

Opinion on the California ISO's Proposal for Honoring Existing Transmission Contracts (ETCs) under the Market Redesign and Technology Upgrade (MRTU)¹

by

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1. Introduction

The California ISO has recently proposed an approach to honoring existing transmission contracts (ETCs) under its Market Redesign and Technology Upgrade (MRTU). The management of the ISO has asked the Market Surveillance Committee (MSC) to assess the market efficiency implications of this market rule. We first discuss the rationale for this treatment of ETCs. The important features of the ISO's proposed approach are then described. This is followed by a discussion of whether the ISO's proposed approach actually fully honors the ETC holders' contractual rights. The opinion closes with a description of possible complications that could arise when the ISO implements this change in treatment of ETCs.

The ISO proposes to honor ETCs on the interties into California by reserving all of the ETC capacity in the day-ahead market. For ETCs on transmission paths within California the ISO proposes to reserve only the capacity that is scheduled in the day-ahead market. While it is unfortunate that legacy arrangements and seams issues necessitate the co-existence of somewhat incompatible paradigms for managing transmission rights, given the imperative to honor pre-existing contracts, the ISO's hybrid approach to honoring ETCs under the MRTU is perhaps the best possible compromise between honoring pre-existing arrangements and capturing the benefits of the ISO's proposed market redesign. Clearly, the market efficiency consequences of a setting aside all internal ETC capacity in a day-ahead locational marginal pricing (LMP) market are much more severe than would be the case under the current zonal market. In contrast, reserving the entire ETC capacity on the interties with neighboring control areas in a day-ahead LMP market is likely to create similar operational and market monitoring challenges to those that exist under the current zonal market that reserves all ETC capacity for the day-ahead scheduling process.

Stakeholders raised two major concerns. First, the ISO and some stakeholders, most notably the LADWP, disagreed as to whether an approach that treated ETCs on the interties into California the same as ETCs for transmission paths within California honored all of the terms of the ETCs.

¹ The MSC solicited input from stakeholders in the process of formulating this opinion. Stakeholders were asked to submit written comments to the MSC by September 28, 2004. Seven organizations submitted written comments to the MSC. These were: Brett Franklin from the Electricity Oversight Board (EOB), Diana Mahmud from the Metropolitan Water District of Southern California, John Burnett of the Los Angeles Department of Water and Power (LADWP), C. Anthony Braun from the California Municipal Utility Association (CMUA), Alexander Cabrera of Southern California Edison (SCE), Sean Neal of the Modesto Irrigation District (MID), Michael Wemer of the California Department of Water Resources, and Robert Tang of the City of Azusa Light and Water. On September 30, 2004 the MSC also held a public conference call with stakeholders where these written comments and other issues were discussed. The MSC is extremely grateful for the time and effort taken by stakeholders. Their input was very helpful to the MSC in formulating this opinion.

It appears that the ISO's most recent proposal to reserve all ETC capacity on the interties in the day-ahead market addresses these concerns. Any disagreement on contractual terms should be settled between the seller and owner of the ETC. Nevertheless, we believe that the ISO's current proposal fully honors all ETCs. Second, some stakeholders, most notably MID, have argued that it makes little sense for the ISO to devote substantial funds to developing the new software necessary to implement this approach to honoring ETCs given the current uncertainty about whether an LMP market will be implemented in California. However, the ISO emphasizes that the incremental cost of honoring ETCs according to this proposal is extremely small under either an LMP market design or the Transitional Alternative Pricing and Settlement (TAPAS) market design. In contrast, it would be very costly to implement software to reserve ETC capacity on internal interfaces. The major uncertainties associated with adopting LMP can be addressed by the Federal Energy Regulatory Commission (FERC) implementing an effective local market power mitigation (LMPM) mechanism and providing the regulatory intervention necessary to resolve the seller's choice contracts problem, the two major barriers to implementing an LMP market in California.

2. Rationale for Proposed Approach to Handling ETCs

Since the start of the California market in April of 1998, the ISO has honored ETCs by reserving transmission capacity on a day-ahead basis whether or not this capacity was fully scheduled by the ETC rights holder. This capacity is held out of all ISO markets until 20 minutes before the start of the operating hour to allow for schedule increases by the ETC rights holders. Any unused transmission capacity is then made available to the ISO operators for use in the real-time market. The current approach to honoring ETCs by limiting the amount of non-ETC schedules the ISO accepts in its day-ahead and hour-ahead markets only applies to internal inter zonal interfaces (Path 15 and Path 26) and interties with neighboring control areas. The ISO does not currently reserve transmission capacity for unscheduled ETC rights within the three congestion zones in the control area. As noted on page 8 of the ISO's "Proposal for Honoring Existing Transmission Contracts," (dated September 20, 2004, and henceforth referred to as the "White Paper"), at the start of the ISO, FERC presumed that the Participating Transmission Organizations (PTOs) would convert their ETCs to transmission rights in the ISO markets within five years. However, the ISO is currently into its seventh year of operation under this transitional approach to honoring ETCs.

