-- Final DRAFT --

MARKET MONITORING TRANSITION PLAN

FOR SOUTH EAST EUROPE WHOLESALE ELECTRICITY MARKETS

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I. Executive Summary

Pursuant to the Energy Community Treaty and the conclusions of the Twelfth Athens Forum in May 2008, this document contains the Market Monitoring Transition Plan (Transition Plan) to continue market monitoring of the electricity markets in South East Europe. Market monitoring was initiated through a Pilot Plan in 2006 by the United States Agency for International Development (USAID) and the National Association of Regulatory Utility Commissioners (NARUC).[1] A final report on the Pilot Plan was presented at the Twelfth Athens Forum.[2] A critical element of the Final Report was the recommendation to initiate a Transition Phase, with support of USAID that would lead to a permanent market monitoring function under the Energy Community Regulatory Board (ECRB).

The recommendation was considered by the ECRB and the ECRB Electricity Working Group (ECRB EWG). These entities reported to the Athens Forum in favor of the recommendation. The following is the relevant portion of the conclusions of the Twelfth Athens Forum:

> The ECRB supports the enlargement of the market monitoring project to include [Coordinated Auction and Coordinated Auction Office (CAO)] monitoring with [the] suggestion to enlarge the geographical scope of market monitoring to the participants in the future [eighth congestion management] region and CAO participants. The ECRB proposed only publicly available data to be used within the market monitoring according to data available by TSOs and in compliance with Regulation (EC) 1228/2003 and the Congestion Management Guidelines.

Accordingly, this Transition Plan has been prepared to provide details on how this transition will occur. The ECRB EWG approved this plan in November 2008 and it was accepted by the ECRB in December 2008. This Transition Plan is not the final market monitoring design. Any permanent function will be established at a later point in time as more experience is gathered during the transition, especially with respect to how the coordinated auction will be structured and how the CAO will be monitored.

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[1] The Pilot Plan was proposed in the context of the Treaty establishing the Energy Community which entered into force in July 2006. The Treaty has among its key elements the commitment to advance the competitive structure of the electricity markets. USAID, in conjunction NARUC assembled a team of consultants to perform the market monitoring led by Dr. Robert Sinclair of Potomac Economics in Fairfax, Virginia and including Dr. Peter Kaderjak of the Regional Energy Policy Center (REKK) at Corvinus University in Budapest, Dr. David Newbery of the Energy Policy Research Group (EPRG) at Cambridge University in England.

A. Project Scope

The scope of the Transition Plan has two main elements. First, the on-going monitoring of the regional wholesale markets will continue in the manner established under the Pilot Plan, with modifications to meet the Athens Forum requirements. Second, consistent with the conclusion of the Twelfth Athens Forum, market monitoring also will be dedicated to monitoring the development of the coordinate auction mechanism and the implementation of a monitoring function for the Coordinated Auction Office (CAO) and Coordinated Auction (CA).

The consultants that currently produce analyses under the Pilot Plan will continue their activities during the transition phase under the guidance of the ECRB EWG and will also assist in implementing a monitoring function that oversees the CAO and CA. The Energy Community Secretariat (ECS) will provide administrative assistance, including requesting and collecting data. The transition plan will continue through December 2009, but may extend until a final monitoring arrangement is established.

The geographic scope of the Transition Plan will be consistent with the geographic scope under the Pilot Plan, which itself reflects the signatories of the Energy Community Treaty. The entities are Albania, Bosnia & Herzegovina, Bulgaria, Croatia, Former Yugoslav Republic (FYR) of Macedonia, Montenegro, Romania, Serbia, and the United Nations Interim Administration Mission in Kosovo (UNMIK). The monitoring will be expanded to include the others in the 8th Region.

B. Transition Process

The transition process will extend through December 2009. The transition Plan described herein provides the guidelines the ECRB EWG will use to conduct the market monitoring. The guidelines are in two parts. First, the guidelines establish the analyses and data requirements that will support the on-going monitoring initiated under the Pilot Plan. Second, the guidelines establish the analysis and data to support a monitoring of the CAO and CA.

[2] The Report along with the five quarterly reports and other information associated with the Pilot Plan are posted on the SEE Market Monitoring website: http://www naruc.org/see_monitoring/reports html

This Transition Plan provides initial market monitoring guidelines. ECRB EWG will direct the Consultant, Potomac Economics, to expand or modify the guidelines as circumstances change.[3] Changes to these guidelines will be subject to the approval of the ECRB EWG. The consulting team will maintain close contact and collaboration with ECRB EWG and the ECS during the Transition Phase.

