

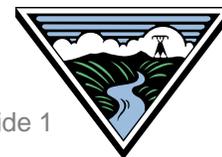
BPA's Proposed Oversupply Management Protocol

February 14, 2012

BPA Rates Hearing Room

To participate by phone

please call (888) 296-1938 and enter 563088



Oversupply Conditions

- High flows on the Columbia-Snake River System create the potential for increased total dissolved gas (TDG) levels.
 - Spilling too much water over the dams creates excessive TDG that can lead to gas bubble trauma in fish and other aquatic organisms.
 - Putting water through turbines to generate electricity does not increase the TDG levels in the river. However there must be load to absorb that power.
 - In addition, if all hydro turbines are operating at maximum capacity, then BPA has no choice but to spill – this is called “lack-of-turbine spill.”
- High seasonal river flows in the Pacific Northwest occasionally generate more hydropower than needed to meet export sales and regional demand.
 - The chance of high flows occurring in any one year and lasting for a month or more is one in three.
 - In these conditions, the market is flooded with low cost hydroelectricity.
 - This creates an economic incentive for regional utilities and independent power producers to displace thermal generation, replacing it with power from the market.
 - That is not the case with variable energy resources (VERs) that receive Production Tax Credits (PTCs) and Renewable Energy Credits (RECs) for generation from their specific generators.
 - Once all displaceable generation in the balancing authority is displaced, but there is still available turbine capacity, additional spill is considered “lack-of-market spill.”
- BPA’s effort to control TDG by displacing generation within our balancing authority in order to reduce lack-of-market spill is the foundation of our oversupply policy.



Environmental Redispatch

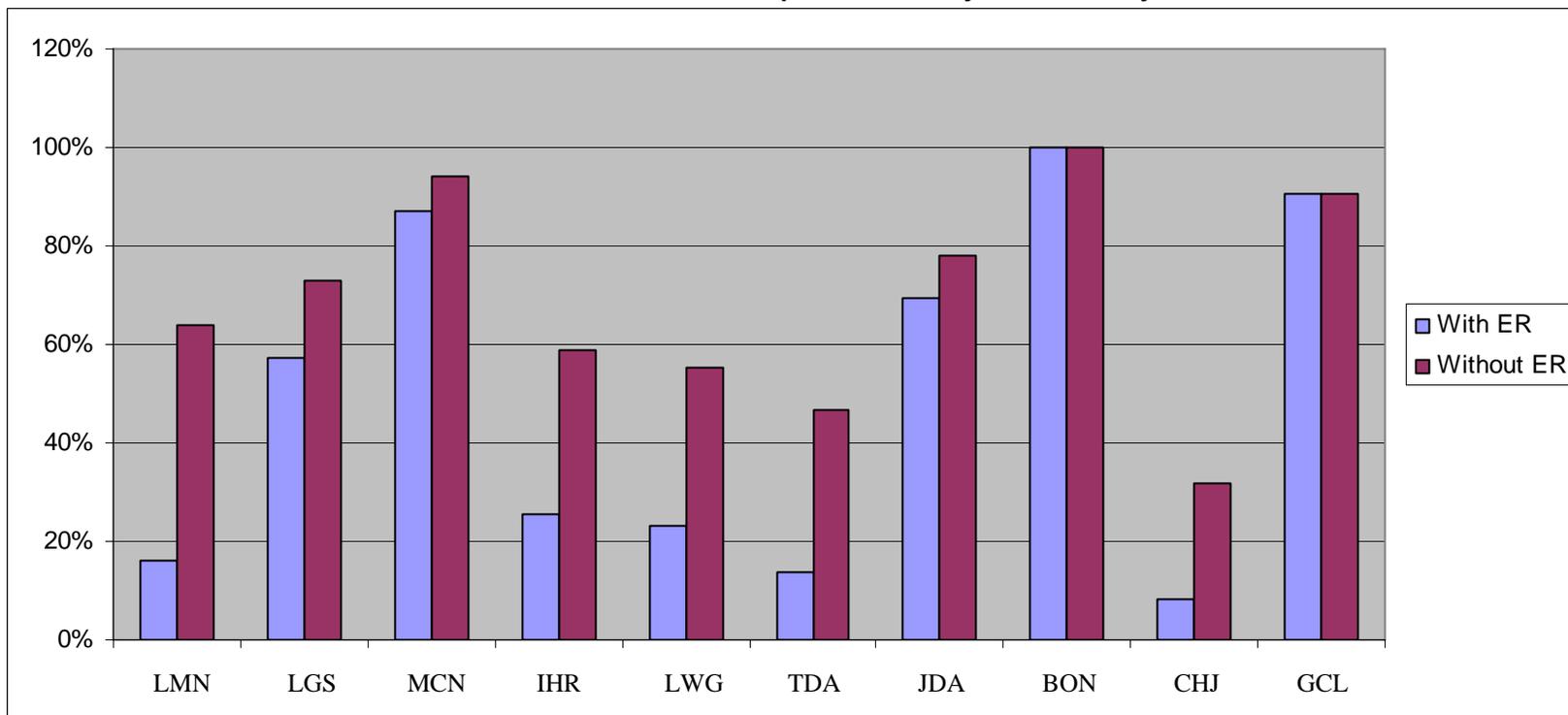
- BPA developed and implemented its Interim Environmental Redispatch (ER) and Negative Pricing Policy to reduce TDG in May 2011.
 - BPA temporarily limited the output of wind generation and replaced energy output with free Federal hydro generation in order to maximize the amount of water put through turbines.
- ER was used to control TDG levels May 18 – July 10.
 - Mostly during light load hours and more infrequently during July.
 - Almost all thermal generation was already shut down during LLHs due to the availability of low or zero-priced hydropower below their marginal production costs. Approximately 4,700 MWh of non-VER energy was redispatched.
 - Approximately 97,500 MWh (135 MW months*) of wind energy was redispatched. This was approximately 1.2% of total wind generation over the previous 12 months.

