

ADMINISTRATOR'S DRAFT RECORD OF DECISION ON ENVIRONMENTAL REDISPATCH AND NEGATIVE PRICING POLICY

February 18, 2011

I. INTRODUCTION

The purpose of this Draft Record of Decision (ROD) is to provide interested stakeholders with the opportunity to comment on the Bonneville Power Administration's (BPA) proposed policy decisions to adopt an Environmental Redispatch protocol and to not pay negative prices to sell surplus power of the Federal Columbia River Power System (FCRPS) when such protocol is in effect. The Environmental Redispatch protocol is designed to ensure BPA's compliance with Clean Water Act (CWA) and Endangered Species Act (ESA) obligations, as well as BPA's obligations under the Pacific Northwest Electric Power Planning and Conservation Act (NWPAA), under specific hydro and load conditions, and after all practicable mitigating measures have been implemented. When these conditions exist, BPA proposes to replace scheduled generation in BPA's Balancing Authority Area with Federal hydropower at no cost. BPA also proposes to not pay negative energy prices to maintain compliance with environmental and statutory requirements.

II. BACKGROUND

In June 2010, the BPA Balancing Authority Area faced a temporary oversupply of generation due to surging spring runoff on the FCRPS and high winds. The generation levels in the BPA Balancing Authority Area exceeded its load and export commitments. Excess generation in relation to loads and exports creates high frequency, which, if unmitigated, could negatively impact power system reliability. These conditions also led to a lack of demand for federal hydropower even at zero cost and threatened to create

water conditions in the Columbia River dangerous to fish and in violation of BPA's CWA and ESA obligations.

A. Evolution of the FCRPS and Federal Columbia River Transmission System (FCRTS)

BPA was established pursuant to the Bonneville Project Act of 1937¹ to dispose of electric energy generated in the operation of the Bonneville Project located in the States of Washington and Oregon. The project was constructed and operated by the U.S. Army Corps of Engineers (Corps). The BPA Administrator's authority to market power was expanded over the years as other Federal dams were built throughout the Pacific Northwest by the Corps and Bureau of Reclamation (Bureau).² These power generation facilities, and the transmission lines built by BPA to move the power, generally became known as the FCRPS.³

With the passage of the 1974 Federal Columbia River Transmission System Act (Transmission System Act)⁴, the Administrator was, with minor exceptions, "designated as the marketing agent for all electric power generated by Federal generating plants in the Pacific Northwest" constructed by the Corps and the Bureau.⁵ Many of the generating plants are part of "multiple-purpose" projects, meaning the projects serve multiple purposes such as power production, navigation, recreation, flood control, irrigation, and

¹ 16 U.S.C. § 832 (2009).

² See, e.g., The Flood Control Act of 1944, 16 U.S.C. § 825s; Executive Order 8526, 5 Fed. Reg. 3390 (1940); see also Aluminum Co. of Am. v. Central Lincoln Peoples' Util. Dist., 467 U.S. 380, 386 n.5 (1984); U.S. Dep't of Energy, Bonneville Power Admin., 29 FERC ¶ 63,039, at 65,122 (Nov. 27, 1984).

³ See, e.g., H.R. Rep. No. 976, 96th Cong., 2d Sess., pt. 2, at 26; 16 U.S.C. § 839a(10)(A).

⁴ 16 U.S.C. § 838-838k (2009).

⁵ Id. § 838f.

other miscellaneous purposes.⁶ The Transmission System Act placed BPA on a "self-financing" basis, which removed BPA from the Congressional appropriations process for financing. As such, BPA funds its operations through revenues and borrowing authority granted to it under the Transmission System Act. Today, BPA markets power generated at thirty Federal hydroelectric projects in the Pacific Northwest, and several non-Federal projects.⁷

The Federal Columbia River Transmission System (FCRTS) was developed simultaneously with hydroelectric development. BPA transmission lines were originally built to interconnect federal generating resources and move the generation to the load areas. Over time, BPA transmission lines were also used to transmit power generated by non-federal resources. The capability of the transmission system is tied to generation levels, especially at the critical hydroelectric projects along the Lower Columbia and Lower Snake Rivers.

Integrated operation of the power and transmission facilities is reflected in the various statutory directions to the Administrator that transmission service is to be made available to third parties if BPA transmission "is not required for the transmission of Federal energy;"⁸ is in "excess of the capacity required to transmit electric power generated or

⁶ See, e.g., Bonneville Project Act, 16 U.S.C. § 832 (2009); 43 U.S.C. § 485h(a)-(b) (2009); Federal Water Project Recreation Act, 16 U.S.C. §§ 4601-12, 4601-13, 4601-18 (2009); Flood Control Act of 1962, Pub. L. No. 87-874, § 203, 76 Stat. 1180 (1962); Flood Control Act of 1950, Pub. L. No. 81-516, § 204, 64 Stat. 170 (1950); Rivers and Harbors, Improvements Act, Pub. L. No. 79-14, 59 Stat. 10 (1945); Columbia Basin Project Act, 16 U.S.C. § 8351; H.R. Rep. No. 80-1507, at 2 (1948).

⁷ See Ass'n of Pub. Agency Customers v. Bonneville Power Admin., 126 F.3d 1158, 1163 (9th Cir. 1997) [hereinafter APAC].

⁸ 16 U.S.C. § 837e. The priority is "to the needs of the Government." H. R. Rep. No. 93-1375 at 56 (Sept. 25 1974).

acquired by the United States;”⁹ “is not in conflict with the Administrator’s other marketing obligations;”¹⁰ and can be provided “without substantial interference with his power marketing program.”¹¹ The inter-related nature of generation and transmission is elsewhere recognized throughout BPA’s organic statutes when it comes to finances, cash management and cost recovery.¹²

BPA’s marketing directives are diverse and often competing. BPA is, for example, required to establish rates to assure timely repayment to the U.S. Treasury, while keeping rates as low as possible consistent with sound business principles.¹³ At the same time, BPA must act to protect, mitigate, and enhance fish and wildlife, including spawning grounds and habitat, of the Columbia River and its tributaries.¹⁴ The Administrator and other Federal agencies responsible for managing, operating, or regulating hydroelectric projects on the Columbia River and its tributaries must exercise their responsibilities “in a manner that provides equitable treatment for such fish and wildlife with the other purposes for which such system and facilities are managed and operated.”¹⁵ The Administrator and Federal water managers must also take the Pacific Northwest Electric Power Planning and Conservation Council’s (Council) Fish and Wildlife Program (the

⁹ 16 U.S.C. § 838d.

