

Humboldt Q/A (6/9/05)

Q1. Please address the following questions regarding transmission requirements related to replacement generation for Humboldt Bay Power Plant.

One of the technical requirements in the RFO for Humboldt Replacement Generation was the requirement for replacement generation to have a Fast Start / Fast Ramp capability to pick up at least 40MW in 3-4 minutes.

1. Is this capability required at all times during the load cycle (i.e. both off-peak and on-peak)?
2. What is the basis for the 40MW and the 4 minutes? If replacement generation individual units were sized smaller than 40MW, would this change the requirement or is the requirement based on loss of a transmission line?
3. Some technologies have the capability to start, parallel and ramp to full load in 10 minutes. Would this "quick start" capability meet all or part of the system needs or must the full 40 MWs be provided through local spinning reserve at all times?
4. Is there a minimum generation criteria for the Humboldt area? Is it necessary to provide the 40MW Fast Start / Fast Ramp capability through "spinning reserve" during periods when local generation is scheduled at minimum load?

A1 Due to the unique characteristics of the Humboldt area transmission system, the Fast Start/Fast Ramp capability of the existing Humboldt Power Plant generation provides much reliability benefits in serving the Humboldt area load. The Humboldt area load is served from in-area generation and import. The import capability is limited and is provided via long transmission lines. For example, the two key 115 kV lines are over 100 miles long. The import lines traverses over rough terrain that could hinder maintenance and repair activities. The outage history showed that these lines have more frequent outages than the average 115 kV lines. The Fast Start/Fast Ramp capability would allow higher level of import than without the capability while maintaining the same service reliability. If the contingencies of generation and/or line outages were to occur, the Fast Ramp capability would allow the system to continue to serve the customers. Without the Fast Start/Fast Ramp capability, The CAISO would require other measures to maintain reliability. Such measures could include reducing import, installing special protection scheme to shed customer load or adding transmission facilities.

1. The Fast Start/Fast Ramp capability is needed to maintain reliability under certain contingency conditions (loss of local generation and/or import lines.) Adverse weather conditions would increase the probability of the contingencies and high import would exacerbate the reliability problem. Thus

the need for the Fast Start/Fast Ramp capability is driven by the system conditions rather than by load cycle.

2. The Fast Start/Fast Ramp capability is based on the characteristics of the existing generation. Please note that the existing Fast Ramp capability is in terms of seconds, not minutes. The Fast Start/Fast Ramp (as determined by the ramp rate) capability of the replacement generation should be similar to the existing units.
3. The "quick start" capability as described is needed, but the ramp rate is much slower than the existing units. As discussed above, the ramp rate is critical in maintaining the reliability of the system and the slow ramp rate as described could cause service interruptions.
4. Currently, the CAISO has an operation procedure (T-138) governing the operation for the Humboldt area. The procedure is developed based on the characteristics of the existing generation resources and import capability. The procedure directs the adjustment of the in-area generation to manage the loadings on the transmission facilities. The Humboldt Bay Power Plant (the thermal units, then the MEPP) is the preferred generation to be used for the managing the loadings. Implicitly, the procedure requires a minimum in-area generation (roughly equal to the area load minus the import capability.) The minimum level of the Humboldt Bay Power Plant generation is further complicated by the output of other in-area generation. As discussed in 1 above, the need for the Fast Start/Fast Ramp capability is driven by the system conditions rather than the load level.

The need and the quantity of Fast Start/Fast Ramp capability should be determined by its cost and benefit as well as those from viable alternatives.