C. Market Monitoring Guidelines

1. Current Market Monitoring Guidelines

Market monitoring initiated under the Pilot Plan has focused on the market for cross-border transmission capacity. Because of the importance of maximum and non-discriminatory access, this monitoring will continue. The key to monitoring bilateral contracts market like the market in SEE is identifying periods of congestion and other transmission access issues. Congestion can be observed through a variety of indicators, primarily including lack of ATC and curtailment of cross-border schedules. When such actions are taken, data will be sought that records such actions. Data also will be sought determine the potential cause of the congestion, including data underlying the calculation of NTC and ATC values.

Based on data requested from TSOs and data procured from public sources an analysis will be conducted to identify potential impediments to competition arising from setting and utilizing ATC will be pursued. This will involve accounting for the real-time uses of the system by comparing the reserved uses of the system to the actual physical flow. This will aid in detecting situations consistent with under- and over-scheduling (although it may not be determinative). Under-scheduling occurs when power is reserved but not used, thereby potentially withholding the capacity from the market. Accordingly, we will also seek to monitor “capacity release” to determine the extent to which reservations not used have been released and made available for sale in what is known as the secondary market. Over-scheduling occurs when transactions are allowed to be executed without proper reservations and scheduling. This analysis also will identify areas where additional ATC is the most valuable in order to focus monitoring resources

[3] The other consultants that contributed to the Pilot Plan may also be involved in ancillary activities such as benchmark modeling and special studies. The consultants are Dr. Peter Kaderjak of the Regional Energy Policy Center (REKK) at Corvinus University in Budapest, Dr. David Newbery and Elizabeth Hooper of the Energy Policy Research Group (EPRG) at Cambridge University in England.

on ensuring accurate ATC values are estimated for these paths. As explained below, this analysis will be converted to reflect changes associated with cross-border trading arising from the CAO monitoring.

2. Coordinated Auction Office Monitoring Guidelines

There will be two main components of monitoring the coordinated auction. The first component is a transitional phase involving the monitoring of the ongoing design and development effort to ensure efficient allocation design, efficient governance, and adequate transparency to ensure effective monitoring. The second component is the development of a market monitoring function for the CAO once the CA is operational.

The market monitoring issues associated with the coordinated auction can only be identified tentatively because the final details of the CAO have not been fully settled. Accordingly, some of the guidelines may have to be revisited as the situation changes.

As a preliminary matter, we find that Article 9 of the Regulation 1228 supports the conclusion that the ECRB is the most appropriate entity to undertake the monitoring of the CAO. However, the final determination is left to the ECRB and other options remain equal candidates for discussion.

Monitoring Activities during the Transition Phase. During the transition to a final CAO, monitoring activities will concentrate on the development of the coordinated auction mechanism to ensure adherence to regulatory and economic principles. To the extent practicable, this will include participation of the Consultant in the activities of the SEE CAO Implementation Group. In addition to monitoring the CAO development, a mechanism for monitoring the CAO operations will be developed and proposed to the ECRB EWG. The ECRB EWG would then be in position to propose such a monitoring structure to the SEE CAO Implementation Group.

During the transition phase, we anticipate focusing on at least four areas: (1) auction design, including establishing transmission constraints within the auction mechanism (e.g., maximum flow approach); (3) revenue distribution mechanism; (3) CAO structure and transparency; and (4) expanding the monitoring to include all members of the 8th Congestion Management Region.

Monitoring the Coordinated Auction Office and Auction. Once the CAO is established and functioning, monitoring will continue and will focus on three areas. The first area of monitoring is the operation of the coordinated auction mechanism. This monitoring will focus on helping ensure the auction mechanism is producing effective and efficient economic outcomes by evaluating inputs, including the PTDF matrix and the maximum flow calculations. The second area is monitoring of auction results and outcomes. The third area of monitoring is the governance and administration of the CAO. This monitoring will focus on whether governance is independent of market outcomes, whether governance is in accordance with CAO charter, by-laws, and other regulations.

