# DRAFT

## Resource Adequacy Forum
## Technical Committee
### Hydro Sub-Group Meeting Notes
July 23, 2007

On Monday, July 23rd, the Technical Committee's Hydro sub-group met to discuss capacity issues. In attendance were John Fazio, Mike McCoy, Dick Adams, Wally Gibson, Kristine Bartlett, Eric King and Greg Mendonca. Howard Schwartz, Heidi Heath and Chris Robinson were on the phone.

John gave a 15-minute background presentation to set the stage for the day's discussion. While the focus of the meeting was to talk about how well the Trapezoidal model calculates hydro peaking capability (relative to BPA's HOSS model), the group drifted into a discussion of how to define an appropriate peak duration and the pros and cons of using single-hour capacity values.

John indicated that there were at least two purposes for using the Trapezoidal output. The first is for use in the Genesys model and the second is to provide a better defined method of calculating a regional hydro capacity derate for submission to the WECC. Genesys uses the Trapezoidal 2-hour, 4-hour, 8-hour and 10-hour sustained peak capabilities along with the single-hour peak capability to limit the hourly hydro dispatch. "Calibrating" the Trapezoidal output to HOSS is just one step in the benchmarking process. John mentioned that once this comparison is complete and new Trapezoidal output is used in Genesys, he would try to run a back-cast study to compare simulated hourly hydro dispatch with actual generation for 1997-99 (years for which we have streamflow data). That project is likely to be difficult and may not be doable but it will be explored.

The discussion of the comparison between the Trapezoidal model and HOSS began with Mike, Kristine and John reporting on progress made to date. After making sure that both models were starting with the same base case (the 2004 biological opinion), Mike modified the Trapezoidal output to show aggregated federal project generation so a direct comparison to HOSS (federal model) could be made. Mike verified that the Trapezoidal model does use the same monthly energy as HOSS. Adjustments were also made to the Trapezoidal model to not allow Dworshak, Libby and Horse to peak (to match the HOSS operation).

Some differences in the modeling were pointed out. In Kristine's assessment of the 10-hour sustained peak capability, she used the 10 highest load hours (not necessarily consecutive) over 5 days and over 4 weeks, whereas the Trapezoidal model uses 10 consecutive hours over 5 days for one week only. HOSS may see different load shapes from one week to the next. Also, run-of-river projects are required to refill each day in HOSS while in the Trapezoidal model they refill by the end of the week (Sunday).

Initial results show that the difference between the models is greatest for extreme water conditions (wet or dry). In wet years, HOSS shows greater peaking capability than the Trapezoidal model and in dry years HOSS shows less capability. If the capacity

assessment is to be done using a critical hydro condition, then the Trapezoidal output would show a greater peaking capability than what HOSS would predict. In either case the largest differences are on the order of 10 percent. In dry years that represents about a 600 MW difference.

John asked whether a factor could be derived to “adjust” the Trapezoidal output in the event that the differences between models could not be minimized further. Mike said he did not think we would find either a constant factor to use or any kind of correlation to help us. John suggested that it might be worth looking into if differences could not be resolved.

Kristine went on to say that differences were smaller in the fall, especially in September. Mike guessed that that was likely due to the restricted range of generation in the fall months. Kristine said that January showed a much wider range of differences.

Mike said that he suspected the difference might be due to how the head is treated in each model. In high flow years, tail water elevations rise and reduce the amount of available head. Mike thought that looking into those calculations might help.

Next steps include:

- Looking at the peaking capability of individual projects
- Using a 14-hour period (so that the ramp-up and ramp-down periods match HOSS’ shape better
- Examining how the head is calculated in each model

The group went on to discuss how WECC might use this data. Wally reminded the group that the Council does not report to WECC but some Council data is provided (primarily in an appendix). If the differences between HOSS and the Trapezoidal model could be reduced to an acceptable level, would the group be willing to report that data to WECC for their resource assessments?

Dick asked Howard how Washington is planning to deal with capacity issues when asking for IRP reporting from utilities. Howard said that he was planning to work with Dick on that and that he hoped that Washington and PNUCC reporting could be consistent.

**Additional comments by Kristine Bartlett:**

You mentioned in your notes that "the largest differences are on the order of 10 percent." While I think this captures Mike's comment at yesterday's meeting accurately, I do not believe that it truly reflects the results of the comparison. I took another look at the data and it appears on average over all water conditions and months, the difference is 8%. The range of the max differences is 8% to 57%. In the month and year with the largest difference (57%) it amounted to 6000 MW. Granted that is an extreme case however, it is not uncommon to see deltas in the 2000 MW range.

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