¹⁰ Id. § 839f(i)(1)(B).

¹¹ Id. § 839f(i)(3).

¹² See, e.g., Federal Columbia River Transmission System Act, 16 U.S.C. § 838(a); 16 U.S.C. §§ 838i(a), 838i(b)(12); Id. § 838k(b), as amended, Pub. L. 96-501, § 8(c), (d), 94 Stat. 2728 (1980); Bonneville Power Administration Financing, 1974: Hearings on S. 3362 Before the Subcomm. on Water and Power Resources, 93rd Cong., 2d Sess. 121-122 (1974).

¹³ See, e.g., 16 U.S.C. § 838g.

¹⁴ 16 U.S.C. § 839(6).

¹⁵ Id. § 839b(h)(11)(A)(i). BPA provides equitable treatment to fish and wildlife by undertaking mitigation measures on a system-wide basis as described in greater detail in Northwest Environmental Defense Center v. Bonneville Power Admin., 117 F. 3d 1520, 1532-34 (9th Cir. 1997). In other contexts, the Ninth Circuit Court of Appeals has determined that BPA has authority to protect fish and wildlife by imposing restrictions on transmission access. California Energy Res. Conservation and Dev. Comm’n v. Bonneville Power Admin., 831 F.2d 1467, 1477-78 (9th Cir. 1987), cert denied, 488 U.S. 818 (1988).

program)¹⁶ “into account . . . to the fullest extent practicable” at each relevant stage of decision making.¹⁷

As indicated earlier, the Administrator is to make available transmission service to third parties once BPA’s needs have been met. The Federal Energy Regulatory Commission (Commission), starting in 1996, has issued several major orders designed to encourage competition and discourage public utilities that own, operate or control interstate transmission facilities from using them in a manner that favors the transmission provider’s power merchant function over other power suppliers.¹⁸ A key feature of this initiative has been the establishment of Open Access Transmission Tariffs (OATT) providing for transmission services that meet the Federal Power Act’s just and

¹⁶ The program, by statute, consists of “measures to protect, mitigate, and enhance fish and wildlife affected by the development, operation, and management of [hydroelectric facilities on the Columbia River and its tributaries] while assuring the Pacific Northwest an adequate, efficient, economical, and reliable power supply.” 16 U.S.C. § 839b(h)(5). Congress directed the Council to include in the program measures that would “provide flows of sufficient quality and quantity between [the dams] to improve production, migration, and survival of such fish. . . .” *Id.* § 839b(h)(6)(E)(ii).

¹⁷ *Id.* § 839b(h)(11)(A)(ii).

¹⁸ Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities, Order No. 888, FERC Stats. & Regs. [Regs. Preambles 1991-1996] ¶ 31,036 (1996), Order No. 888-A, on reh’g, III FERC Stats. & Regs. [Regs. Preambles] ¶ 31,048 (1997), Order No. 888-B, on reh’g, 81 FERC ¶ 61,248 (1997), Order No. 888-C, on reh’g, 82 FERC ¶ 61,046 (1998), aff’d in part and remanded in part sub nom., Transmission Access Policy Study Group, et al. v. FERC, 225 F.3d 667 (D.C. Cir. 2000), cert. denied, Board of Water, Light & Sinking Fund Comm’rs v. FERC, 121 S.Ct. 1188, cert. granted, New York v. FERC, , cert. granted, Enron Power Mktg., Inc. v. FERC, 69 U.S.L.W. 3574, 2001 D.A.R. 1983 (U.S. Feb. 26, 2001): Open Access Same-Time Information System (formerly Real-Time Information Networks) and Standards of Conduct, Order No. 889, FERC Stats. & Regs. [Regs. Preamble 1991–1996] ¶ 31,035 (1996), order clarified, 76 FERC ¶ 61,009 (1996), order aff’d in part, remanded in part, Transmission Access Policy Study Group v. FERC, 225 F.3d 667 (D.C.Cir. 2000), cert. granted in part, New York v. FERC, 69 U.S.L.W. 3281 (U.S. Feb. 26, 2001), cert. granted, Enron Power Marketing, Inc. v. FERC., 69 U.S.L.W. 3382 (U.S.Dist.Col. Feb. 26, 2001), cert. denied, Board of Water, Light and Sinking Fund Comm’rs of the City of Dalton, Georgia v. FERC, 69 U.S.L.W. 3382 (U.S. Feb 26, 2001): Regional Transmission Organizations, Order No. 2000, FERC Stats. & Regs. [Regs. Preamble] ¶ 31,089 (2000), on reh’g, FERC Stats. and Regs. ¶ 31,092, 90 FERC ¶61,201 (2000), cert. denied, Public Utility District No. 1 of Snohomish County, Washington v. FERC, 272 F.3d 607 (D.C. Cir. 2001); Preventing Undue Discrimination and Preference in Transmission Service, Order No. 890, FERC Stats. & Regs. ¶ 31,241 (2007) , order on reh’g, Order No. 890-A, FERC Stats. & Regs. ¶ 31,261 (2007), order on reh’g, Order No. 890-B, 123 FERC ¶ 61,299 (2008), order on reh’g, Order No. 890-C, 126 FERC ¶ 61,228, order on clarification, Order No. 890-D, 129 FERC ¶ 61,126 (2009).

reasonable, and not unduly discriminatory standard applicable to public utilities.¹⁹ While BPA has historically provided transmission access to others and is not a public utility, as a matter of policy in 1996, it adopted an OATT hewing closely to FERC's OATT, but with changes designed to meet BPA's and the region's needs and practices.²⁰ At the time that BPA first adopted the OATT, and for some time thereafter, wind resources were practically non-existent in the Northwest.

As discussed later, there has been a dramatic surge of wind generation in the Northwest in recent years, and the amount of wind generation is expected to double beyond that in the next several years. This has occurred as a consequence of a number of factors, including BPA's decision to adopt an OATT and other related policy decisions that have aided the development of wind generation in BPA's Balancing Authority Area. Until recently, it appeared that BPA could continue to provide transmission service to wind and other generation without undue impact on its fiscal, fish and wildlife, and other

¹⁹ See, e.g., Federal Power Act, 16 USC 824e(a).

