Resource Adequacy Technical Committee Meeting

November 1, 2007 – 10:00 a.m. to 3:00 p.m.

Notes

PARTICIPANTS: John Fazio and Wally Gibson (NWPCC), Mary Johannis and Eric King (BPA), Clint Kalich (Avista), Dave Levee (Powercast) and Howard Schwartz (WA CTED),
PHONE PARTICIPANTS: Villamor Gamponia (PSE)

I Status of Work Plan Activities

John Fazio reviewed the major milestones in the plan with the goal of the Council adopting the Final Capacity Adequacy Standard at their March 2008 meeting. John discussed some of the improvements he is making to GENESYS. The new Trapezoidal model results are ready to go in, the synchronization process (with BPA's HYDSIM) is nearly complete and new hourly load algorithms must be incorporated (to match the Council's new short-term load model). Once these improvements are implemented, he will recalibrate the Planning Reserve Margin (PRM) targets. Another task is to look at what constitutes a significant event. One option is to change from just looking at a winter LOLP for the energy target and a winter/summer LOLP for the capacity target to a year-long energy/capacity event.

II Selection of Hydrologic/Temperature Event for Capacity Reporting to WECC and PNW Forum

The effort to select one hydrologic condition for which to evaluate hydro capacity for all of the Region's hydro facilities is being undertaken not just for reporting purposes, but also to help with utility specific guidance and to more intuitively link the use of hydro in the LOLP studies to the adequacy targets. We are trying to protect against combinations of events that would lead to a 1-in-20 year deviation in load/resource balance. Wally Gibson emphasized that we need to test this assumption, that is, if using a particular event will lead us to the right size for the reserve margin.

Wally asked how an "event" would be defined when reporting to WECC. Mary Johannis responded it would likely be an adverse hydro event only (not including temperature) because WECC does its own adverse temperature scenario. Similarly, for a PNW regional capacity adequacy assessment, the methodology on slide 2 of the *110107 Tech Hydro Event* PowerPoint indicates that maximum hydro system capability is to be calculated for the selected hydrologic condition, rather than evaluating hydro capacity to meet the associated load condition, which in combination would simulate a 1 in 20 year event. In the regional assessment, if the aggregate PNW capacity from all resources results in PRM greater than or equal to the targets, then it is assumed there are sufficient resources to meet adverse temperature events since the PRMs include adverse temperature components.

The selection of a combination hydro/load "1 in 20 year event" becomes important for capacity inventory calculations of individual utilities. Mary said that BPA focused on an adverse temperature event because the hydro capability is fairly constant across many different water conditions (slide 7). They chose a median hydro condition in combination with a 1-in-10 temperature event to evaluate BPA's capacity inventory. Only capacity surplus to BPA's

resource adequacy needs, which are defined by the capacity required to meet the 1 in 20 year event, is deemed available for marketing.

Clint asked if there is any correlation between runoff and peaking capability. Eric King responded that the peaking capability is fairly constant over a wide range of water conditions, but in the driest years it does drop off quickly (slide 13).

Wally asked why use natural flows instead of regulated flows. Regulated flows would show a better correlation shown on slide 7. BPA's point in using unregulated flows is to show that there is no correlation between sustained hydro peaking capacity and hydrologic condition for a wide range of water conditions because of the use of stored water is that the selection of a hydro event from a very broad range of hydrologic conditions works for BPA. Specifically, the FCRPS sustained hydro peaking capability stays relatively constant over a wide range of choices, so the Technical Committee can focus on what event works for the west-side and Williamette hydro facilities without too much concern that the selected event might not work for the FCRPS.

Eric explained that he selected Seattle's ROSS and PGE's Round Butte as hydro facilities representative of west-side and Williamette hydro projects. Based on the discussion at the last meeting, Eric investigated a number of hydrologic conditions, which would be considered adverse for these projects without particular regard to the Columbia River, given the non-sensitivity of FCRPS capacity to the hydrologic condition. There was a discussion regarding how many hydro projects within the Region might be in a similar situation as the FCRPS, i.e. that capacity is fairly constant over a wide range of flows. The possibility of hiring a consultant to perform evaluations of hydro capacity for the major regional hydro facilities was discussed. Such an evaluation might be useful in confirming whether the suggested February 1969 condition for calculating regional hydro capacity is acceptable to the PNW hydro utilities. **Action Item:** Mary will check to see if BPA has consulting funds to perform this evaluation. Clint indicated that Avista staff might be able to help with the analysis, **if** confidentiality issues are not an obstacle.