II. Background

The Market Monitoring Transition Plan is a continuation and expansion of the SEE Market Monitoring Pilot Plan. The Pilot Plan originated at the Eighth Athens Forum in June 2006. USAID and NARUC assembled a team of consultants to develop the Pilot Plan. The consulting team includes Dr. Peter Kaderjak of the Regional Energy Policy Center (REKK) at Corvinus University in Budapest, Dr. David Newbery of the Energy Policy Research Group (EPRG) at Cambridge University in England, and Dr. Robert Sinclair of Potomac Economics in Fairfax, Virginia. The Pilot Plan was initiated in December 2006 and continued through the second quarter of 2008. In May 2008, the Twelfth Athens Forum welcomed the continuation and expansion of the project under the ECRB.[4]

A. Market Monitoring

The underlying motivation for market monitoring is to improve the competitive structure and operation of electricity markets and to detect anticompetitive conduct. This is accomplished by well-designed indices and screens that are derived from actual market data and employed to detect instances of market failure or anticompetitive conduct. Experience shows that effective market monitoring is a critical component of effective competition[5] and can prevent significant market performance problems during the restructuring and liberalization process.[6] Moreover, market monitoring can contribute to the goal of market transparency, something that is widely-recognized as critical to market development.[7] To the extent market monitoring can facilitate the

[4] See Twelfth Athens Forum Conclusions, May 15-16, 2008.

[5] See, *e.g*., Newbery, D., and R. Green, "Review of the Monitoring of Market Power – The Possible Roles of TSOs in Monitoring for Market Power in Congested Transmission Systems", Report to the European Electricity Transmission System Operators, 2004.

[6] See, e.g., "Lessons from International Experience with Market Monitoring", Frank Wolak, Center for The Study of Energy Markets, Working Paper #134, June 2004.

[7] The consensus on this issue is broad. See, for example, ESTO Conference on Market Transparency, November 17, 2006, Brussels; "List of data European TSOs need to pursue optimal use of the existing transmission infrastructure", European Transmission System Operators, December 2005. See also, "ERGEG Guidelines on Good Practice on Information Management and Transparency in Electricity Markets," E05-EMK-06-10, March 2006. While the ERGEG does not address the role of market monitoring in depth in the report, there is mention that one way to coordinate international data transparency is through monitoring activities, p. 6. See also, "Transparency of Information about the Availability and use of Infrastructure and the Promotion of Competition in European Wholesale Power Markets", EFET updated position, May 2006. See also, "Survey on the Implementation of Market Transparency Requirements in Countries Involved in the Athens Process" Eurelectric

availability of market data that otherwise would not be available, this clearly aids the important goal of market transparency. In addition, market monitoring requires useful data with clear economic content. When market monitoring systems are established, market participants are then encouraged or required to develop more useful data. The market monitoring process also clarifies the economic content of the data that otherwise, in raw form, may not reveal useful market information.

Given the important role of market monitoring in market development, performance, and transparency, it is beneficial to continue the market monitoring function beyond the timeframe of the Pilot Plan.

B. Scope of Market Monitoring Transition Plan

The following is the text of the Twelfth Athens Forum conclusions regarding continuation of the market monitoring plan:

> The Forum welcomed the USAID market monitoring report and asked for the extension of the contract to support ECRB capabilities to carry out monitoring in the future. The ECRB supports the enlargement of the market monitoring project to include [the coordinated auction] and CAO monitoring with suggestion to enlarge the geographical scope of market monitoring to the participants in the future [eighth congestion management] region and CAO participants. The ECRB proposed only publicly available data to be used within the market monitoring according to data available by TSOs and in compliance with Regulation (EC) 1228/2003 and the Congestion Management Guidelines

Accordingly, this Transition Plan will be extended in time using analysis developed under the Pilot Plan and extending the analyses to monitor the CAO. These analyses will be changed or eliminated to the extent certain data is no longer available as a result of the Athens Forum conclusion which requested only data be used that is in compliance with Regulation 1228 and the Congestion Management Guidelines.

The geographic scope will be expanded beyond the current geographic bounds set in the Pilot Plan. In particular, the geographic scope will expand to include the 8th Congestion Management Region.

Ad-Hoc Group on South East Europe, Preliminary Results, June 2006. See also, "Eurelectric Comments on ERGEG Best Practices Propositions", April 2006.

Because the Athens Forum also concluded that the scope of the market monitoring should be extended to monitoring the coordinated auction mechanism and the CAO, the Transition Plan also encompasses monitoring of the development, implementation, and operation of the coordinated auction mechanism and the CAO.

II. Administrative Structure

This section addresses the administrative structure within which market monitoring will be conducted under the Transition Plan. Consistent with the conclusion of the Twelfth Athens Forum, market monitoring will be conducted under the ECRB (through the ECRB EWG).