One market inefficiency associated with the current approach to handling ETCs is what is called "phantom congestion," where the ISO reserves transmission capacity on an interface because of an ETC, and this results in congestion in the day-ahead and/or hour-ahead congestion management markets. Because these ETC rights are often not fully scheduled in the day-ahead or hour-ahead markets and not fully used by the ETC holder in real-time, this results in no congestion in the ISO's real-time market. Such phantom congestion has two undesirable effects. First of all, beneficial day-ahead and hour-ahead transactions are prevented from occurring. In particular, larger and less expensive units with long ramp-up times may be prevented from being scheduled. Second, relationships between day-ahead and real-time prices may be distorted, with higher price differences between buses day-ahead reflecting the phantom congestion. Releasing unscheduled ETC capacity in the day-ahead and hour-ahead markets would reduce the likelihood that these effects of "phantom congestion" in the day-ahead and hour-ahead markets would occur.

We should note that there is much disagreement about the extent and costs of phantom congestion under the current market design. Several stakeholders have argued that the ISO is fixing a problem that doesn't exist. However, the transition to LMP and other elements of the MRTU

necessitates doing something different. Because changes are necessary, we feel that it is imperative for the ISO to avoid the risk of much more severe internal phantom congestion problems that would be created by an attempt to pre-reserve all internal ETC capacity. In addition, reserving internal ETC capacity in the day-ahead market would significantly increase the software costs of implementing a LMP or TAPAS market design.

The transition to a full network model in the day-ahead and hour-ahead congestion management process under an LMP market considerably complicates the process of determining the amount of transmission capacity within California to withhold from the day-ahead market in order to honor ETCs across transmission paths within California. As noted in the ISO's White Paper, under the current zonal market design the ISO control area is modeled as a radial transmission network, so the process of reserving ETC transmission capacity is relatively straightforward. The ISO operators reduce the power flow limit on the inter-zonal interfaces with ETCs. Under an LMP paradigm, unscheduled ETC rights would need to be modeled as Point-To-Point Transmission Options from a source to a sink. As the White Paper notes, this is a considerably more complex task within the context of a looped transmission network with thousands of nodes, relative to the case of a three-zone radial network. The task is comparable to assigning a set of financial option transmission rights while maintaining a simultaneous feasibility criterion. In order to accommodate the direct and indirect network effects of all possible combinations of usage of the options rights the ISO must greatly reduce the amount of capacity that can be made available to other participants.

Depending on the extent to which virtual bidding is allowed, the potential market inefficiencies that result from withholding ETC capacity on the interties into California from the day-ahead and hour-ahead markets could be very small. One of the stated goals of the MRTU process is for the day-ahead and hour-ahead markets to resemble as closely as possible expected real-time system conditions in the day-ahead and real-time markets. Withholding all ETC capacity from the day-ahead and hour-ahead markets is inconsistent with achieving this goal, unless market participants can submit virtual bids at all locations in the control area. Reserving only the ETC capacity that is scheduled in the day-ahead and hour-ahead markets comes closer to achieving the goal of making day-ahead and hour-ahead market outcomes resemble expected real-time system conditions without substantial amounts of virtual bidding throughout the ISO control area.

Holding out only ETC capacity that is scheduled in the day-ahead market both within California and across the interties with neighboring control areas is likely to lead to superior market performance relative to a market design that holds out all ETC capacity at the interties into California. However, ISO's proposed hybrid approach to honoring ETCs should not significantly degrade market performance under an LMP market design. By allowing virtual bidding at all interties, the ISO can allow market participants the opportunity to eliminate these market inefficiencies by creating additional transmission capacity in the day-ahead market based on their expectations of the amount of ETC capacity that will be released in real time.

3. Major Features of ISO's Method for Honoring ETCs

There are three major features of the ISO proposed methodology for handling internal ETCs. The first is that the ISO will not reserve transmission capacity on internal ETCs but will instead guarantee physical access to rights holders through hour-ahead or real-time markets. The second feature is how the ISO will manage the costs of fully honoring internal ETCs in the hour-ahead and

real-time markets in California. The third feature concerns the process used by the ISO to validate ETCs.