²⁰ These tariffs apply transmission terms and conditions to all transmission users on a comparable, non-discriminatory basis. As noted in the 1996 Final Transmission Terms and Conditions Proposal, Administrator's Record of Decision, at 5:

Similarly, the Public Generating Pool (PGP) stated

Comparability is a critical issue for all BPA customers who purchase transmission services from BPA. Much of the transmission terms and conditions testimony by PGP and others has focused on whether BPA's proposal meets comparability requirements. . . . The proposed NT and PTP tariffs, as modified by the settlement, are a realistic approach to the needs of BPA in operating the Federal Transmission System while maximizing the customers' ability to use the system. PGP believes that the proposed tariffs contain terms and conditions which are generally consistent with FERC's pro forma tariffs. They appropriately balance the obligation to substantially conform to the pro forma tariffs with the specific needs of BPA's customers in the Northwest. PGP believes that NT and PTP tariffs under the Settlement Agreements are equal to or better than the FERC pro forma tariffs when considered in light of the particularities of the Northwest hydro system and the historical usage of the Federal Transmission System.

PGP Brief, WP-96-B-PG-01/TC-96-B-PG-01, at 5-6.

responsibilities. As discussed in the next section, recent events and the expected growth in wind generation have revealed the need for BPA to take action in order to continue to meet its environmental and statutory responsibilities.

B. The June 2010 Events

As stated previously, the hydroelectric projects comprising the FCRPS are operated for multiple public purposes, including flood control, irrigation, power production, navigation, recreation, and municipal water supply. The system is also operated to protect the river's fish, including salmon, steelhead, sturgeon, bull trout, and other listed species under the ESA. Flow augmentation requirements to protect listed species under the ESA have dramatically changed the way the reservoirs are managed, generally reducing storage space in reservoirs and leaving less flexibility to manage flows over time for power production. High flows in the Columbia River system can create conditions where water can no longer be stored or spilled, and must be run through FCRPS generators in order to maintain compliance with BPA's environmental obligations. High flows in the Columbia River system are not rare; there is a one-in-three chance of flows at least as high as those of early June 2010 occurring in any year and lasting for one month or more. High flows are more likely to occur in Spring runoff periods, when the winter snow begins to melt, increasing river flows.

When water is spilled over a spillway at a dam, it creates bubbles of air in the water. As the water plunges into the deep pool at the base of the dam, the air bubbles carried to a certain depth are subjected to hydrostatic pressure that forces them to dissolve into the water. The amount of Total Dissolved Gas (TDG) created increases with water

temperature, spill volumes, and spillway plunge depth. Because dam operators exercise some control over how much water passes through the facility, and by which pathway (generator, spillway, removable spillway weir, or other bypass route), which in turn affects the level of TDG in the river, dam operators are held responsible by water quality regulatory agencies for ensuring that TDG supersaturation²¹ levels are held within the prescribed legal limits. Currently, during fish passage season (April through August), some level of spill is considered an important passage route for threatened and endangered juvenile salmonids, and waivers are provided by the states to allow TDG limitations up to 120% supersaturation levels in the river stretch just below each dam.²²

TDG is a serious concern in the Columbia River because excess TDG threatens the health of aquatic life, and salmonids in particular. This is especially true as levels rise above 120%. Excess gas produces a class of physiological problems known as gas bubble trauma that in more extreme cases are fatal to fish. Although the purpose of the TDG water quality standards is to protect federally listed endangered species (as well as other non-listed fish species), because TDG is considered a “water quality” parameter, it is regulated under the CWA and under state water quality laws. The primary regulators for TDG for the FCRPS mainstem dams are the states of Washington and Oregon and, for a portion of the upper Columbia, the Colville Tribe. Given that the overlapping purpose of

²¹ TDG levels above 100% are considered “supersaturation” levels.

²² In Washington, there is also a limitation that applies to forebay monitors of 115% supersaturation levels. Outside of the April to August fish passage season, all TDG limits are set at 110% supersaturation.

the CWA and ESA is to protect fish, the issue of TDG is also addressed in the FCRPS biological opinion (BiOp).²³

Many structural changes have been made at FCRPS dams to lower the TDG levels created by spill. These changes consist of spillway flow deflectors²⁴ at every FCRPS project included in the FCRPS BiOp, with the exception of The Dalles.²⁵ Based upon preliminary information, the United States Army Corps of Engineers (Corps) and BPA have collectively spent approximately \$107 million on the design, construction, and operation for spillway flow deflectors on the Snake River and mainstem Columbia River projects to help alleviate TDG conditions in the rivers.

As stated above, dam operators exercise some control over which path the water takes through the dams, and moving the water through generators rather than over the spillways reduces the TDG level. However, water cannot be run through generators unless there is load for the energy produced to serve. Since the 1970s, BPA and other Northwest hydro producers have routinely sold surplus power produced during times of high flows at very low rates to utilities in the Northwest and California to encourage operators of coal, oil, natural gas, and other power plants to reduce the output of their plants and replace it with surplus hydropower when available.