*1 MW-month equals 730 MWh, or an average of 1 MW spread over the 730 hours in a month.



Effect of ER on TDG Levels

Percent of hours with spill level that would have resulted in TDG above the 125% one-hour maximum over the ER period May 18 – July 10, 2011.



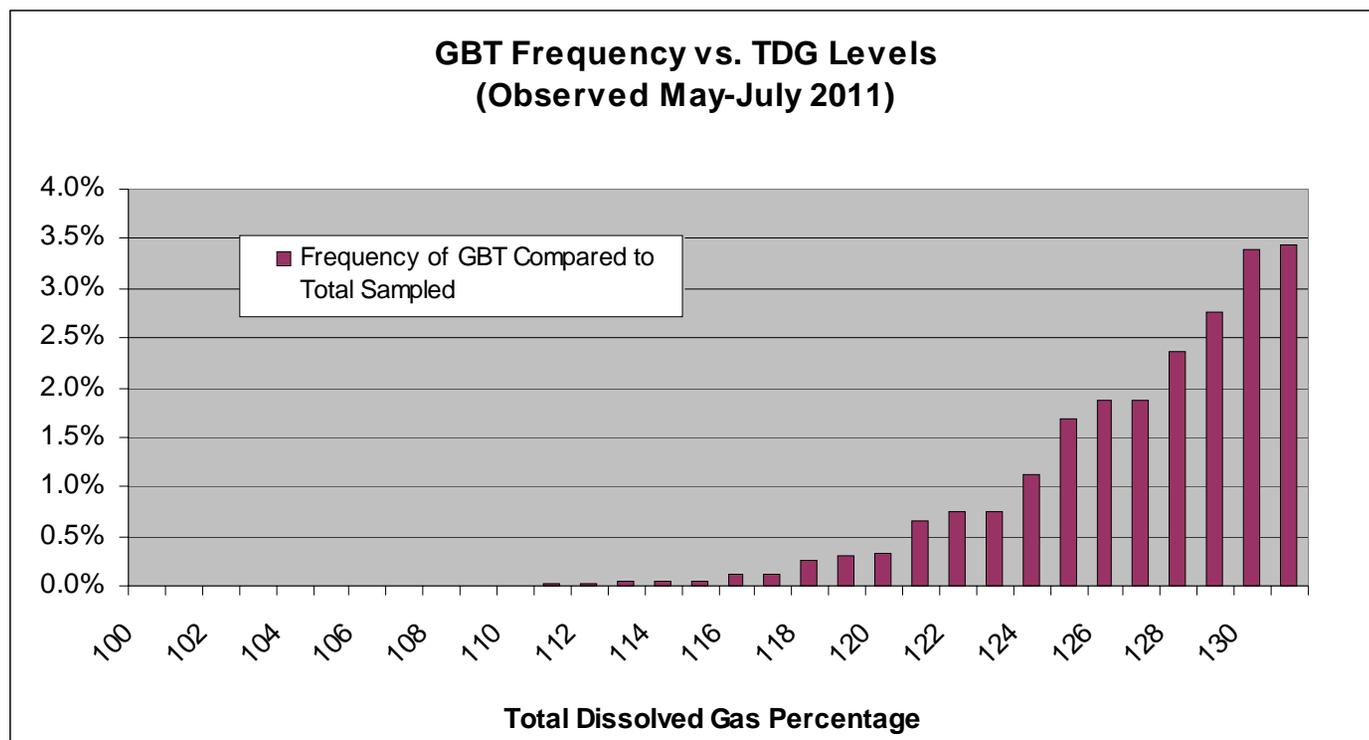
Average percentage of hours over 125%
With ER – 49%
Without ER – 69%