Physical Access

The ISO's proposal continues the existing practice of fully reserving all ETC capacity on interties with neighboring regions. For ETCs that are internal to the ISO, the ISO will only reserve ETC capacity to the extent that it is scheduled in the day-ahead market. In the simplified hour-ahead market, changes to internal ETC supply schedules would continue to have priority over all other schedule changes made in the hour-ahead market. The load side of internal ETC schedules would be scheduled and settled at specific network nodes, or if applicable, the interfaces of a Metered Subsystem. If the ISO is unable to accommodate additional internal ETC capacity by accepting adjustment bids in the hour-ahead market, then it will redispatch internal resources as part of running the real-time market to make room for the desired ETC schedule changes.

There are two relevant questions from a system efficiency standpoint. First, how will the proposal influence the accuracy of ETC schedules? Second, how costly is it to adjust the system to "make room" for internal ETC schedule changes that come in between the close of the day-ahead market and real-time system operation?

On the first question, we do not expect large differences in scheduling behavior by external or internal ETC holders under the ISO's proposal. Internal ETCs will continue to be honored by making room for the incremental ETC capacity requests between the day-ahead and real-time markets. ETCs on the interties will continue to be honored by withholding all of the ETC capacity from the day-ahead market. Continuing to set aside all ETC capacity at the interties will reduce the competition these ETC holders face for the transmission capacity outside of the ISO control area that is necessary to make use of additional intertie ETC capacity between the close of the day-ahead market and the real-time market. ETC holders at the intertie will continue to enjoy the luxury of waiting to schedule additional energy with their ETC capacity because they can be confident that attractive generation sources outside of California will not already be spoken for.² This is likely to continue to cause ETC holders at the interties to under-schedule their ETC capacity in the day-ahead market in order to take advantage of attractive last-minute options for transmission capacity in the neighboring control areas.

The system reliability and cost consequences of making room for incremental internal ETC requests are likely to be smaller under a LMP market design versus the current zonal market design. Under a LMP market, the ISO operators have many more locational prices under their control to incent generation units and loads to change their day-ahead or hour-ahead schedules to make room for incremental internal ETC requests made between the day-ahead and real-time markets. The Residual Unit Commitment (RUC) process is designed to ensure that adequate resources are available in the local areas, which should further increase the ability of ISO operators to meet incremental internal ETC requests without significant reliability or cost consequences. Last, by 2007, ISO operators will have more advanced tools at its disposal for managing network redispatch, which should reduce these costs even further.

² Most stakeholders explicitly recognize the advantage this capacity set-aside bestows on the ETC holder. Some have claimed that taking away this advantage would deny them a right bestowed upon them by the contract.

Cost Allocation

The ISO proposes to implement what it calls a “Perfect Hedge” option to ensure that all ETC holders are held financially harmless by day-ahead ETC schedules as well as ETC schedule changes made in the hour-ahead and real-time markets. This will be accomplished by the ISO reversing the congestion charges associated with scheduling ETC capacity in any of the ISO markets. To ensure that non-collection by the ISO of the day-ahead ETC congestion charges does not create a liability for non-ETC CRR holders, the ISO will model internal ETC obligations along with other Congestion Revenue Right (CRR) requests in the CRR simultaneous feasibility test. However, the ISO will not release the CRRs necessary to provide this day-ahead hedge to ETC holders. The ISO will follow a similar process in the hour-ahead and real-time markets to refund the congestion charges associated with valid post-day-ahead ETC schedule changes. Under the ISO’s proposed LMP market, all charges for hour-ahead and real-time congestion will be collected in an account known as the “Imbalance Energy Offset.” Reversing these congestion charges for ETC holders will reduce the amount of money flowing into this account. Reversal of real-time congestion charges will occur for schedule changes made in both the simplified hour-ahead market and before the real-time market.

Validation

The ISO also proposes an option to take over validating ETC schedules from the relevant PTO, although its preference is to continue to have the PTOs schedule and validate ETC schedules. The ISO’s “middle ground” approach is to perform day-to-day verification that submitted ETC schedules are within their contractual rights, as long as the contract sellers, the PTO, provides certain information to the ISO that forms the basis for this validation. The ISO emphasizes that this new approach is offered as an option, but is not intended to exclude the current approach of PTOs scheduling and validating ETCs.

4. Assessing Whether the ISO Proposal Honors ETCs

There are two major issues associated with determining whether the ISO’s proposed approach actually honors the ETC holders’ contractual rights. The first issue concerns the timing of honoring ETC capacity and whether this might impact the amount of transmission capacity ultimately available to the ETC holder. The second issue concerns the impact of withholding internal ETC capacity from a day-ahead LMP market on the ability of the ISO to provide internal ETC holders with additional transmission capacity inside of the ISO control area between the day-ahead and hour-ahead and real-time markets.

