVDC Light® systems are particularly applicable to intermittent renewable power

HVDC Light® offers several unique benefits in managing intermittent or variable power, as is commonly found with some renewable energy sources such as wind power. Its inherent smoothing capability provides a means for conditioning such power and integrating it with the AC grid.[17] Its black start capability allows it to be started up from a de-energized state, as would occur at a wind farm after a calm period.[18] Finally, its ability to function as a "virtual generator" allows it to draw on other resources (such as thermal generation plants) to firm up power from intermittent generation sources.

e. Environmental & Homeland Security benefits of HVDC Light®

HVDC Light® transmission technology offers numerous environmental benefits, especially when the cable is buried or laid underwater.[19] These include its smaller footprint, thus need

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[11] Zhang at 2.

[12] Johansson.

[13] *Cf.* Wang at 2.

[14] AC Grid with Embedded VSC-HVDC for Secure and Efficient Power Delivery, J. Pan, R. Nuqui, K. Srivastava, T. Jonsson, P. Holmberg, Y.-J. Häfner ("Pan") at 4, presented at IEEE Energy 2030, IEEE (2008); *see also* HVDC Light® System Interaction Tutorial at http://www.abb.com/cawp/GAD02181/C1256D71001E0037C1256D08002E7282.aspx.

[15] Johansson at 8; Cross Sound Cable Project - Second Generation VSC Technology for HVDC, B.D. Railing, J.J. Miller, Pl Steckley, G. Moreau, P. Bard, L. Ronström, J. Lindberg ("Railing") at § 5.1, Session 2004, Cigré (2004); HVDC with Voltage Source Converters - a Powerful Standby Black Start Facility, Y.-J. Häfner, H. Duchen, M. Karlsson, L. Ronstrom, B. Abrahamsson ("Häfner"), IEEE PES T&D Conference (2008).

[16] Johansson at 8; Häfner.

[17] Castro; Axelsson.

[18] The Future Is Now: Linking up the World's Largest Offshore Wind-farm Area with HVDC Transmission, J. Kreusel, ABB Review, accessed on July 15, 2009 at http://search.abb.com/library/Download.aspx?DocumentID=9AKK104295D3404&LanguageCode=en&DocumentPartID=&Action=Launch&content=external.

[19] Light and Invisible - Underground Transmission Technology with HVDC Light, D. Ravemark, B. Normark, ABB Review 4:2005, accessed on July 15, 2009 at

for a narrower right-of-way; the absence of noise emissions; negligible electromagnetic fields; and reduced material consumption.[20] These attributes typically make it easier to gain environmental approvals and community acceptance.[21]

In addition, HVDC Light® transmission lines offer significant homeland security benefits. By their very nature buried and submarine cables are less accessible to damage from deliberate sabotage when compared to overhead transmission systems. Further, this Project would provide a transmission pathway in case parallel overhead lines are damaged, whether deliberately or accidently.

2. Benefits to PSANI Region

Experience on a similar cable project in New York has demonstrated that the addition of an HVDC Light® transmission line had significant benefits to that region. Similar benefits should occur on the BPA transmission system in the PSANI region. These potential benefits stem from several factors: general challenges facing the existing grid; the obligation to meet Treaty requirements with Canada; upgrading the Olympic Peninsula system; the impacts of transmission constraints undertaken by Puget Sound entities to maintain reliability and/or avoid curtailments in general; and increased access by regional entities to the Alberta power market.

a. Potential to significantly help improve the existing transmission system with an already permitted project

Much of the existing transmission infrastructure in the Pacific Northwest was built approximately 50 years ago. The current grid, especially in the PSANI area, is a patchwork of segments built by different entities at different times and with different objectives. While ongoing upgrades and reinforcements have made it possible for the grid to generally keep pace with regional needs, reports indicate that transmission paths in the greater PSANI region are chronically congested and the situation is only expected to get worse.[22] There are apparently many reasons, but a partial 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 renewable energy;

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http://search.abb.com/library/Download.aspx?DocumentID=9AKK100580A2085&LanguageCode=en&DocumentPartID=&Action=Launch&IncludeExternalPublicLimited=True.

