



## Responses to Questions from Renewable Northwest Project

### 10/13 e-mail from Steve Kerns to Ken Dragoon

Hey Ken, Here are a couple tables [see page 3] that may help answer your question about GCL/CHJ spill. The "averages spill" is the amount of spill averaged over the dates identified. The "max day-average spill" is the highest amount of day-average spill that occurred over the identified dates.

In nearly every year, the GCL/CHJ spill identified in these tables occurred for many consecutive days with an occasional day or two break. Note that the spill in 2000 was pretty much confined to CHJ only.

Let me know if I can help answer any other questions.

### 10/15 e-mail from Ken Dragoon:

Just to make sure I understand what I'm seeing -- for June 7-30, 2010, there was an average of 27 kcfs spilled at Grand Coulee and 35 kcfs at Chief Joseph. Assuming an h/k for Coulee of 25, and 12 for Chief Joseph, this means an average spill of 875 MW at Coulee and 324 MW at Chief Joseph. Since this occurred over 23 days, that would be about 373,000 MWh of spill at Coulee and 234,000 MWh at Chief Joseph for a total of roughly 607,000 MWh of spill. Does all that sound close to being right?

On the wind side, I see about 742,000 MWh of generation from June 7-30, so presumably the spill might not have occurred if the wind had been displaced. Is that the crux of BPA's argument?

As you pointed out in your presentation, the wind averaged about 1,200 MW of generation over that time period, but of course it wasn't constant. I am curious whether BPA noted spill levels increasing when the wind was high compared to times when wind generation was lower. Can you provide hourly spill data?

Finally, although clearly wind generation is serving load that might otherwise physically be served by BPA, I wonder whether the marketing team would have access to those loads even if the wind were not blowing. For example, BPA might not be able to access the transmission rights used by the wind generator to serve its load, or a recipient of wind generation might simply not be in a position to negotiate with BPA... Do you have a view on that? In other words, if the wind weren't blowing, would BPA be able to access all those loads? I wonder too whether some contracts would even allow for a wind generator displacement. Some power purchase agreements may involve steep penalties for failure to supply all the available wind. I know that the PPAs I was involved with had severe penalties for underperformance, and I imagine some wind could not be displaced without a renegotiation of certain contract provisions, irrespective of price. Is that a concern?

### 10/18 response from Steve Kerns:

I'll try to answer your questions. Let me know if you need more clarification

1) Your MW-hrs of GCL/CHJ spill are pretty close to what I get at GCH/CHJ - about 639,000 MW-hrs. Note that DWR and Willamettes were also spilling during this period for a total of around 750,000 MW-hrs.

2) If the wind had been displaced, the amount of lack-of-market spill would have been less. Would there still have been a need to spill some? Possibly, depending upon the



timing of when wind generators were producing MWs and what the conditions were on the FCRPS.

3) The top five spill days were June 10, June 17, June 15, June 16, and June 11 (largest first). These five days accounted for about one third of all the lack-of-market spill we encountered in June. I think all of these days except for June 11 had a significant amount of wind. The TMT website (<http://www.nwd-wc.usace.army.mil/tmt/>) has many links to operational data, so look there for spill data. Let me know if you can't find it.

4) This relates to #2 on whether we could expect a one-for-one MW reduction in spill for every MW of wind generation that is displaced. In general, my opinion is that you would not expect a one-for-one reduction but it should be pretty close to one-for-one. One factor that I mentioned in #2 has to do with the timing of wind generation and how it relates to everything else going on in the FCRPS. Another factor you mention in your last paragraph involves finding markets and having transmission rights to get the generation to load. On the other hand, other NW utilities with hydro resources were having the same spill issue - maybe they would have the necessary transmission rights and ability to find load.

Steve

## GCL/CHJ Spill 1

	<b>Apr 13 – Jun 21, 1996</b>	<b>Apr 23 – Jun 28, 1997</b>	<b>May 25 – Jun 7, 1998</b>	<b>Apr 16 – Apr 25, 2000</b>
GCL Average Spill	17 kcfs	40 kcfs	7 kcfs	1 kcfs
CHJ Average Spill	46 kcfs	73 kcfs	9 kcfs	9 kcfs

	<b>Apr 13 – Jun 21, 1996</b>	<b>Apr 23 – Jun 28, 1997</b>	<b>May 25 – Jun 7, 1998</b>	<b>Apr 16 – Apr 25, 2000</b>
GCL Max Day-Average Spill	45 kcfs	93 kcfs	23 kcfs	2 kcfs
CHJ Max Day-Average Spill	104 kcfs	150 kcfs	30 kcfs	20 kcfs



## GCL/CHJ Spill 2

	<b>Jun 2 – Jul 4, 2002</b>	<b>May 26-Jun 16, 2006</b>	<b>May 27 – Jun 28, 2008</b>	<b>June 7 – 30, 2010</b>
GCL Average Spill	9 kcfs	10 kcfs	11 kcfs	27 kcfs
CHJ Average Spill	14 kcfs	17 kcfs	16 kcfs	35 kcfs

	<b>Jun 2 – Jul 4, 2002</b>	<b>May 26-Jun 16, 2006</b>	<b>May 27 – Jun 28, 2008</b>	<b>June 7 – 30, 2010</b>
GCL Max Day-Average Spill	33 kcfs	24 kcfs	30 kcfs	52 kcfs
CHJ Max Day-Average Spill	39 kcfs	36 kcfs	38 kcfs	103 kcfs