It is proposed that the ECRB EWG will provide overall guidance to Potomac Economics, the Consultant, based on the guidelines set forth herein. The Consultant will conduct data analysis and produce quarterly reports. The Energy Community Secretariat will provide administrative support.[8] The ECS will work closely with the consulting team in collecting and storing market monitoring data. The ECS will provide the market monitoring data to the consulting team to execute the monitoring activities.

The following are the responsibilities of the ECS under the Transition Plan:

- Initiate monthly data requests starting January 2009;
- Receive data requests and ensure compliance from the TSOs;
- Provide market monitoring data to the consulting team; and
- Circulate draft and final reports and post market monitoring documents in electronic format. Reports will be quarterly starting with First Quarter of 2009. Draft quarterly reports will be issued 45 days after the end of the quarter with final report issued 30 days later.

[8] Under the Energy Community Treaty, the ECS provides administrative support to, among others, the ECRB. The ECS also has the duty under the Treaty to assist the European Commission in the coordination of donor activities and provide administrative support to such activities.

Based on the market monitoring data received from the ECS, and pursuant to appropriate confidentiality and non-disclosure constraints, the consulting team will have the following responsibilities:

- Process and store market monitoring data provided by the ECS;
- Construct and evaluate market monitoring screens and indices consistent with the Transition Plan;
- Draft analytical Quarterly Reports; and
- Conducting follow-up investigations when appropriate

Coordinated Auction Office

The Transition Plan establishes guidelines for monitoring the coordinated auction mechanism and the SEE CAO. Because the implementation of the CAO is not fully developed at this point, the Consultant will work with the ECRB EWG and the ECS to modify and improve the guidelines as necessary. The following are the responsibilities among the parties.

- The Consultant will work with the ECRB EWG and the ECS to monitor key issues associated with the SEE CAO Implementation group;
- The Consultant will work with the ECRB EWG and the ECS to refine the elements of the CAO monitoring function beyond those identified herein, including:
    - establishing data transfers from the coordinated auction office to support the market monitoring function;
    - establishing reporting requirements, (e.g., daily, monthly, annual)

converting analysis under the Pilot Plan to analysis that fit the congestion management system under the coordinated auction office (as explained below).

III. Market Monitoring Guidelines

This section presents the market monitoring guidelines within which the ECRB EWG and the ECS will provide market monitoring under the Transition Plan. The guidelines identify the analysis, the motivation for the analysis, and the data required for the analysis. This section has two main subsections. In subsection A we provide the guidelines for market monitoring that will occur during the transition phase, which leads up to the establishment of the coordinated auction office. This monitoring has been established under the current Pilot Plan and will continue. In Subsection II.B we provide the guidelines for monitoring the coordinated auction office.

A. Continuation of Market Monitoring under the Pilot Plan

Market monitoring will focus on the market for cross-border transmission capacity. For the cross-border transmission capacity market, the Transition Plan seeks monitoring to promote maximum and non-discriminatory access because of the critical impact of transmission access on competition in the wholesale generation market. Accordingly, many of the monitoring analyses will focus on events and conditions which restrict cross-border access.

Primarily, monitoring of the cross-border transmission market will involve improving access to cross-border transmission capacity, thereby increasing the liquidity in trading and improving the conditions for effective and efficient competition in power supply. Accordingly, a key component of the market monitoring data requirements include requests for data and processes for calculating and allocating cross-border interface capability and managing internal congestion that may impede cross-border trade. As the congestion management in the region is transferred to the coordinated auction office, these analyses will be changed to reflect the transition.

The data to be used in the market monitoring transition phase will be determined both by the analysis needed for effective monitoring and by the direction provided at the Twelfth Athens Forum. As indicated in the Athens Forum conclusions, the ECRB recommended the market monitoring be conducted using public data pursuant to Regulation EC 1228/2003 of the European Parliament (“Regulation 1228”) and the Annex to Regulation 1228 concerning the

management of Available Transfer Capacity ("Congestion Management Guidelines").[9] Recognizing that at least initially TSOs may not fully respond to data requests, other sources of data will continue to be sought out. Accordingly, the analysis and data requirements discussed below are designed to monitor the key performance indicators of the market given the data is consistent with this direction. However, data beyond these requirements that are needed to advance and refine the analysis will be reported to the ECRB EWG in order to expand the ECRB recommendation with respect to market monitoring.

There are two main areas of market monitoring concern for the cross-border transmission capacity market. The first is the calculation and allocation of the cross-border capacities pursuant to the goal of maximizing available capacity and allocating it efficiently. The second area is the range of strategic actions that can be taken by market participants to create artificial congestion and exploit market power.