[20] *Id.*

[21] *Id.*

[22] Challenge for the Northwest: Protecting and Managing an Increasingly Congested Transmission System, BPA, April 2006 ("BPA Congestion White Paper") at 1-2, accessed on June 11, 2009 at http://www.bpa.gov/corporate/pubs/Congestion_White_Paper_April06.pdf; National Electric Transmission Congestion Study, U.S. Dept. of Energy, August 2006 ("DOE Congestion Study") at 31-35; 2006 Annual Report at 13, 15-16, BPA, accessed on June 11, 2009 at http://www.bpa.gov/corporate/Finance/a_report/06/AR2006.pdf.

- treaty-mandated deliveries of power to British Columbia; and
- the transmission of energy through the region to markets outside the region.[23]

Adding transmission capacity is one way to reduce this congestion, however, in most areas it will be a challenge to permit and build any new above-ground transmission lines in the Puget Sound region. Local interests find overhead transmission lines an easy target when mobilizing public opposition and political pressure. Complying with environmental laws and regulations to apply for and obtain the necessary permits, with the attendant studies and reviews, is typically a costly and time-consuming process. Some of these challenges may be avoided or lessened if the new line is to be installed within an existing transmission right of way but this cannot be assumed. Further, the applicant is vulnerable to appeals and litigation at many points throughout the application process. As a result of all these factors, the costs and time requirements are unpredictable and ultimate success is uncertain.

Constructing the actual infrastructure for an overhead line is also an expensive process. First, a transmission right of way or transmission easement must be purchased unless the line can be installed within an existing transmission right of way. There is also the cost of constructing the transmission system itself. The costs become even higher when considering the full lifecycle of the project. In addition to the one-time-only permitting and construction costs, costs for maintaining the right of way and maintaining and repairing and transmission infrastructure should be integrated over a project's design lifecycle.

By contrast, the proposed JDF Cable would add north-south transmission capacity to the grid, thus easing congestion and enhancing stability. As discussed above, the properties of its HVDC Light® technology enhance its value to overall grid functionality well beyond its nominal transmission capacity. Further, it is already fully permitted as an underground/underwater system, thus avoiding many of the concerns, expense, delays, and uncertainties connected with a proposal for an above-ground transmission system as described above.

b. Potential to help address critical needs on the Olympic Peninsula and Vancouver Island

The transmission system on the Olympic Peninsula has specific needs that could be addressed with the addition of the JDF Cable. BPA's transmission system on the Olympic Peninsula is a radial line north of Shelton with no substantial interconnections back to the grid north of this point (see map). This system could benefit from these improvements; for example, a BPA report notes the need to maintain reliable service in the face of the growing loads on the Peninsula.[24] In addition, a study team for ColumbiaGrid also "identified low voltages and potential violations of voltage stability standards for several contingencies on the Olympic Peninsula ... precipitated by winter load growth."[25] Such instability "could impact a wide area that includes Puget Sound Energy's loads on the Kitsap Peninsula."[26]

[23] BPA Congestion White Paper at 7-10.

[24] 2008 BPA Plan - Draft - Transmission Services, BPA, July 2008 ("2008 BPA Transmission Plan") at 7.

[25] Final Draft - 2009 Biennial Transmission Expansion Plan, Rev. 2, ColumbiaGrid, February 2009 ("ColumbiaGrid Plan") at 17.