The overall goal of hydro capacity evaluation effort is to select one regional hydro condition, for which the 18-hour sustained hydro peaking capacity could be calculated at every PNW hydro facility. The peak hour hydro from that analysis could then be reported to WECC and PNUCC. The regional 18-hour hydro capacity could be estimated from the Trapezoidal Approximation for this hydro condition and be compared to the aggregate of the individual hydro capacities for verification purposes. Finally the event tracker spreadsheet tool that John developed could be used to evaluate the reasonableness of the selected hydrologic condition in defining regional hydro capacity.

III GENESYS Model Calibration and Validation

A <u>Comparison of HOSS and Trapezoidal models:</u> John explained that the Trapezoidal Model is primarily used to set the limits on dispatch of hydro capacity in GENESYS. Since GENESYS actually dispatches hydro and other resources to meet load and maintain operating reserves, it is not necessary for the output from HOSS and the Trapezoidal model to completely mirror each. However, they should be in the same ball park. Wally was concerned with the magnitude of deviation between the two models on the order of 2,000 MWs during certain months and under certain hydro conditions. John explained that the actual comparison should be done between GENESYS and HOSS, but that this comparison cannot be done directly, since HOSS only models the FCRPS; whereas GENESYS models regional hydro, but does not have the ability to disaggregate

it to individual hydro facilities. A comparison of GENESYS and HOSS hydro capacity just using the FCRPS proportion of GENESYS-dispatched hydro capacity might allow for a very high level comparison of the hourly hydro dispatch from these two models.

B Synchronization of GENESYS and the HYDSIM models: John is modifying the HYDSIM algorithm in GENESYS to mimic BPA's latest version of HYDSIM output.

C Comparison of peak hourly loads: An algorithm, which simulates hourly regional loads with similar results to the hourly loads forecasted from the Council's short-term load forecasting model also needs to be incorporated into GENESYS, since the HELM algorithm is not the optimum tool for simulating hourly loads outside the winter period. Massoud Jourabchi of the Council and Dick Adams of PNUCC are comparing the aggregated single hour load forecasts from PNUCC's Northwest Regional Forecast to the Council's new hourly simulation model. Perhaps this comparison can be presented at the next meeting.

D Demonstration of Event Tracker: John showed outputs from GENESYS when load is increased to cause curtailment events. Events occur during bad water and adverse temperature conditions. In some Aprils, the amount of maintenance assumed to be out in combination with low water and high temperature causes curtailments. These may be false positives, if maintenance can be deferred. **Action Item:** Check forced outages simulated in model to see if they are reasonable.

E Outcome of Validation and Calibration Effort: Once the above work is complete, John will rerun GENESYS to calculate new capacity and possibly energy targets.

IV Considerations for Utility-Specific Guidance regarding the Capacity Standard

Mary made the presentation on utility guidance. Clint suggested that most utilities do not do LOLP studies. But Dave suggested that Aurora might be configured to do LOLP studies for individual utilities. He said that all options to provide service should be counted, including contracts. Dave would like to try to use Aurora for a regional study for comparison to GENESYS results. Is 5% the right target level for the LOLP? Dave says probably not because we really need to also look at duration and magnitude of events and potential solutions. Dave's perspective is from the customer's point of view. What kinds of outages can the customer sustain or would be willing to accept? Different customers have different needs and will have different preferences for electricity reliability. John replied that most electricity curtailments occur because of transmission and distribution outages. Hence, we cannot currently plan for the level of curtailment based on individual customer preference. Realistically we can only look at "regional" curtailments or periods of high electricity prices.

V Next Meeting

The next Technical Committee Meeting is scheduled for November 27, 2007 from 10 a.m. to 3 p.m. at the Council's Offices. The November 28th Steering Committee meeting will be postponed to December.