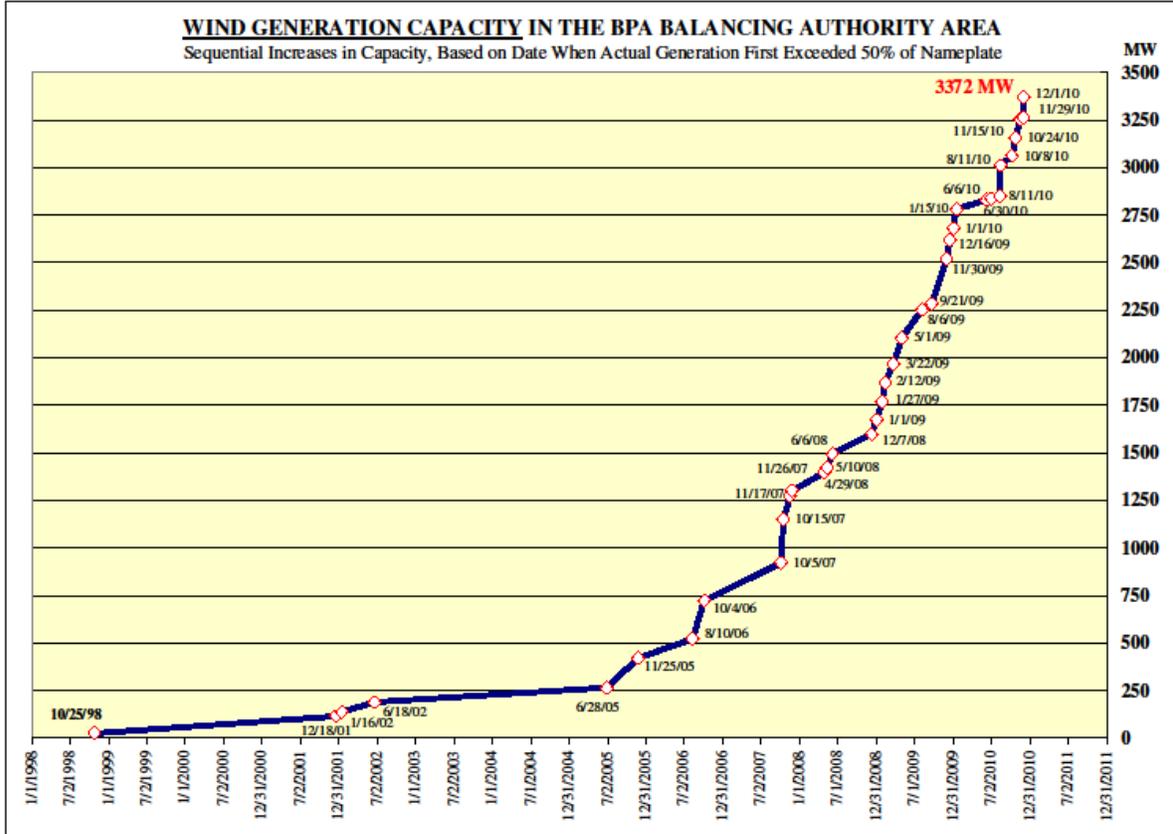
²³ BPA must follow BiOp provisions except in cases of a system emergency. In National Wildlife Fed., et al v. National Marine Fisheries Serv., et al, the court stated that compliance with the BiOp and ESA was “not optional” and that protection of threatened and endangered species must come before other needs. No. CV 01-640-RE, 2007 WL 1541730 at *2 (D. Or. May 23, 2007).

²⁴ Flow deflectors are structural devices that redirect water as it comes over the spillway of a dam in a manner that reduces the depth the water plunges into the pool below, helping to reduce the TDG levels.

²⁵ At the Dalles, flow deflectors were not considered practical. Other structural modifications, however, including a fish training wall, have been constructed to help improve juvenile fish survival.

Over the years, a number of factors have made it increasingly difficult to manage high flows. In the 1990s, the wholesale power market was deregulated. In this environment, load and resource balance is no longer managed by utilities alone. Rather, generation may be developed by private parties independent of load requirements and sold outside the balancing authority where the generation resides. In the end, the source balancing authority is left to deal with the balancing of loads and resources using the resources available to the balancing authority, such as the FCRPS. In addition, as previously explained, environmental requirements have resulted in higher flows. Despite these difficulties, BPA has been able to successfully manage these factors and maintain compliance with all environmental and statutory requirements.

In recent years, however, nearly 3,400 megawatts of wind power generation has connected to BPA's transmission grid in the Columbia River Basin, adding highly variable renewable generation to the hydro base of the Columbia River system. The amount of wind generation interconnected to BPA's transmission grid is expected to double in the next few years. The majority of this wind generation is exported out of BPA's Balancing Authority Area and the wind generation operates independently of load demand, increasing the likelihood of overgeneration conditions. The following graph illustrates the recent growth of wind generation in BPA's Balancing Authority Area:



WIND_InstalledCapacity_current.xls 1/28/2011

Not only has the rapid increase in wind power in the Northwest increased the Northwest power system’s maximum generation output significantly, but it also requires provision of balancing reserve capacity to the wind generators to compensate for within-hour movement and forecast error. Providing this capacity now consumes a significant portion of the operating flexibility of the FCRPS. Maintaining balancing reserve capacity as overgeneration conditions materialize reduces BPA’s ability to manage such conditions.

In order to maintain system reliability, BPA must use the FCRPS as a backstop for variations in the amount of generation and load that occur during an operating hour compared to the hourly schedule provided by the generators and load in BPA's Balancing Authority Area prior to the operating hour. Almost all loads and generators have some amount of variation between their actual hourly energy used or output provided and the amount scheduled prior to the operating hour. As the balancing authority, BPA is responsible for maintaining the balance between overall generation and load required to maintain a reliable system. Because the actual output of wind generation varies from the scheduled amount more frequently and in greater magnitude than loads or traditional thermal generators, BPA has had to significantly increase the amount of capacity it maintains for meeting its reliability obligations as the amount of wind generation interconnected to the system has increased.

This capacity is provided in the form of either incremental (inc) balancing reserves or decremental (dec) balancing reserves. To provide inc balancing reserves, BPA must operate the FCRPS to ensure that enough flows are available to run FCRPS generation to meet drops in the output of the wind generation fleet below the hourly schedule submitted before the operating hour. To provide dec balancing reserves, BPA must operate the FCRPS to ensure that water can be spilled or stored in order to decrease FCRPS generation to account for sudden wind generation ramps where the amount of power produced by the wind generation fleet increases above the hourly schedule submitted before the operating hour. Reservation of this capacity affects BPA's operation of the FCRPS.

The amount of reserves that BPA holds is partially a function of the hourly scheduling timeframe. BPA is participating in regional efforts to expand intra-hour scheduling and also has a number of internal initiatives underway to allow for more flexible means for scheduling energy. To the extent these efforts successfully help accommodate the variability of wind generation, BPA hopes to be able to partially reduce reserve amounts. With the expected growth of wind generation, however, BPA will still be required to increase the amount of reserves it must carry in the future. As a result, while intra-hour scheduling may help reduce reserves in the near term, it will not solve the over generation condition itself since the region will still face more on-line generation than there is load to absorb it.

The events of early June 2010 illustrate how the increase in wind generation has influenced the ability to manage high flows on the Columbia River.²⁶ After a dry winter, spring 2010 river flows were expected to stay fairly low. Throughout April and May, FCRPS operation focused on providing enough river flow and spill to meet objectives designed to protect endangered juvenile salmon migrating to the Pacific and on refilling reservoirs in Idaho, Montana and Washington by July. In early June, however, a strong Pacific jet stream brought storm systems with heavy precipitation and which produced flooding in some areas. Snake River streamflows nearly tripled, and Columbia River streamflows nearly doubled. The resulting flows were more than adequate to meet flow

²⁶ BPA released a report detailing the events that occurred in June 2010 and the steps BPA took to mitigate the situation. The report is available at: <http://www.bpa.gov/corporate/AgencyTopics/ColumbiaRiverHighWaterMgmt/>.

and spill objectives for fish passage. Operators' focus shifted to developing strategies and modifying operations to reduce excess spill and keep TDG at levels safe for fish.