[26] *Id.*

During normal winter weather, a line outage anywhere along this line or a breaker failure at Olympia could result in an inability to meet Olympic Peninsula loads.[27]

We recognize that BPA is taking measures to address these vulnerabilities, including plans to reinforce the existing line from Olympia to Shelton and install a new line into Shelton from the Satsop area to improve voltage stability and prevent load loss.[28] In addition, BPA is considering reinforcing its transmission system from Shelton to Port Angeles; pre-planning documents suggest that the timeframe for such reinforcements will be 2013 or beyond.[29] These improvements will greatly improve reliability and system integrity but by themselves will not add substantial capacity, provide an alternative route to deliver power, or generate the revenue that would be provided by the cable connection to British Columbia.

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[27] *See* Olympic Peninsula Study of Non-wires Solutions to the 500kV Transmission Line from Olympia to Shelton and a Transformer Addition at Shelton, Energy and Environmental Economics, Inc. and the BPA Energy Efficiency Group & Transmission Business Line, January 12, 2004, accessed on June 11, 2009 at http://www.transmission.bpa.gov/planproj/Non-Wires_Round_Table/NonWireDocs/Olympic_NWS_011204.pdf.

[28] 2008 BPA Transmission Plan at 7-8.

[29] Olympic Peninsula Reinforcement - North of Shelton Analysis ("BPA North of Shelton Analysis") at 9, BPA, accessed on June 17, 2009 at http://www.transmission.bpa.gov/PlanProj/Non-Wires_Round_Table/NonWireDocs/OlympicPeninsulaReinforcementNonWiresPres3-13-06.ppt..

An alternative route providing power into the system from its northern end would help address these needs and provide additional benefits to the system. This is especially valuable since the greatest concentrations of population and industry on the Peninsula are located to the north in the region encompassing Port Angeles and Sequim, communities where population growth and economic development have been concentrated. The availability of an additional, parallel link between southern Puget Sound and British Columbia would provide an alternative pathway to serve loads on the Olympic Peninsula, easing congestion and freeing up transmission capacity on the north-to-south pathways east of Puget Sound and on the east-to-west pathway across the Cascades.[30] The ability to provide electrical capacity and supply power from the north in emergency situations would provide a distinct improvement in the reliability of electrical service to the Olympic Peninsula.

c. Potential to help meet U.S.-Canada treaty obligations

In looking to the future, it is our sense that another challenge to the existing transmission system is the United States' obligation to provide enough capacity to meet treaty obligations while satisfying the needs of domestic customers.

Under a treaty between the United States and Canada,[31] the downstream power benefits of dams in Canada are shared equally between the two countries. The U.S. is obligated to return Canada's portion of the downstream power benefits, or the "Canadian Entitlement," each year. The amount of the Canadian Entitlement is calculated in advance according to the provisions of the Treaty (Article VII and Annex B); the annual Canadian Entitlement is currently around 1200 average MW, with a projected maximum of 1314 average MW in 2012.[32] The U.S. must have available transmission capacity to make this delivery until at least September 15, 2024, the earliest date the Treaty can be terminated.[33]

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. It is our understanding that at this time and by mutual agreement, BPA delivers 11/14 of the Canadian Entitlement to the 500 kV interconnection line between BPA's Custer Substation and BCTC's Ingledow Substation, both near Blaine, Washington. The remaining 3/14 is delivered near Nelway, in eastern British Columbia.[34]

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[30] The ColumbiaGrid study team stated that the JDF Cable would provide "Possible Significant Benefit" (the highest possible ranking) in the "British Columbia to Northwest" transmission path and "Possible Benefit" (the next highest ranking) on the "West of Cascades North" pathway. ColumbiaGrid Plan at 20-21.

[31] "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"), ratified in 1964.

[32] 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.

[33] 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; see also Treaty.

[34] 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.