South East Europe is not integrated into a centralized market but instead trading is conducted primarily through cross-border transactions. The key to monitoring decentralized (bilateral trading) markets is to identify periods of congestion and other transmission access issues. Congestion can be observed through a variety of indicators, primarily including lack of ATC and curtailment of cross-border schedules. Data will be sought that records when such action is taken. Data will also be sought to determine the potential cause of the congestion, including data underlying the calculation of NTC and ATC values and generation dispatch.

1. Analysis: Monitoring Congestion Events.

A main facet of monitoring transmission networks is identifying the incidence of congestion. These occur in the planning horizon when there is no transmission capacity available for incremental transactions (i.e., the ATC is zero). It occurs near real-time when operators take measures to curtail transactions or re-dispatch generation. The market monitoring plan will request data to monitor the frequency of these events and potentially evaluate these actions.

[9] Annex to Regulation 1228. *Guideline on the Management and Allocation of Available Transfer Capacity of Interconnections between National Systems*.

The following is a summary of the data elements requested along with a citation to the relevant portions of Regulation 1228 or the Congestion Management Guidelines that support the elements. Appendix B contains the text of the relevant sections.

- Monthly NTC and ATC values;
  - *Regulation 1228, Article 5, Sections 2-3*
- Results of monthly ATC auctions;
  - *Congestion Management Guidelines, Sections 5.3 and 5.5(e)*
- Congestion management measures taken in near real time, (e.g., curtailments).
  - *Congestion Management Guidelines, Section 5.1*
- Near-real-time forecast Demand
  - *Congestion Management Guidelines, Section 5.7*

2. Analysis: Potential Causes of Congestion

During periods of congestion, market monitoring should focus on analyses, indices, and screens that could reveal whether the congestion is being created artificially in order to exercise market power or otherwise restrict competition. The following analyses are designed to reveal evidence of anticompetitive conduct related to congestion: (1) analysis of cross-border transmission capacity; and (2) improper out-of-merit generation dispatch.

Analysis of Cross-Border Transmission Capacity. The monitoring seeks to illuminate the process of reserving and scheduling on the interconnections with the goal of identifying potential impediments to competition. This analysis will attempt to include monitoring of the release of capacity to the secondary market. The monitoring screens seek to compare reserved uses of the system and actual physical flow. It can provide insight into the usage of the interconnection and detect potential under- and over-scheduling. Under-scheduling occurs when power is reserved but not used, thereby potentially withholding the capacity from the market. Over-scheduling occurs transactions are allowed to be executed without proper reservations and scheduling. This analysis also will identify areas where additional ATC is the most valuable in order to focus monitoring resources on ensuring accurate ATC values are estimated for these paths. This analysis is currently conducted under the Pilot Plan.

Data Required:

- Actual power flows on each interconnection;
  - *Congestion Management Guidelines Section 5.5 (h)*
- Underlying assumptions and Results of the Base Case Power Flow Model used to estimate TTC and NTC;
  - *Congestion Management Guidelines Section 5.10*
- Transmission Reliability Margin (TRM) values and methods of estimation;
  - *Regulation 1228, Article 5, Section 2*
- Schedules on each interconnection for each market time unit;
  - *Congestion Management Guidelines 5.5(d)*

Generator Dispatch. Generation dispatch is evaluated to determine the extent to which congestion may be exacerbated by uneconomic dispatch patterns. Congestion is a common occurrence on utility systems and does not necessarily raise competitive concerns. If a departure from least-cost dispatch ("out-of-merit" dispatch) occurs when congestion is present and the out-of-merit dispatch is not justified, this raises potential competitive concerns.

An estimated supply curve is used to compare actual dispatch with an estimated optimal dispatch to determine whether the actual dispatch departed significantly from the estimated economic dispatch. In instances when dispatch departed substantially from the estimated optimal dispatch and was concurrent with a congestion event, the circumstances should be investigated more carefully to determine if the out-of-merit dispatch was justified. The supply curve will be estimated based on generator-specific information (mainly the estimated heart-rate curve), and generator fuel costs. These generator-specific values can be estimated using unit-type and public information. Actual output will be provided by the TSOs, which, under Regulation 1228, are required to collect this from generators.