BPA worked with the Corps, Bureau of Reclamation and Northwest and California utilities to reduce spill and move spill away from the fish passage routes on the Columbia and Snake rivers. The following is a list of the operational steps taken to reduce excess spill:

- Reduced generation of the Columbia Generating Station nuclear plant to the lowest level possible without risking its ability to return to full power.
- Cancelled or delayed non-essential generating unit outages and transmission control maintenance.
- Arranged to use 2 feet of flood control space at John Day Dam to reduce involuntary spill and prevent lower Columbia flooding.
- Shaped Hungry Horse and Dworshak dams' generation as much as possible into heavy load hours.
- Coordinated a 5 kcfs reduction at Arrow Dam with B.C. Hydro.
- Reduced flows at Albeni Falls Dam as much as possible.
- Reduced decremental wind balancing reserves.
- BPA Power and Transmission coordination resulted in generation being moved around the system to minimize capacity reduction on intertie lines to California while maintaining transmission reliability.
- Disposed of over 73,000 MWh at zero cost for the month of June.

Operationally, there was very little else that could have been done to reduce excess spill and manage system TDG levels. Notably, BPA was not able to find sufficient load for turbines to avoid spill and incurred 745,000 megawatt-hours or about 1,000 average megawatts of spill for lack of load in June. BPA nearly reached TDG levels of 120% supersaturation with this amount of spill.

During this time, most Northwest thermal generation shut down or reduced to minimum operating levels. These generation owners obtained low-cost or free Federal hydropower to replace thermal generation. However, due to differing economic considerations, the roughly 3,000 megawatts of wind power projects located in BPA's Balancing Authority Area did not respond to the availability of free Federal hydropower. Wind power output ranged from zero to nearly full output, depending on wind conditions. To help ensure BPA could meet its environmental obligations, BPA reduced dec balancing reserve capacity because water storage capacity was at its maximum, and spilling was not an option because it would have exacerbated TDG levels. With reduced dec balancing reserves, wind generators that are generating more than scheduled are more likely to be required to reduce generation in order to stay closer to the scheduled amount of generation. Even with this reduction, BPA delivered all wind power that was scheduled and produced, while maintaining compliance with environmental requirements. As the amount of wind generation in BPA's Balancing Authority Area continues to grow, however, the steps taken by BPA to reduce spill listed above will likely be insufficient to continue to produce such results.

Thermal power plant operators normally find it economical to displace their fuel with lower-cost hydropower since they can store or conserve their fuel while they receive hydropower. Wind power projects, however, cannot store their fuel and are generally eligible to receive Federal Production Tax Credits (PTC) and/or state Renewable Energy Credits (REC). Unlike thermal operators, wind operators have an economic incentive to operate as much as possible, regardless of system conditions. The PTC is currently \$21 per megawatt-hour and state RECs are generally in the \$8 to \$20 per MWh range, so this incentive is significant. While all wind power projects are eligible to receive RECs for production, most new wind power projects have opted not to take the PTC, and instead have opted for the Investment Tax Credit or other grants that provide for up-front financial benefits tied to the cost of the project and not actual production. Thus, wind power projects that opt for the Investment Tax Credit or other grants will receive the full financial benefit of these options regardless of project output.

BPA continues to work with the region to identify additional steps it could take in future years to assure compliance with the CWA and ESA when similar overgeneration events occur. After receiving input at public workshops on October 12 and December 3, 2010, BPA is actively exploring the following additional tools that could assist managing TDG levels during overgeneration events:

- BPA is working actively with multiple counterparties to ensure that the thermal displacement market is as active and liquid as possible. We are committed to

trying to maximize displacement of the region's thermal resources prior to implementing Environmental Redispatch.

- Discussions are taking place with multiple utilities for possible 2011 implementation of time-shifted irrigation pump load. While this likely will start small, the hope is that the concept can be grown in future years.
- BPA initiated conversations with the Bureau of Reclamation and Idaho Department of Water Resources to increase diversions to replenish irrigation aquifers. While there is very little potential for 2011 implementation due to limited infrastructure, the longer-term potential may be on the order of 5 kcfs.
- Through an effort known as the Transmission Utilization Group (TUG), BPA has been working with Northwest and California utilities to explore and mitigate potential barriers to maximizing utilization of the interties to California. A draft report of this group is expected to be released in late February or early March, 2011.

BPA has assigned teams of subject matter experts to actively pursue these options and will report on their progress to the region through existing customer forums in the upcoming months. However, with as much as 3,000 MW of additional wind generation expected to come on line in the next few years, these steps will be insufficient to ensure BPA's compliance with its environmental and statutory obligations. The use of

traditional market mechanisms involving the sale of zero cost hydropower does not appear to be a viable strategy for displacing renewable generation that faces the loss of Federal and state production incentives when not producing power. In addition, paying negative prices to displace renewable generation in order to ensure BPA's environmental obligations are met is neither socially optimal nor consistent with traditional principles of cost causation, as BPA's statutory preference customers would end up paying the costs of displacing renewable generation that is almost entirely serving the loads of utilities outside of the BPA Balancing Authority Area. The costs of Federal and state production incentives should be borne by a broad group of taxpayers and ratepayers receiving the wind power, not concentrated on smaller subsets of consumers with limited economic interest or benefits from the renewable generation.

Payment of negative prices is also inconsistent with BPA's obligations under the NWPA. The NWPA provides that transmission access and services are to be provided subject to any existing legal obligations and without substantial interference with the Administrator's power marketing program.²⁷ While one purpose of the NWPA is to encourage the development of renewable power in the Pacific Northwest through BPA's acquisition authority, that is one purpose among many that BPA must meet, including assuring the Northwest an economical power supply, providing environmental quality, continuing to repay the U.S. Treasury on a current basis, and protecting, mitigating and enhancing fish and wildlife of the Columbia River and its tributaries.²⁸ In that last regard, the NWPA directs that,

²⁷ 16 U.S.C. § 839f(d)(2) & (i)(3).

²⁸ 16 U.S.C. § 839.