During the winter, returning the Canadian Entitlement to British Columbia has been identified as the predominant stress on the grid in the PSANI region.[35] The need to remedy congestion due, in part, to Canadian Entitlement deliveries has led to actions to avoid curtailments or, if unavoidable, actual curtailments of service to area utilities.[36] At times, Canadian Entitlement deliveries must be rescheduled or curtailed due to the need to protect transmission service on the U.S. side of the border.[37]

A substantial increase in south-north transmission capacity in the greater PSANI 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 in order to serve the population centers in western BC then a solution that simultaneously meets that goal, reduces system congestion, and meets other needs recognized by both countries, may be deemed to more fully address the parties' needs even if it involves an auxiliary pathway into that substation. Even if such agreement cannot be reached, routing other transmission schedules via an alternative link should help relieve congestion in this corridor.

d. Potential to address impacts of transmission constraints to improve reliability and/or avoid curtailments

It is our sense that implementing measures to control excessive power flows and meet treaty demands include curtailing flows through redispatching generation or rescheduling transmissions.[38] However, there are limitations on the effectiveness of such tools, and they come at a price.[39] For example, BPA may lose sales and transmission revenues and see its customer service levels impaired. At the same time BPA's customers must buy energy from a likely more expensive alternative source or potentially suffer their own lost sales and impaired customer service.

e. Opportunities to earn additional revenues within the BPA service area

To the extent that new capacity offered by the JDF Cable enables additional power transactions there will be new revenues associated with wheeling such power across the existing grid as well as through the JDF Cable. Further, easing congestion will make it easier for power to be sold within the BPA service area, increasing (or at least reducing impediments to) revenues from such transactions.

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[35] ColumbiaGrid Biennial Plan at 57.
[36] BPA Fact Sheet; Utilities' Comments.
[37] White Testimony at 4; BPA Fact Sheet.
[38] BPA Congestion White Paper at 11-15.
[39] BPA Congestion White Paper at 13-17.

f. Access to broader markets and energy sources

Additional transmission capacity in the north-south axis also opens up access to out-of-area power markets. This offers BPA and its customers the potential to purchase power at favorable prices and to offer their own generating capacity to broader markets.

In establishing its business case for a proposed thermal upgrade project on the western leg of the Northern Intertie, the British Columbia Transmission Corporation evaluated the opportunity to sell additional transmission service for US to BC (US-BC) and US to Alberta (US-AB) transfers by investing in increased capacity on this leg. BCTC analyzed historical (August 2003 to August 2007) BCTC queue requests for long-term firm point-to-point ("LTF PTP") service for US-BC and US-AB transfers and found that transmission customers placed 57 requests for a total of 5880 MW of transmission capacity. Of these, approximately two thirds were withdrawn, expired, or were refused due to an inability to provide them with timely service at an acceptable price.

Pending customer requests that remain in BCTC's transmission queue for LTF PTP service indicate market interest in additional capacity for US-BC and US-AB transfers. As of July 31, 2007, queued customer requests for pending south-to-north transfers on this intertie totalled 1,350 MW, comprised of seventeen requests for either imports to BC (400 MW) or wheel-through to Alberta (900 MW). The weighted average term of these requests was 4.5 years.

These analyses only examine south to north transfers, not north to south. Nonetheless they demonstrate BCTC's conviction that there is pent-up demand for additional transmission capacity on this axis, justifying an investment in expanding such capacity. Presumably this also generally represents the pent-up demand for transmissions in the other direction.

Note that BCTC's analyses only considered revenues from transmission tariffs, not from sales of power. Regardless, the transmission volumes considered here also represent potential income to power providers from sales of their power.

As additional renewable energy resources are developed throughout the Western United States and Canada, enhancing access to such resources will be increasingly important. As noted above, HVDC Light® "virtual generation" capabilities can help firm up power flow by matching controllable generation resources to intermittent generation sources. In addition, a geographic benefit results from having access to a variety of intermittent sources since such resources may become available on different schedules (e.g., wind power from E. Washington vs. wind power from BC coast), thus allowing renewable sources to firm up each other. Finally, the availability of increased capacity facilitates the purchase of renewable energy in more markets.