Data Required:

- Hourly output of each generator;
  - *Currently, this data is not required to be made available under Regulation 1228. As explained in subsection II.6 below, procuring this data will be attempted through collaboration with the regulators and the TSOs.*

3. Analysis of Generation Markets

Given the dominance that is prevalent in the generation sector in the region, the Transition Plan will ultimately aim to monitor the generation market. Currently, Regulation 1228 does not require generator output data to be made public. As a result, procuring this data may require coordination among regulators and TSOs. Securing this data would allow an examination of production and dispatch patterns in connection with congestion events, as discussed above.

In addition, the transition plan will continue the generation modeling begun under the Pilot Plan. This model is a benchmark model that can be used to identify potential market power concerns. The additional generation data collected under the transition plan will allow a more accurate depiction the benchmark model.

4. General Note on Providing Data

A final provision regarding the Transition Plan data requirements involves the provision of data under the Congestion Management Guidelines. This relates to Section 5.9 which states:

> All information published by the TSOs shall be made freely available in an easily accessible form. All data shall also be accessible through adequate and standardized means of information exchange, to be defined in close cooperation with market parties. The data shall include information on past time periods with a minimum of two years, so that new market entrants may also have access to such data.

TSO conforming to the provisions of Regulation 1228 and the Congestion Management Guidelines would provide easy access to the key data required for the monitoring plan.

5. Summary of Data to be Requested

The following is a summary of the data to be requested under the Transition Plan. Each element in this list is required under Regulation 1228 or the CMG, as explained in the previous subsection.

- For all external interconnections: NTC, AAC, and TRM (including AAC present before any monthly auction and AAC after monthly auctions);
- Results of Annual and Monthly ATC auctions;

- Day-ahead or real-time measures taken pursuant to congestion management guidelines that involved a curtailment of a cross-border transaction;
- Near real-time forecast control area load;
- Power flows over all interconnections;
- Total scheduled volume of transactions across the interconnection for each hour;
- The following results of the monthly Power flow case;
    - Peak parallel (or loop) flow on each interconnection in UCTE reference base case for the month (a) natural flows, and (b) outside flows;
    - Base Case exchange on each interconnection in the UCTE reference base case;
    - Forecast load for the control area in the UCTE reference base case;
    - Output of each generator in the UCTE reference base case for the month and the generation-shift factor for each generator relative to each cross-border interconnection.

6. Other Critical Data not Covered under Regulation 1228

In addition to the data required under Regulation 1228 and the CMG, other data is essential to a successful market monitoring. As noted above, monitoring generation markets requires data that is not currently required under Regulation 1228. Market monitoring of bilateral contract markets in the Western U.S. relies critically on generation data to determine potential manipulation of transmission capacity in order to exercise market power. In addition, bilateral contract terms among generators and their major customers are also used to monitor generator activity. One indicator, although not determinative, is the spread between generation costs and bilateral contract prices. The following data would contribute to monitoring in this regard:

- Hourly output of each generator in the control area;
- Bilateral contract terms between generators and major customers;

This is just a preliminary list of potential additional data. Additional data may be required once the plan has been adopted and monitoring needs are further revealed. Additional needs will be addressed by the ECRB EWG and data requests will be amended as the EWG finds appropriate.

B. Coordinated Auction Monitoring Guidelines

The Twelfth Athens Forum concluded that the scope of the market monitoring be extended to monitoring the coordinated auction mechanism and the CAO. Accordingly, there will be two

main component of monitoring the coordinated auction.[10] The first component is transitional phase. It involves the monitoring of the ongoing design and development effort to ensure efficient allocation design, efficient governance, and adequate transparency to ensure effective monitoring. This transitional phase also involves the expanding of the geographic scope of the market monitoring to include the participants in the coordinated auction office, *viz*., the countries comprising the 8th Congestion Management Region (the "8th Region").[11] The second main aspect is the ongoing monitoring of the CAO once the CAO is operational. This will include monitoring the market activity and outcomes associated with the auction mechanism and monitoring the functioning of the office in accordance with its governance structure.

The market monitoring issues associated with the coordinated auction can only be identified tentatively because the final details of the CAO have not been settled. Accordingly, some conclusions and recommendations herein may have to be revisited as the situation changes.

These issues are addressed in this section. This section is in three subsections. In the first subsection, subsection 1, we provide an overview of the currently-proposed coordinated auction mechanism in order to provide some context to the monitoring issues. In subsection 2, we discuss the transitional issues associated with monitoring the development, design, and implementation of the coordinated auction. In subsection 3, we discuss the market monitoring issues associated with the ongoing operation of the CAO. The issues presented herein are only indicative because the final CAO mechanisms and governance have not been fully settled. We have responded herein to the most recent manifestation of the CAO mechanisms and structure.