TDG Supersaturation Can be Harmful

- Known source of lethal and sublethal harm to fish and other aquatic life by causing gas bubble trauma (GBT), similar to the bends.
- Higher levels of TDG resulted in more trauma to migrating smolts.

(Note that TDG is measured at the spillway, while GBT sampling generally takes place at the next dam's forebay. Thus an unknown number of harmed fish may have died before being sampled.)



Data from the Fish Passage Center <http://www.fpc.org/smolt/gasbubbletrauma.html>.



FERC Filings and Settlement

- On June 13, 2011 parties filed complaint with FERC indicating that BPA failed to provide comparable transmission service.
- BPA engaged in compromise discussions to find an equitable and durable solution.
- FERC issued a ruling on Dec. 7, 2011 rejecting the ER policy on the basis that it did not provide comparable transmission service.
- BPA's proposal is based on concepts discussed in the compromise discussions.

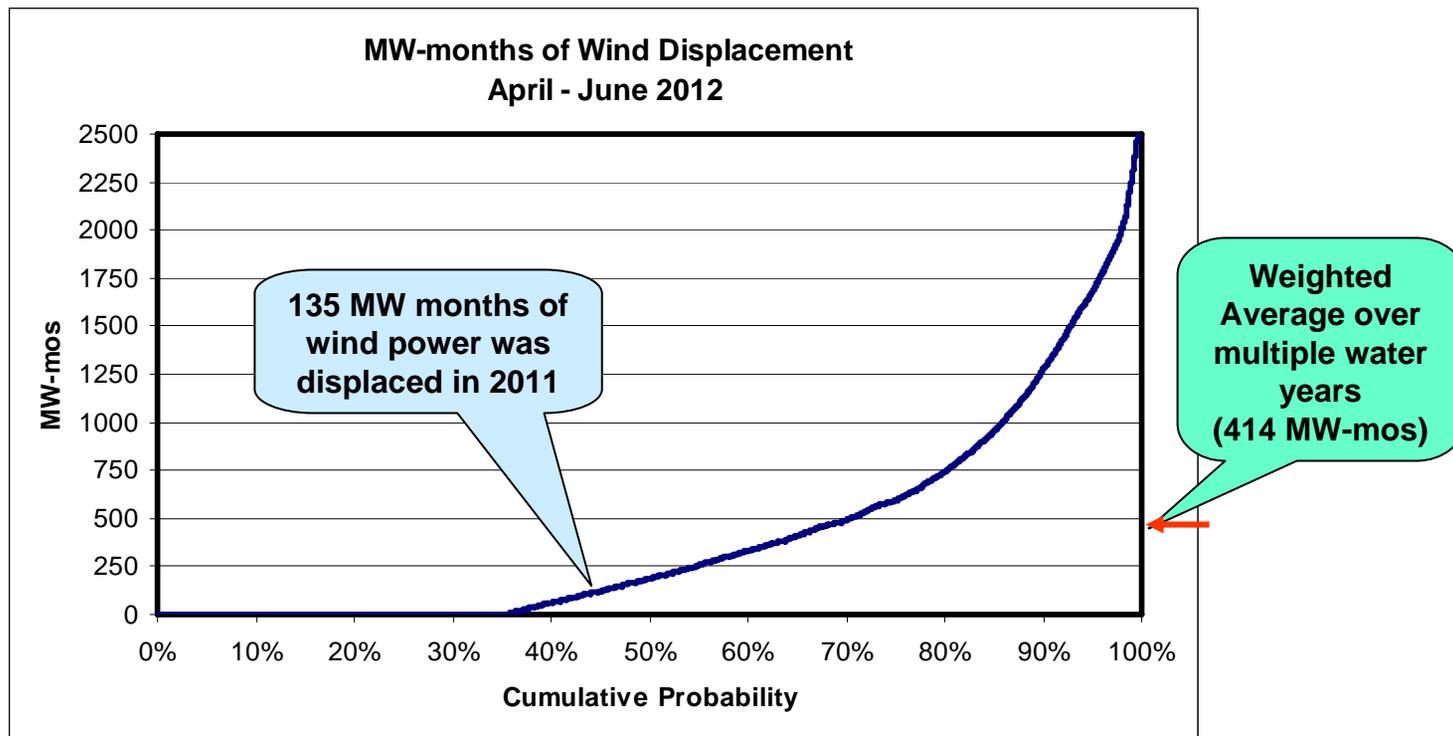


Putting Oversupply into Perspective

- BPA's use of displacement in 2011 was modest relative to expectations based on the analysis in BPA's February 2011 Overgeneration Analysis, *Northwest Overgeneration: An assessment of potential magnitude and cost*.
- BPA refined its oversupply analysis modeling based on its spring 2011 experience. The refined modeling, using forecasted load and resource information for 2012 were then combined with:
 - 70 water years (1929 – 1998)
 - 15 hydro shapes (1996 – 2010)
 - Weekly HLH/LLH shapes
 - 30 synthetic wind generation patterns
 - Consistent with those used in BPA rate case
- Above combinations result in 31,500 games or potential outcomes