[t]he Administrator shall use the [BPA] Fund and the authorities available to the Administrator . . . to protect, mitigate, and enhance fish and wildlife to the extent affected by the development and operation of any hydroelectric project of the Columbia River and its tributaries in a manner consistent with [the Council's power plan and fish and wildlife program], and the purposes of th[e] [Northwest Power Act].²⁹

Up until now, BPA anticipated that it could meet, and has met, these various statutory objectives. And under current circumstances, BPA believes it can continue to meet these various objectives by providing no-cost BPA hydropower when necessary to displace non-Federal generation in order to satisfy BPA's environmental obligations, while at the same time ensuring load service. However, for reasons set forth below, BPA believes that its statutory responsibilities and the objectives of the NWPA would be frustrated if BPA were required to pay negative prices in order to ensure compliance with BPA's environmental obligations.

As a result, given its statutory obligations and legal authorities, BPA is proposing to establish an Environmental Redispatch mechanism that would provide no-cost Federal hydropower in place of wind power or other energy from generation projects in BPA's Balancing Authority Area under certain conditions. These conditions and additional details of the rationale for BPA's negative pricing policy are further discussed below.

III. ENVIRONMENTAL REDISPATCH PROPOSAL

Environmental Redispatch means the temporary substitution of renewable, carbon-free hydropower for renewable, carbon-free wind power or other generation when necessary

²⁹ 16 U.S.C. § 839b(h)(10)(A).

to maintain compliance with the ESA and CWA. During an Environmental Redispatch, utilities and consumers who purchase wind power or other energy would continue to receive full energy deliveries, but the energy would originate from the FCRPS instead of other resources.

As explained in the previous section, during times of high flows, BPA is required to reduce spill at the Columbia and Snake River dams and run the water through power turbines, to the extent possible, in order to meet its CWA and ESA obligations. During the June 2010 events, in order to match this generation with load, BPA offered free hydropower to generators within BPA's Balancing Authority Area, resulting in most of the thermal generators in the Northwest shutting down. Although the wind generation in BPA's Balancing Authority Area remained online, BPA was able to maintain compliance with its CWA and ESA obligations. With another 3,000 MW of wind generation expected to interconnect to the BPA transmission system over the next few years, and with the potential for even higher flows than those experienced in June 2010, the proposed Environmental Redispatch protocol is now necessary to ensure that BPA can meet its CWA and ESA obligations.

BPA would perform Environmental Redispatch only as a last resort to avoid harm to listed salmon and other aquatic species during high water periods that result in overgeneration in the BPA Balancing Authority Area and dangerous TDG levels in the Columbia River.

A. Conditions for Environmental Redispatch

BPA is seeking comment on the actions that it should take before calling upon Environmental Redispatch. Before implementing Environmental Redispatch, BPA proposes to take all reasonable actions to reduce excess spill, including:

- Sales through bilateral marketing, including offering to sell at zero cost;
- Cutting prescheduled Pacific Northwest Coordination Agreement storage;
- Deferring scheduled generation maintenance activities;
- Deferring scheduled transmission maintenance activities;
- Increased pumping into Banks Lake at Grand Coulee;
- Seeking flow reductions with BC Hydro;
- Seeking additional load under hourly coordination with Mid-Columbia Hydro Projects;
- Seeking access to additional reservoir storage space at Federal Projects;
- Generation Reductions at Columbia Generating Station;
- Requesting adjustments to mutually agreeable transactions;
- Operating hydro projects inefficiently and at speed-no-load, within BiOp parameters;
- Implementing additional spill at FCRPS projects per COE spill priority list within gas standards;
- Reducing available balancing reserves to maximize turbine flows.

This is a list of known actions that are typically available and effective to relieve excess spill conditions. BPA is continually evaluating additional measures to add to this list.

In the event that BPA determines that these actions collectively will be insufficient to manage spill past unloaded turbines, BPA proposes to implement Environmental Redispatch if: (1) high flow conditions at hydroelectric projects risk excessive spill and TDG levels; (2) there is unloaded turbine capacity at those projects to potentially relieve spill, and (3) there is online generation that can be displaced with Federal power without compromising system reliability.

B. Proposed Environmental Redispatch Implementation

1. Environmental Redispatch Priority

BPA proposes to prioritize the Environmental Redispatch of non-federal generators interconnected to the BPA transmission system using a least-cost generator approach. First, BPA proposes to redispatch thermal generators to as low of a generating level as possible without threatening reliability.³⁰ Most thermal generation, however, will likely have accepted low-cost or free FCRPS generation and should already be offline. Second, if BPA determines that additional generation relief is needed after redispatching thermal generators that do not have reliability requirements, BPA proposes to explore the possibility of redispatching Variable Energy Resources (VERs),³¹ such as wind generation, that do not receive PTCs associated with their energy generation, although the ability to do so may take time to develop. These generators will be redispatched to achieve the necessary relief, which may result in such generators being moved

³⁰ The reduction in output of some thermal generators may have negative impacts to system reliability. Examples include generation that supports the reactive stability of the transmission system, minimum generation to provide capacity for ancillary service obligations, or minimum generation to meet future peak load.

³¹ In the future, VERs other than wind, such as solar energy, may be developed within BPA's Balancing Authority Area.

completely offline. Finally, if thermal and non-PTC VER reductions still prove insufficient, BPA proposes to redispatch all remaining VERs. BPA is interested in receiving comments on this proposed Environmental Redispatch priority and other priority options.

2. Environmental Redispatch Protocols

BPA has held preliminary discussions with customers on the processes necessary to implement Environmental Redispatch. The discussions to date have primarily focused on the generators that would be subject to Environmental Redispatch (applicability), the pros and cons of various approaches to the initiation of Environmental Redispatch (timing), and a desire for information on the cessation of Environmental Redispatch (notice). As BPA further develops the processes and procedures in the coming weeks, BPA expects to have additional customer meetings and written documents to inform customers on the specific procedures associated with Environmental Redispatch.

BPA will develop protocols to notify generators that Environmental Redispatch may be imminent and will develop procedures to notify generators of their maximum allowed generating levels when Environmental Redispatch is in effect and when the Environmental Redispatch event has passed. The tools that BPA will use to advise and communicate with generators will likely evolve over time; however, BPA is seeking comment on the general concept for Environmental Redispatch protocols. Initially, e-mail notification and web-based advisory notices may be used. Eventually electronic signals to the generators' remote telemetry units will provide the primary communication vehicle for BPA to communicate to generators. Environmental Redispatch may be implemented on a day-ahead basis or in real-time.