1. The Coordinated Auction

The coordinated auction is primarily a method for allocating cross-border transmission capacity and is intended to achieve a common congestion-management framework among countries and territories of South East Europe pursuant to European Union regulation 1228/2003. As noted above, the countries and territories involved in the development of the coordinated auction

[10] By coordinated auction, we mean what is also known as the explicit coordinated flow-based auction.

[11] The 8th Region is defined as the territories of the signatories to the Energy Community Treaty, the Republic of Bulgaria, Hungary, Romania, Slovenia, the Hellenic Republic, and the future interconnections between Republic of Italy Albania and Montenegro.

include, but are not limited to, the signatories of the Energy Treaty. The development of the coordinated auction in South East Europe has been ongoing since 2004.

The coordinated auction will replace the current methods for allocating cross-border capacity. The current methods typically involve a bilateral auction where cross-border capacity is estimated and then allocated at each border through an auction conducted by each party to the interconnection. These are so-called "contract-path-based methods" whereby the capacity is estimated and allocated based primarily on the electrical impacts of a simple electricity transfer from one point on the grid to another point with out regard to the impact of other regional transactions. The primary benefit of a properly implemented coordinated auction is improving the efficiency of cross-border transmission capacity allocation because it considers the anticipated actual flow of each cross-border transactions, which increases the certainty of system usage and, therefore, allows greater system utilization. It can also provide efficient price signals that indicate the cost of congestion and provide direction for transmission grid investment.

Under the current contract-path-based system, a fixed amount of transmission capacity (called the Net Transmission Capacity or "NTC") is allocated at each border under separate (but somewhat standard) procedures. Transmission customers compete to buy the capacity in advance on each interconnection using a simple auction. However, system-wide conditions can be affected by the level of reservations on each interconnection and there is no effective way to adjust the allocating process to account for the impact.

The Auction Mechanism. Under the coordinated auction, bidders are requested to report only the "source" and "sink" of the transaction underlying the transmission request without regard to a specific transit paths or a specific cross-border interconnections. The bidder specifies a bid quantity and a bid price. All transmission requests for the same timeframe (e.g., the month-ahead timeframe) are treated simultaneously regardless of the source-sink pairs. The auction mechanism determines whether the set of simultaneous requests are feasible given anticipated system load, resources, transmission constraints, and other existing uses of the network. This feasibility is determined using power transfer distribution factors (PTDFs) which indicate how each transaction will contribute to various physical path flows based on the request's source-sink pair. The physical paths are represented by "critical branches". If the estimated total physical

flow from all bidders is not within the critical branch limit, then the capacity of the critical branch is rationed in accordance with the bid prices. This rationing is conducted using a combination of the bid prices and the estimated physical flows. More precisely, a bid metric for each transaction is calculated by dividing the bid price by the portion of the transaction that would flow on the congested facility (as calculated using the PTDF). Hence, the bidders with the highest bid price-to-PTDF ratios are given access to the constrained facility to the extent feasible. Bidders with the lower bid price-to-PTDF ratios are denied. Essentially, the mechanism allocates capacity to bidders with higher bid prices and lower impact on physical flows.

All successful bidders pay a "clearing price" for access to the congested facility. This clearing price is established as the lowest bid price-to-PTDF ratio among the successful bidders. The single-price auction method works well to provide the appropriate incentives for transmission customers to submit bids that reflect how they view the true value of using the constrained facility. The clearing price provides important information regarding the values of relieving congestion on that constraint.

PTDF Matrix. The PTDF matrix indicates what portion of a transaction will flow over each constrained facility. If the PTDF matrix is not properly established, some transactions may be indicated as contributing to a constraint in greater or lesser proportion than actually occurs in real-time operations. Accordingly, if it is not properly established, some transactions may face unnecessary restrictions while others may be granted more favorable access. In subsection 3, we explain possible monitoring scenarios.

Border Capacity and Maximum Flow Values. While the auction mechanism is designed in accordance with sound economic principles, its effectiveness depends on critical input values. The most critical input values are the limits used to define the transmission constraints. This is critical because constraints on the transmission facilities that are too stringent will result in the auction-rationing being invoked too often and limits that are too lax will result in the auction-rationing not being invoked when it should be invoked. In this section we evaluate how the coordinated auction will establish transmission constraints in the auction mechanism.

