



**M E M O R A N D U M**

**TO:** Jane Wilson, REAP Project

**FROM:** Pierce Atwood

**RE:** Bosnia-Herzegovina System Operator/ Market Operator  
Questions

**DATE:** May 7, 2009

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This Memorandum follows up our prior e-mail correspondence and telephone calls regarding electric power market design in Bosnia-Herzegovina.

**I. BACKGROUND AND ISSUES**

We understand that the issues surrounding congestion management on the transmission network are of concern in BiH. The fact that BiH has recently and publicly been noted as out of compliance with Energy Community Treaty and EU Directives with respect to explicit auctions and other transparent congestion management and cross-border market mechanisms and related electric power market design issues has helped raise the profile of these issues.

These questions, in turn, have also been presented against the structural and political backdrop in BiH. That backdrop includes a State-level Independent System Operator (ISO), a State-level Transmission Company (Transco), explicit legislative and charter limitations in the functions of each, and Entity level generation and distribution companies, together with State and Entity level regulators.

More particularly, these issues have become highlighted because, in order to satisfy requirements under the Energy Community Treaty and applicable EU Directives regarding allocation of transmission capacity during periods of congestion, BiH must migrate from the current system of pro rata allocation to an auction-based system.

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Implementation of an explicit auction process, in turn, raises a number of other questions. These issues include, for example, who conducts the auction, whether the ISO has the legal authority to do so, how to structure a system so that the ISO is not placed in the position of holding funds generated by the electricity market, is not acting as a trader in electricity, and thus can avoid taking risk positions, and market regulation, monitoring and enforcement.

## II. SYSTEM OPERATOR VS. MARKET OPERATOR

One issue that has arisen in the discussions among the various stakeholders is the difference between a “system operator” and a “market operator”. The ISO, per statute, is authorized to be a balancing market operator but is not expressly authorized to be a financial market operator.

As an initial reference point, it may be helpful to define these somewhat differing terms, with the understanding that no universal definition of either term appears to exist:

a. A **System Operator** is the organization responsible for the operation and operational reliability (and long term reliability) of the transmission grid. The System Operator can be, and frequently is, separated functionally, corporately and ownership-wise, from the owner of the hard assets (wires and poles). The functions of the System Operator typically include operational control of flows, dispatch instructions to generation, assurance that the system stays within operating limits, determination of reserve needs, and support and supply of ancillary systems (with the ability to call generators to provide these services).

b. A **Market Operator** can be similar to a commodity or mercantile exchange, though the exact flow of funds can vary within differing electric market models and usually differs from what is customarily seen in other commodity and exchange markets, such as financial exchange markets. For purposes of this discussion, the Market Operator can be defined as the party that accepts and clears the bids and offers and then communicates to the System Operator units to be dispatched. Market Operators in some power systems actually “make the market” by taking a proprietary interest in the commodity (capacity, energy, ancillary services) and then settling the trades (and bearing the risk of non-settlement). Globally, markets vary widely in complexity and products, structure and cash flow. For example, in some markets, only energy is traded, and ancillary services are self-supplied by generators at no additional cost. In other markets, ancillary services are further unbundled and provided pursuant a market mechanism, either day ahead, week ahead, or some other option system. The

real-time spot market in energy is one common element under the direction of the Market Operator (as defined in this context). Other products and services include day-ahead energy markets, ancillary services, and capacity.

c. Distinctions. One way to view the distinction between System Operator and Market Operator is that the Market Operator oversees the mechanism by which the decisions concerning what generation to run at any given moment are made. These decisions, in turn, are acted upon by the System Operator. This two-part structure can lead to greater efficiencies in dispatch (more competitive bidding). On the other hand, a two-part system can also lead to irregularities and opportunities for abuse, as we saw in California when generators would withhold supply and otherwise act to manipulate markets. To be sure, a separation between Market Operator and System Operator can be achieved in a fashion that promotes transparency, efficiency and lack of corruption. It requires among other things detailed operating agreements and market rules, mechanisms to promote transparency, and rigorous monitoring, validation and enforcement from regulators. As an example, the FERC Office of Energy Market Regulation did not even exist when the California crisis first started in 1999-2000 and now has several hundred professionals involved in assuring that power markets function fairly, efficiently and transparently.