- BPA's oversupply modeling estimated the amount of displacement we might expect in 2012 using our forecast of the size of the wind fleet and loads. Modeling of a large number of different water and wind conditions resulted in an average estimate of 414 MW-months (302,000 MWh), about **three times** what occurred in 2011. (Conditions have been drier than average since that modeling was done, so this estimate may be somewhat high – but conditions can change significantly and quickly.)
- This amount is approximately **3-4%** of total wind generation expected in 2012.
- Based upon preliminary displacement cost data provided by a portion of the wind fleet, the expected value of lost contract revenue, PTCs (29% of wind fleet), and RECs (valued at \$16/MWh) of this amount of curtailment is estimated to be **\$12 million**.



Forecast for 2012



- 35% probability that in 2012, conditions will not result in oversupply conditions.
- There is a low probability that extreme conditions could lead to significantly greater amounts of oversupply than experienced in 2011.



Oversupply Management Protocol

- Tariff filing to implement Least-Cost Displacement of non-federal generation in BPA's balancing authority based on an audited cost curve.
- Term of the tariff filing is March 6, 2012 – December 31, 2015.
- Prior to implementing Least-Cost Displacement BPA will employ all reasonable strategies available for managing TDG levels.
- If reasonable operational actions are not sufficient to manage TDG when the levels measured by the U.S. Army Corps of Engineers exceed Oregon and Washington water quality standards at projects that are spilling past unloaded turbines, then BPA will reduce any thermal generation in our BA to minimum output levels and replace wind schedules with free FCRPS energy as well as pay wind generators based on the least cost displacement curve to reduce generation in our BA.
- In its initial proposal in the rate case, BPA will propose a roughly 50/50 cost allocation between users of the Federal Base System and wind generators.



