

Memorandum -

To: ISO Board of Governors
From: Frank A. Wolak, Chairman, Market Surveillance Committee of ISO
cc: Yakout Mansour, President & CEO, and Charlie Robinson, VP, General Counsel & Corporate Secretary
Date: July 26, 2006
Re: *Low Voltage Transmission Revenue Requirements Cost Recovery (LVTRR) for Non-Load-Serving Participating Transmission Owners*

The Trans Bay Cable (TBC) project, approved by the California ISO Board on September 8, 2005, addresses reliability concerns in the San Francisco peninsula region. The major investment component of this project is a 59-mile high voltage direct current (HVDC) transmission line under the San Francisco Bay from Pittsburg to San Francisco. This line will connect at Pacific Gas and Electric's (PG&E) Pittsburg Substation and at PG&E's Potrero Substation in San Francisco. The project also requires the construction of converter station facilities and facilities needed to connect to PG&E's Potrero Substation at the 115kV level. These are Low Voltage Transmission Facilities subject to Low Voltage Transmission Revenue Requirement (LVTRR) recovery under TBC's Transmission Owner Tariff.

The high voltage construction and operating costs of the project will be recovered from the California ISO's Transmission Access Charge, which is assessed on all load served in and wheeled through the ISO Control Area. The tariff also allows a Participating Transmission Owner (PTO) to recover its LVTRR through a Low Voltage Access Charge on the loads served by these low voltage facilities. The ISO management believes there is a potential ambiguity in the ISO Tariff concerning how TBC will recover its LVTRR. In light of this, the CAISO conducted a stakeholder process for considering revisions to the ISO Tariff that provide greater clarity on how TBC will recover its LVTRR and will be seeking Board approval of certain CAISO Tariff modifications at the August 3 Board meeting.

The purpose of this memo is to specify a set of economic principles that the ISO management should adhere to in designing a mechanism to recover TBC's LVTRR. The first principle is assigning the cost of a project to the entities that caused it. For the TBC project, the entities that benefit from the low voltage transmission facilities should pay for the cost of constructing and operating these facilities. The second principle is that unless there is congestion on the low voltage transmission line, the marginal cost of shipping an additional MWh of energy across the facilities is, to a first approximation, equal to zero. This implies that in order for TBC to achieve revenue recovery for its low voltage transmission facilities, all users must pay an access price in excess of the marginal cost of using the line. The third principle is that the physics of transmission network operation make it impossible to determine precisely how much of each transmission facility a market participant is using during a given time interval. Equivalently, determining precisely how much each market participant benefits from a given transmission facility is also extremely difficult. This logic suggests that the substantial expense necessary to obtain a better estimate of the distribution of

these costs or benefits across market participants may not be worth it. Simple rules for determining the “share of use” of these facilities by each market participant may be superior on a long-term cost versus benefits basis. I now discuss the application of each of these principles to the design of a mechanism to recover TBC’s LVTRR.

Beneficiary Pays

Low voltage transmission facilities are typically thought of as delivering energy in one direction and in that sense only benefit loads at one end of the transmission link. In the present case, TBC’s low voltage facilities would only deliver energy to customers located in San Francisco. Viewed from this perspective, the beneficiaries of these facilities are loads located in San Francisco. However, there are other high voltage transmission network interconnection points with the low voltage transmission network in San Francisco. This logic implies that more deliveries over the TBC low voltage facilities implies that the other low voltage facilities in San Francisco and the high voltage facilities they connect to may need to be used less intensively to meet San Francisco load. This logic implies that customers interconnected to the high voltage transmission network outside of San Francisco may be indirect beneficiaries of the TBC low voltage facilities. It is difficult to determine the geographic extent of these benefits, or equivalently how many of PG&E customers should be included. One logical geographic boundary is the service territory of PG&E. This logic implies recovering TBC’s LVTRR from all customers located in the PG&E service territory.

Recovering Fixed Costs

Virtually all of the construction and annual operating and maintenance costs of TBC’s low voltage facilities do not vary significantly with the amount of energy that flows over these facilities. For this reason it is necessary to set price for using the facilities that is above the marginal cost of using these facilities during uncongested periods. The most efficient way to recover revenues beyond those available from marginal cost pricing is to set prices above marginal cost in proportion to the inverse of the elasticity of demand for that consumer or product. Determining the inverse elasticity of demand for TBC’s transmission facilities would be an extremely complex and expensive process that is unlikely to yield credible results.

Costs Versus Benefits of Complexity

A final issue concerns the cost and potential market efficiency properties of a more complex allocation process relative to an extremely simple mechanism. Given how difficult it would be to determine the inverse of the elasticity of demand for using TBC’s low voltage facilities for each potential user of these facilities, a process that attempts to account for differences across customers in their willingness to pay to use TBC’s facilities is very likely to be extremely inaccurate. Factoring in the increased cost of implementing such mechanism provides further evidence in favor of straightforward, easy-to-administer mechanisms.

Concluding Comments

These general principles do not yield a single recommended process for recovering TBC’s LVTRR. However, if followed, they are likely to yield a mechanism that imposes little, if any, harm to short-term energy and ancillary services market outcomes and may even yield benefits.