BPA will provide as much advance notification to generators as is practicable when river conditions and other indicators show that Environmental Redispatch is likely. We anticipate that, once BPA has advised generators that Environmental Redispatch is likely, Environmental Redispatch event notifications and specific generator output limits will be issued on an hourly basis as needed until conditions improve.

BPA does not plan to curtail schedules to enable Environmental Redispatch events. Generators will still schedule their expected output as if normal operating conditions are in effect, and BPA will displace the non-Federal generation with Federal power to make up for the difference between the maximum non-Federal generation output determined by BPA and communicated to the generator through the process described above and the non-Federal generator's schedule.

Once Environmental Redispatch is no longer necessary for affected generators, BPA will notify those generators to enable a return to normal operations.

3. Expected Duration of Environmental Redispatch

The conditions that lead to an Environmental Redispatch are of greatest likelihood during spring runoff periods. During spring runoff periods, Environmental Redispatch is more likely to be triggered in nighttime and shoulder periods, as regional loads are lower and unloaded turbine spill is more prevalent. During peak daytime hours, turbines are more likely to be loaded to full capacity, which reduces the likelihood for Environmental Redispatch. BPA proposes to match the period of redispatch with the expected duration

of the conditions. Depending on the conditions, Environmental Redispatch could last anywhere from a minimum of several hours up to several weeks. Concurrent with the release of this draft ROD, BPA is also releasing peer-reviewed analysis that identifies scenarios that illustrate the potential range in magnitude, duration and potential financial implications of Environmental Redispatch events. These materials will be made available on BPA's website.

4. Contract Amendments

Concurrent with this Draft ROD, BPA will be drafting proposed contract modifications and an Environmental Redispatch Business Practice (BP). The intent of doing this simultaneously is to have the mechanisms to implement Environmental Redispatch ready immediately if the Final ROD decision is to adopt an Environmental Redispatch protocol.

Currently, BPA has the contractual right to implement Environmental Redispatch under current Large Generator Interconnection Agreements, Small Generator Interconnection Agreements, and other forms of interconnection agreements. These agreements condition interconnection service on BPA's compliance with Applicable Laws and Regulations, such as the CWA and ESA.³² Further, BPA believes that situations in which BPA must comply with environmental requirements qualify as Force Majeure events under the various interconnection agreements.

³² See BPA OATT, Attachment L, Article 4.3 of the Standard Large Generator Interconnection Agreement; BPA OATT Attachment N, Article 1.5.2 of the Small Generator Interconnection Agreement.

However, in order to give generators clear notice of BPA's intention and authority to implement Environmental Redispatch, BPA proposes to unilaterally³³ amend Appendix C of Large Generator Interconnection Agreements, Attachment 5 of Small Generator Interconnection Agreements, and related provisions of other interconnection agreements to explicitly provide for Environmental Redispatch.

BPA will prepare draft modifications of Appendix C of Large Generator Interconnection Agreements and Attachment 5 of Small Generator Interconnection Agreements and will post the modifications for comment on our web site:

http://transmission.bpa.gov/business/Business_Practices/

Concurrent with posting the draft modifications, BPA expects to post a draft Environmental Redispatch BP, with a minimum two week comment period. We anticipate posting these drafts in February 2011 and responding to comments concurrent with the issuance of the Final ROD.

5. OATT Amendments

Due to the importance of this issue, in order to be absolutely clear regarding the terms and conditions of Transmission Service, BPA will explore in a separate process whether to amend its OATT to more specifically delineate the effect of BPA's environmental and related statutory obligations on Transmission Service.

³³ The Federal Energy Regulatory Commission has ruled that Transmission Providers have the unilateral right to amend interconnection agreements to include control area requirements. See Bonneville Power Administration, 112 FERC ¶ 61,195, P20 (2005).

IV. NEGATIVE PRICING POLICY

The Northwest energy market is a bilateral market, with most of the trading done at the Mid-Columbia trading hub and the California Oregon border. Under certain conditions, typically when electricity loads are light and there is an over-abundance of generation, the Northwest electricity market can be susceptible to negative prices. Generally, the magnitude and duration of negative prices is influenced by a number of factors, which include:

- transmission constraints,
- volatile stream flows,
- the region's growing number of VERs that can operate economically at negative prices due to PTCs and RECs,
- reliability-driven must-run thermal generators, and
- constraints on the amount of spill at FCRPS projects each spring.

These factors make generation forecasts difficult, limit exports, and inundate the region's resource stack with must-run generators, and power that is profitable at negative prices for those generators that receive Federal and state production incentives.

A. Proposed Negative Pricing Policy During Overgeneration Events

BPA proposes not to pay negative prices during times when BPA must generate in order to comply with its environmental obligations. BPA paying negative prices could result in opportunities to distort the market and presents an unreasonable cost shift from those generators that can operate profitably during times of negative prices to BPA's fish and

wildlife program and to BPA ratepayers. To date, BPA has not been required to pay negative prices during these situations.

As indicated earlier, BPA must act in a fashion that reasonably balances and accommodates the multiple purposes of the NWPA.³⁴ Currently, BPA's fish and wildlife budget exceeds \$800 million each year. The difficulties in balancing the management of the FCRPS to protect, mitigate, and enhance fish and wildlife and maintaining an economical power supply are captured well in BPA's ROD adopting the 2008 BiOp.³⁵ Payment of negative prices in order to protect fish and wildlife and to assure that the value of a wind generators' PTCs and/or REC's are not impacted, imposes an additional and unnecessary burden on BPA's fish and wildlife program costs, and runs an unacceptable risk of significantly increasing fish and wild life costs and compromising BPA's cost recovery objectives and the need to maintain an economical power supply. The twin goals of protecting, mitigating, and enhancing fish and wildlife affected by the development, operation, and management of hydropower facilities while assuring the Pacific Northwest an adequate, efficient, economical, and reliable power supply will be

³⁴ Section 4(h)(10)(A) of the Northwest Power Act obligates the Administrator to use his authorities to "protect, mitigate, and enhance fish and wildlife to the extent affected by . . . any hydroelectric project of the Columbia River and its tributaries," consistent with the Council's Power Plan, the purposes of the Northwest Power Act, and other provisions of law. See, e.g., Cal. Energy Comm'n v. Bonneville Power Admin., 909 F.2d 1298, 1315 (9th Cir. 1990)