Least-Cost Displacement Protocol

- BPA will displace non-federal generation in BPA's balancing authority area to mitigate TDG levels.
- There will two types of displacement – non-VER and VER.

Non-VER

- Declare minimum generation levels consistent with: ramp capability, plant reliability and safety, and commitment to providing local VAR support or operating reserves.
 - BPA will update and reissue the Minimum Generation Business Practice issued last year.
- During TDG events, thermal plants will be displaced down to declared minimum levels and their hourly schedules replaced with free FCRPS generation.
- BPA is working with Energy Northwest and the broader nuclear industry to determine what is an appropriate minimum generation level for Columbia Generating Station.



Least-Cost Displacement Protocol continued

VERs and Non-VERs that qualify for RECs and PTCs

- BPA will displace non-federal VER generation in BPA's balancing authority area to mitigate TDG levels.
- Displaced VER generation will receive compensation based on audited costs.
- VER Generators will submit \$/MWh costs annually.
 - Data submittal required by April 1 for 2012 and February 1 for 2013-2015.
- Eligible costs include unbundled RECs, PTCs, and the contract value of the bundled sale and purchase of RECs and metered generation.
- Compensation will be calculated by multiplying the \$/MWh by the difference in MWh between scheduled generation and the level that BPA dispatchers direct the generator to achieve.
- Applicable to generators that have a commercial operation date before March 6, 2012.

*There may be some non-VERs that will have qualifying RECs and will be compensated the same as VERs.



Future Generation Interconnections

- Generation interconnections that have REC or PTCs that enter commercial operation after March 6, 2012 have two options.
 - Choose to be redispatched without compensation and therefore not share in the cost allocation.
 - Choose partial compensation, which will be set at a figure up to 50%, and share in the proposed cost allocation.



VER Cost Curve Audit

- BPA will randomly select ten generators each year for audit by a third party.
- For 2012, the audit will occur after-the-fact and compensation will be subject to true-up based on any differences found.
- Future year audits will occur prior to construction of the cost curve and will be used to develop the cost curve.
- A penalty equal to the difference between the audited and submitted costs, multiplied by a factor of 1,000, will apply to any submitted costs that exceed the audited costs by more than \$5/MWh.
 - Any penalty revenues will offset future costs of displacement.
- Generators that do not provide cost data will be assumed to have zero costs on the cost curve.



Cost Allocation

- Propose to cover 2012, and any 2011, Oversupply costs with Transmission reserves.
- BPA will run a 7(i) rate setting process to establish rates to recover Oversupply costs in 2013 – 2015, and to replenish Transmission reserves for 2011 and 2012.
- In its initial proposal in the rate case, BPA will propose a cost allocation methodology through a new control area services rate allocating approximately 50% of the costs to users of the Federal Base System and 50% to wind generators.



Prior to Displacement

- BPA will again employ reasonable operational means available to avoid thermal and VER displacement, while still meeting all system non-power requirements such as flood control. These may include:
 - Spill swaps
 - Implementing spill due to lack-of-demand consistent with TDG Management Plan
 - Position Banks Lake to have the maximum amount of pump load available
 - Delay generator and transmission maintenance outages and capital work out of May, June, and July when feasible
 - Reduce DSO 216 reserves
 - Notify Transmission Loss Return customers that they are exempt/relieved from returning losses and that they will be credited accordingly to reflect the adjusted Transmission Loss Return Schedule



Next Steps

- Public comment will be accepted through noon on Feb. 21.
- BPA will review comments and submit the Attachment P tariff language with FERC on March 6.
- In early March BPA will issue draft Business Practices to implement the Oversupply Management Protocol for public comment. We will schedule a public meeting to explain the differences from the 2011 ER BP. We may also schedule a Joint Operating Committee meeting to respond to technical questions about communications through electronic signals or similar operational details.
- BPA is expecting to submit its broader Order 890 Open Access Tariff to FERC by the end of March. BPA will be seeking reciprocity status for this broader filing.