The ISO’s white paper summarizes how the ETCs were honored during the former vertically integrated regime. Both SCE and Pacific Gas and Electric (PG&E) honored their ETCs by re-dispatching their own generation units to accommodate ETC schedules when this was necessary. This approach is consistent with the ISO’s proposed approach. Neither SCE nor PG&E compensated ETC holders for unused ETC capacity, although to varying degree both entities allowed third parties to use ETC capacity. PG&E did not explicitly allow ETC holders to sell their capacity to third parties, but it did allow ETC holders to buy and sell electricity on behalf of third parties. SCE did allow some ETC holders to sell unscheduled ETC capacity to third parties, although the ETC holder was the only entity allowed to make schedule changes. The ISO’s proposal allows ETC holders to continue to exercise these rights.

Several stakeholders commented that the ISO should consider offering a non-firm transmission rights product in the day-ahead market as a way to honor existing transmission rights. We are not aware of any formal wholesale market in the United States that offers non-firm transmission capacity product. Under a wholesale market design, all transmission capacity is non-firm in the sense that if the transmission price exceeds a market participant's willingness to pay for it, the market participant will forego the use of this transmission capacity. This same transmission capacity is firm in the sense that if a market participant purchases the right to use a portion of a transmission interface in the day-ahead market, unless it sells this capacity back in a subsequent market, it has a firm financial right to this transmission capacity. Consequently, under a wholesale market regime, there is no need for a non-firm product because all market participants have the ability to submit bids that express their willingness to give up transmission capacity they have purchased in a previous market or purchase additional transmission capacity. The ISO's proposal provides strong incentives for all market participants to submit bids giving their willingness to sell and buy transmission capacity, because the ISO has committed to implementing pro-rata curtailments of non-ETC transmission capacity in the real-time market in order to honor additional internal ETC requests. Consequently, although the ISO will sell unused internal ETC capacity in the day-ahead market, ISO market participants have a strong incentive to submit adjustment bids in the real-time market, because they face the risk of pro-rata curtailments in the very unlikely event the ISO has insufficient adjustment bids available to accommodate an ETC holder's request to use additional internal ETC capacity in real time.

The final point concerns the ability of the ISO to provide the additional internal ETC capacity requested between the close of the day-ahead market and real-time system operation. As noted above, the current market design honors internal ETCs using this 'schedule changing' mechanism. Because the ISO operators have more tools at their disposal to cause suppliers and loads to change their day-ahead schedules to make room for additional internal ETC capacity requests under an LMP market, it is likely to be more straightforward and less costly for ISO operators to honor these incremental internal ETC capacity requests under an LMP market design. Therefore, it seems more likely that incremental internal ETC capacity will be fully honored under an LMP market design relative to the current zonal design.

5. Potential Complications in Implementation

There are two topics that should be studied in more detail before the ISO issues tariff language to implement its proposal. The first concerns determining how much CRR capacity to withhold from the CRR allocation process to implement the ISO's "Perfect Hedge" approach to honoring internal ETC contracts. The second issue concerns determining what information the ISO will need to collect from both PTOs and ETC holders in order to validate ETC schedules in the day-ahead market and implement the "Perfect Hedge" settlement option.

Because ETC contracts are typically directional options rather than point-to-point obligations, it is unclear precisely how the ISO can best hedge the congestion costs associated with honoring the ETC contracts through an explicit reversal of congestion charges in the day-ahead and real-time markets. We recommend that the ISO undertake studies of how to raise the necessary congestion revenues to fund the option CRRs implicit in its "Perfect Hedge" option while still providing the largest possible amount of obligation CRRs to ISO market participants. While we do not believe this is an insurmountable obstacle to implementing the ISO's approach to honoring internal ETC contracts, we do believe that there could be significant expected benefits associated with studying this issue before this proposal is implemented.

Similar logic applies to the issue of what sort of information the ISO should collect from both PTOs and ETC holders in order to provide the maximal flexibility to ETC holders in exercising their transmission rights. A specific issue to be addressed includes how to allow third parties to use ETC capacity for those ETC rights that previously allowed third parties to make use of them. Another is how to validate that the terms of an ETC contract are satisfied for those ETC contracts that did not previously require the ETC holder to specify explicit sources and sinks. The ISO's White Paper notes that a number of ETC contracts do not specify explicit sources and sinks. Most ETCs only specify capacity on transmission paths. The PTO and the ETC holder must decide how these zonal ETC rights will be translated into nodal ETC options. The ISO can provide input to this process, but this appears to be an issue that should be resolved between the parties to the contract.

Finally, we strongly urge the PTOs to convert all ETCs to conventional transmission rights as soon as possible. As noted above, the costs of having a number of somewhat inconsistent pricing and allocation mechanisms for transmission capacity within and into the California ISO control area are likely to be significant. Such inconsistencies are barriers to trade and to efficient use of transmission and generation resources. Converting these transmission capacity allocation mechanisms to a single standard is likely to increase significantly the benefits California consumers receive from LMP energy and ancillary services markets.