³⁵ Bonneville Power Administration Record of Decision Following the May 2008, NOAA Fisheries FCRPS Biological Opinion on Operation of the Federal Columbia River Power System, 11 U.S. Bureau of Reclamation Projects in the Columbia Basin and ESA Section 10 Permit for Juvenile Fish Transportation Program, at 33-36 (Aug. 12, 2008), available at http://www.bpa.gov/corporate/pubs/rods/2008/BPA_ROD_to_Implement_2008_FCRPS_BiOp_RPA.pdf.

put at an unreasonable risk if BPA is forced to pay negative prices as a consequence of providing transmission to VERs.³⁶

If BPA's policy was to pay negative prices to comply with CWA and ESA requirements, marketers and non-Federal generators would be presented with opportunities to refuse BPA offers of low-priced or free power and wait until BPA was forced to offer its power at negative prices in order to comply with environmental requirements. The fact that there is a large amount of publicly available hydro, generation, stream flow, and water storage data makes the region aware of those times when hydro flexibility is tight and the potential of negative prices exists. If the region knew that BPA was approaching must-run conditions in order to meet ESA and CWA requirements and BPA was willing to pay negative prices, there would be less incentive for resources to back down economically in isolation and a higher incentive to delay target purchases until prices went negative and approached the last dispatchable resource in the region – renewable generation receiving Federal and state production incentives. This would not only create undue pressures on BPA's fish and wild life budget and significant economic risk to BPA and its ratepayers but also risk to BPA's ability to manage TDG levels in the river.

³⁶ These principles were reaffirmed in BPA's ROD adopting the 2010 Supplemental BiOp. In evaluating the different approaches proposed by the various parties, the ROD stated: "To the extent that these alternative operations would further reduce the generation of the hydrosystem or restrict its flexibility in meeting load, they would escalate the costs and intensify the challenges of maintaining an adequate, effective, economical and reliable power supply." Bonneville Power Administration Record of Decision Following the May 20, 2010, NOAA Fisheries Supplemental Biological Opinion to the May 2008 FCRPS Biological Opinion for Operation of the Federal Columbia River Power System, 11 U.S. Bureau of Reclamation Projects in the Columbia Basin and ESA Section 10 Permit for Juvenile Fish Transportation Program, at 20 (June 11, 2010), available at <http://www.bpa.gov/corporate/pubs/RODS/2010/>.

BPA must plan the operation of the FCRPS to keep the interconnected system of projects within operational requirements, such as meeting load and ancillary service obligations, maintaining reliability, and meeting environmental obligations. Meeting BPA long-term preference customer load obligations form the base of this operation, and BPA purchases or sells power in the marketplace to reshape the net load to meet operational requirements. These purchases and sales are made in differing timeframes based on available information and the need to maintain reliability. If non-Federal generators and marketers withheld offers to purchase FCRPS power until the market turned negative, BPA could be presented with excessive uncertainty that could affect real-time operations due to the magnitude of sales exposure. The water on the FCRPS must be positioned differently to either minimize spill or maximize generation. Excessive uncertainty could cause BPA to position water incorrectly on the system as the depth of sales may or may not materialize in real-time, potentially exacerbating the magnitude or duration of a TDG event.

In addition, the sale of power at negative prices when BPA is required to comply with its CWA and ESA obligations inappropriately shifts the cost burdens associated with the PTC and RECs to fish and wildlife and BPA ratepayers. The PTC and RECs were intended to facilitate carbon free wind production and are paid for by Federal taxpayers and consumers of the renewable generation. BPA marketing activities associated with balancing the system and meeting non-power constraints directly impact the rates of BPA's preference customers; thus, paying negative prices to comply with CWA and ESA requirements would be reflected in these customers' rates through future rate proceedings

and shift the cost burden of the PTC and RECs to BPA's preference customers. This represents an unnecessary transfer of value between two carbon free generation resources.

The payment of negative prices not only shifts the cost burdens associated with the PTC and REC to BPA's preference customers, but also hinders BPA's ability to comply with its CWA and ESA requirements due to potential gaming of the market. BPA, however, has the statutory requirements to carry out its marketing obligations, including keep rates as low as possible consistent with sound business principles, and to protect fish and wildlife affected by operation of the FCRPS.³⁷ Such outcomes would be inconsistent with these statutory principles.

B. Economic Impacts

Environmental Redispatch seeks to ensure generators are able to meet their power delivery obligations. Different resources, however, will face different secondary impacts from displacement under Environmental Redispatch. Thermal resources may face reduced efficiency due to a change in operating level. This will likely be compensated for by the fuel savings associated with the displacement, which explains why thermal resources have traditionally accepted offers of low-priced hydro power during past overgeneration events. As a result, there is expected to be only a very small amount of thermal generation subject to Environmental Redispatch.

³⁷ See 16 U.S.C. § 839f(i)(1)(B); 16 U.S.C. § 839f(i)(3); 16 U.S.C. § 839b(h)(10)(A); 16 U.S.C. § 839e(a)(1).

VERs on the other hand, depending on their financing arrangements and age, may face the loss of PTCs if they are displaced by FCRPS generation. VERs will also face the loss of state-authorized RECs, which are assets that are marketable to meet some state Renewable Portfolio Standards. BPA understands that these losses may fall to the generation owners or to investors, depending on the contractual arrangements. Consequently, BPA has sought to develop the implementation of Environmental Redispatch to minimize these costs to the extent possible.

C. Proposed Legislative Approaches to Mitigate for Environmental Redispatch

Because the economic impacts on VERs stem from the loss of RECs and PTCs, BPA has proposed to explore with wind generators and other regional stakeholders legislative solutions that would allow wind generators to remain eligible for PTCs and RECs when an Environmental Redispatch occurs. Legislative solutions would mitigate the potential economic impacts that Environmental Redispatch poses for VERs. Currently, BPA is actively pursuing legislative amendments in California that would allow wind generation displaced by federal hydropower to still qualify for RECs.

V. CONCLUSION

BPA is requesting that interested stakeholders comment on BPA's proposals to implement Environmental Redispatch and not pay negative prices to meet BPA's environmental and statutory obligations. In addition, BPA seeks comments on the conditions and practices BPA will follow leading up to and during an Environmental Redispatch event, and on the possibility of legislative solutions to the potential economic impacts on VERs associated with an Environmental Redispatch protocol. As stated

above, BPA will have a separate process to develop the modifications to the LGIA and other relevant contracts and the Business Practice associated with Environmental Redispatch. Comments on the specific language in the contract modification and Business Practice should be made in those separate processes.