26. What is the maximum amount of new capacity that can be added in 2008 in the Humboldt area assuming 1) the retirement of the Humboldt Bay Power Plant and 2) no need for system upgrades or reinforcement? What are the factors constraining the maximum amount of new capacity that can be added? (3-17-05)

Assuming 1) the retirement of the Humboldt Bay Power Plant and 2) no need for system upgrades or reinforcements (to the four transmission lines connecting the Humboldt area to the other part of transmission system), the maximum or minimum new generation capacity can be estimated by the local area load, in-area generation and import/export capability.

From our past studies, the import capability is limited by the thermal capability of the two 115 kV lines from Cottonwood during the contingency conditions. (It is presumed that any voltage problems could be mitigated by adding reactive power devices.) For the existing system, the maximum import is about 50 MW. (The 50 MW capability is estimated based on the loss of the largest generator and a transmission line. For the loss of the one of the existing Humboldt generators, the import will increase from 50 MW to 100 MW. If one of the 115 kV lines is not available, the loading on the remaining line will be at its thermal limit, about 90 MVA.) The export capability, about 50 MW, is limited by dynamic instability during contingency conditions.

Based on these past studies, with a projected peak load for 2008 of 194 MW, the maximum in-area generation is 244 MW (194+50 MW). Based on the latest CAISO estimate, the in-area generation capacity, excluding the Humboldt Bay Power Plant, is about 76 MW. Thus the maximum replacement generation is 168 MW (244-76 MW).

27. What is PG&E Transmission Planning's preference for new capacity in the Humboldt area within the 135MW – 150MW range posted in the transmission study posted on the web site? Why does Transmission Planning prefer this amount? Has Transmission Planning taken into account potential load growth or retirement of existing QF generation in the area? (3-17-05)

Of the existing 76 MW generation capacity (not including the Humboldt Bay Power Plant), the typical generation dispatch has been about 55 MW. Thus, the replacement generation of the Humboldt Bay Power Plant to meet the area load without import or export is about 139 MW (194-55 MW). In the 135-150 MW generation replacement range, PG&E transmission planning prefers 150 MW to accommodate load growth (about 1 MW per year) and potential retirement of some of the other existing generators.

28. What is the minimum generating capacity that must be available during critical periods (e.g. peak times, G-1, n-1) in the Humboldt Area assuming no system upgrades or reinforcement? What are the factors driving this minimum generating capacity? (3-17-05)

As discussed in Q/A 26, the minimum in-area generation capacity for year 2008 is 144 MW (194-50 MW) to stay within the thermal limitations on the 115 kV transmission lines. Assuming the other existing generation is 76 MW, the minimum replacement generation should be 68 MW (144-76 MW). However, PG&E transmission planning is not recommending this minimum because the other existing generation may not be able to generate 76 MW due to fuel or other limitations.

29. What is the maximum single contingency generation loss the Humboldt system can accommodate assuming no system upgrades or reinforcement? What are the factors that influence this maximum single contingency? For example, does this maximum single contingency value change depending on the overall size of the plant or the configuration of the plant? (3-17-05)

In according with the CAISO Planning Standards, the worst single contingency for the Humboldt area is the overlapping loss of the largest generator and a transmission line. As discussed in Q/A 26, the size of the largest generator depends on the desired import capability. For example, the existing system has an import capability of 50 MW and the largest generator is 50 MW. If the desired import capability in the Humboldt area were 40 MW, the largest generator could be 60 MW. From a transmission system perspective, it would be preferable to have as high an import capacity as possible; at least the capacity for the system to operate reliably under the condition that one of largest generators is out of service. In order to provide the operational flexibility, we recommended that the generator size be no larger than 50 MW so that the system could be safely operated with actual imports into Humboldt area ranging from 0 MW to 50 MW.

30. We would like to ensure that we do not unnecessarily limit the amount of generation that can develop in the Humboldt area. The Humboldt Proxy Cost Report indicates that replacing the existing generators at the Humboldt Power Plant with more than 150 MW of generation could cause Humboldt to become an exporting area. The footnote on page 2 indicates that this would be undesirable due to congestion in the Cottonwood area. However, the Proxy Cost Report for the long-term RFO indicates that Cottonwood should have 300 MW of on-peak capacity and 200 MW of off-peak capacity available without upgrades. Based on that information, is it possible that Humboldt could accommodate more than the 150 MW limit if no other generation were added at Cottonwood? (3-17-05)

As discussed in Q/A 26, the maximum replacement generation is limited by the Humboldt export capability of about 50 MW (excluding any limitations at or beyond Cottonwood.) For the 2008 system, the maximum generation is estimated to be about 168 MW. Thus it is possible for the Humboldt replacement generation to be somewhat larger than the 150 MW. As discussed in the footnote, the excess generation could subject to curtailment due to limitations within and/or outside of the Humboldt area.

31. Were the Humboldt Proxy Costs generated using the same method as the other proxy costs that were developed for the long-term RFO? (3-17-05)

The Humboldt Proxy Costs were determined using a similar method that was used to determine the proxy costs that were developed for the long term RFO.

Similarities:

- Used the same base cases.
- Used proxy transmission facilities.
- Proxy costs were based on per-unit cost.
- Reactive support costs were based on proportion of generation capacity.

Differences

- Used Humboldt Bay generation to off-set new generation. (The long term RFO study used distant generation.)
- Incorporated results from contingency power flow studies. (The long term RFO did not conduct any contingency power flow studies.)