In the absence of a Market Operator, a different mechanism needs to be developed to assure appropriate dispatch. Previously in New England, when transmission ownership and system operation were merged under one entity, NEPOOL, dispatch was achieved according to marginal costs submitted by the generation owning (and transmission and distribution owning) utilities, who then divided up costs and benefits through a central dispatch algorithm. While NEPOOL itself was not deemed a market operator, it acted in what today we regard as in a market operator function. Advanced market operators, such as ISO New England and PJM, act as clearinghouses for a broad array of electricity products. In the specific case of ISO New England, that ISO took over the system and market operator function from NEPOOL, which is the organization of transmission and generation owning utilities and companies in the New England states. In effect, the operation of the transmission system and electric market in New England was separated from the transmission and generation owners so as to assure transparent and independent operation of the system and the market. NEPOOL remains as an organization comprised of the owners of transmission and generation in the region but does not operate and dispatch the system. They also have a policing and verification process to assure that price distortions do not occur and to assure that market abuse is eliminated. On top of their own pricing functions is the role of the regulator (FERC) and other law enforcement agencies. Both ISO New England and PJM are each system operators and market operators combined.

Because the information from the market is needed instantaneously for operation of the transmission system, the exact line between System Operator and Market Operator will not always be easy to define. In a nutshell, the Market Operator is more concerned about who gets how much money, and the System Operator in who or who is not running generation and flowing electrons at any given moment.

Unfortunately, there does not appear to be a universal definition either in Europe, the U.S. or elsewhere globally, on the distinction between Market Operator and System Operator. The EU, for example, does not appear to define those terms. The draft EU Directive on Electricity, in Article 2, section 3, defines a “transmission system operator” as “a person . . . responsible for operating, ensuring the maintenance of, and if necessary developing the transmission system and where applicable its interconnections with other systems and for ensuring the long term ability of this system to meet reasonable demands for the transmission of electricity”. This definition is consistent with the general definition of System Operator noted above. There is no parallel EU definition for Market Operator.

### III. OPTIONS

Overall, the absence of precise definitions underscores that the stakeholders in BiH should be addressing these questions from a functional, rather than a strictly structural, perspective. The explicit auction function for congestion management contemplated under the Energy Community Treaty and applicable EU Directives appears to be more closely related to the System Operator function (determining system stability, dispatch, flows over constrained interfaces) and thus would not require the creation of a separate organization to perform the auction function. At its heart, the auction function is an operating issue, not a financial issue. We believe that the function can and should be structured in a way that makes it clear that the System Operator (in this case, the BiH ISO) is simply identifying the winners and losers based on the bidding and the amounts to be paid. We believe that secondary legislation could be written and adopted such that the ISO conducts the auction pursuant to detailed rules, reports the auction results promptly and in a transparent manner, and identifies the flow of funds from the winning bidders to the transmission facility owners. It is up to the transmission facility owners (in this case, the BiH Transco) and the winning bidders bilaterally to execute the winning bid, and use the funds to maintain and upgrade the system (in part to reduce congestion). As with prior practice on electricity and gas issues, an appropriate process for preparing this secondary legislation would be for the ISO to develop a rule in consultation with a working group of stakeholders, which in turn is submitted as a recommended rule to the regulator for adoption. The regulator

thus retains jurisdiction and discretion over the rules, but their preparation would lie with stakeholders. This is a common process in ISO systems.

This structural solution has the benefits of working within the existing legislative charter for the ISO, and keeps the ISO out of risk of financial functions and failures. A transparent explicit auction process conducted by the ISO should result in identification of the actual results of congestion and will help guide future investments in the transmission network.

Under the plan above, the ISO would be taking no financial or market risk. That is, the ISO would be indifferent to the identity of the winners and the price. It would not be acting contrary to any prohibition against involvement in the electricity market as a market participant. It would be an auctioneer, not the buyer or seller; the referee rather than player. The ISO is not taking any proprietary interest in the transaction, the winner, the loser, the amount of funds, or the flow of funds.

#### IV. ADDITIONAL ISSUES/MONITORING AND ENFORCEMENT

As the above discussion suggests, moving to an auction process triggers additional issues that would need to be resolved. A core function is market monitoring. Typically, this function rests with the regulator. An independent third-party with appropriate authority, autonomy and accountability needs to assure that the auction process functions as intended, and that improper, non-transparent, market manipulative behavior is prevented, identified or punished as appropriate. A related issue is which party can determine transmission and capacity set asides for native loads, a practice that is permitted under limited circumstances under the EU regime. Again, typically the regulator assumes this authority and acts as the interpreter of the EU Directives and rules. Overall, the preferable approach in BiH would appear to have the regulator establish the general standards by which the auction would be held, and flows of money take place. The ISO would then be charged with administering the auction. All parties would have an appropriate opportunity to report improper behavior to the regulator.

In sum, however, it appears to us at this preliminary juncture that the system operation function and the market operation function can be designed such that the ISO works within its statutory charter and is successfully able to fulfill its function of assuring a safe, reliable and functioning market, without participating as a market participant.