g. Summary of opportunities presented by proposed JDF Cable

In sum, the Juan de Fuca Cable offers a variety of benefits for the PSANI Region. Of significant importance is adding regional transmission capacity: providing any additional north-south transmission capacity via an additional, parallel link between southern Puget Sound and British Columbia will help improve reliability and increase capacity within the PSANI area in general. This Project will also offer specific capacity and reliability benefits to the Olympic Peninsula and will help BPA more readily fulfill the Canadian Entitlement requirements while maintaining service to BPA's customers. In addition, the HVDC Light®

technology offers the potential to enhance the grid's robustness, capacity, and ability to recover quickly from outages. Such benefits have been realized elsewhere; for example, the Neptune submarine power cable between Connecticut and New York.[40] Revenues from increased power sales and transmission tariffs will grow accordingly, and the region will gain enhanced access to outside markets and sources of renewable energy.[41]

C. Status of JDF Cable Project

The JDF Cable Project has received its major environmental permits from both the U.S. and Canada and is currently in a pre-construction phase. These permits include the following:

- June 2009: Issuance of the 'Navigable Waters Permit' from Transport Canada to facilitate construction of the JDF Project.
- May 2009: Completion of the British Columbia Transmission Corporation ("BCTC") Combined Interconnection Impact and Facility Study, a prerequisite to being able to connect to the BCTC system. This study also concluded that no upgrades to the Canadian terrestrial infrastructure for the JDF Cable to be connected under the conditions modeled.
- October 2008: The U.S. Army Corps of Engineers and the Washington State Department of Ecology issued permits authorizing the installation of the JDF Project and certifying that the Project's construction will comply with water quality and pollution guidelines.
- June 12, 2008: Issuance of the Presidential Permit, a requirement for the international movement of electricity. The Presidential Permit is the American counterpart to the Canadian National Energy Board's Certificate of Public Convenience and Necessity, which was granted in September of 2006.
- June 10, 2008: The Bonneville Power Administration and the U.S. Department of Energy's Office of Electricity Delivery and Energy Reliability approved the final Environmental Impact Statement for the JDF Project, thus satisfying the most significant component of the U.S. environmental review process.

At this time, Sea Breeze is finalizing negotiations for a contractor for engineering, procurement, and construction. In addition, Sea Breeze is pursuing contracts to enable financing, coordinating with authorities in the USA and Canada to ensure all commitments are met, completing a cost update, and working through pre-construction requirements including local permits and construction plans.

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[40] The Neptune submarine HVDC cable connecting the grid on Long Island, New York, with Connecticut has made it possible for the New York Independent System Operator to reduce the statewide installed margin reserve of generation capacity despite the state's growing reliance on wind generation, which tends to impair reliability. 2007-2008 Biennial Report, New York State Reliability Council, accessed on July 20, 2009 at http://www.nysrc.org/pdf/Reports/2007-08%20Biennial%20Report%2004-02-09%20final.pdf; New York Control Area Installed Capacity Requirements for the Period May 2008 through April 2009, New York State Reliability Council, LLC, accessed on July 20, 2009 at http://www.nysrc.org/pdf/Reports/Final%202008%20IRM%20Report%2012-14-07%20_2_.pdf.

[41] A recent report by the Idaho National Laboratory estimated that the economic loss to the region if the JDF Cable does not get built will amount to $222,480,000,000 over the lifespan of the project, and 177,000 jobs. The Cost of Not Building Transmission: Economic Impact of Proposed Transmission Line Projects for the Pacific NorthWest Economic Region, INL/EXT-08-14264, Revision 1, Idaho National Laboratory (2008).

Sea Breeze has established a sound relationship with ABB, the manufacturer of the HVDC Light® technology. Sea Breeze is still in negotiations concerning costs and timeframe, but a range of between 18 and 25 months between green light and completion seems reasonable.

Sea Breeze has also been concurrently working with local interests, including local Public Utility Districts and other municipal entities, Indian Tribes and First Nations, and others to explore opportunities for collaboration.

E. Conclusion

If you would like to learn more about this important and exciting project you can contact the Paul Manson or Rod Lenfest at:

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