Under the current proposals, the maximum-flow approach is the method to establish transmission constraints used in the auction mechanism. Under the maximum-flow approach, each TSO identifies the critical transmission facilities on its system that are likely to be the ones that limit inter-TSO transactions. These are called critical branches and the TSO can identify one or more of them. These can be conductor lines or transformers and they do not have to be facilities that make up the interconnections between TSOs. The TSO also identifies facilities associated with the critical branch where an outage would result in significant physical flow being re-directed over the critical branch. These are called "critical outages".

The Total Maximum Flow (TMF) associated with a critical branch is the key variable used in the maximum-flow approach. It is determined based on the physical attributes of the critical branch transmission facility, *viz*., voltage and thermal rating. The voltage of all major transmission facilities in the region are widely known and fixed. For example, any simple transmission line map will indicate the kilovolt rating of each facility. Thermal ratings, expressed in amperes, are determined within the base case model. These are relatively fixed within the model but are within the control of the TSO. Therefore, as explained below, the thermal ratings should be the subject of monitoring screens.

TMF is used to develop the Available Maximum Flow (AMF). The auction mechanism uses AMF value as the transmission limit for each critical branch. Therefore, for a set of simultaneous transmission requests, the flow over each critical branch must be less than the AMF on each branch. If not, then the rationing described above occurs based on bid price and PTDF.

The AMF is derived from Total Maximum Flow (TMF). The derivation of the AMF from the TMF relies on certain base case values. There are four elements that are used to adjust the TMF to arrive at AMF: Flow Reliability Margin (FRM), Natural Flows (NF), Uncertain Outside Flows (UOF) and already-allocated flows (AAF). The following shows the relationship:

$$AMF = TMF – FRM – NF – UOF - AAF$$

FRM is a value established by the TSO to allow capacity on the transmission facilities to ensure a security margin against operating uncertainties. NF is the flow in the base case model on the

critical branch that results from the base case dispatch, i.e., base flows in the absence of regional transactions. UOF is an estimate of the flow on the critical branches in the base case from transactions involving parties outside of the region that cannot be fully anticipated. Finally, AAF is the flow on the critical branch from transmission rights that has already been allocated in the auction for a previous time frame (e.g., yearly auction allocations will be in effect during the monthly auctions).

It is straightforward to see that each of the variables that enter into the calculation of AMF can significantly affect the level of AMF and, therefore, the transmission requests that are approved in the auction. In addition to the TMF value discussed above, three of the other variables (FRM, NF, and UOF) appear to be within the discretion of the TSOs through providing input data to the base case. Accordingly, as explained below in subsection 3, we propose monitoring these variables.

2. Monitoring Activities during the Transition Phase

During the transition to a final SEE CAO, monitoring activities will concentrate on the development of the coordinated auction mechanism to ensure adherence to regulatory and economic principles. To the extent practicable, this will include participation of the consultant in the activities of the SEE CAO Implementation Group. In addition to monitoring the SEE CAO development, a mechanism for monitoring the SEE CAO operations will be developed and proposed to the ECRB EWG. The ECRB EWG would then be in position to propose such a monitoring structure to the SEE CAO Implementation Group.

This current Transition Plan is the result of an effort to advise the ECRB and the ECRB EWG on key matters relating to the CAO. Subsection 3, below, provides our preliminary analysis of the monitoring required for the CAO. As development of the CAO progresses, we anticipate continuing to focusing on at least four areas: (1) monitor the auction design; (3) monitoring the revenue distribution mechanism; (3) monitoring CAO structure and transparency; and (4) the immediate expanding of the monitoring to include all members of the 8th Region.

Auction Design. Generally we find the auction mechanism itself to be designed in accordance with accepted economic theory. We are mostly concerned with the accuracy and reliability of

inputs to the auction mechanism, mainly transmission constraints (critical branch limits), but to a lesser extent PTDF matrices. Monitoring these inputs is discussed in subsection 3.

Revenue Distribution. The allocation of coordinated auction revenue is an area where monitoring could be used to detect potential market power or market flaws. The coordinated auction raises revenue from the accepted bids. This creates a pool of funds that needs to be distributed. The alternative mechanisms to allocate the revenues will be analyzed to determine which one provides adequate incentives for efficient and effective competition. The analysis will be presented to the ECRB EWG so it can propose appropriate mechanisms to the CAO Implementation Group.

Governance and Transparency. During the transition phase, the monitoring resources will be dedicated to determining whether the CAO has sufficient transparency to ensure effective monitoring. The monitoring issues identified herein provide the initial guidelines for addressing the transparency issues. As the implementation approaches, additional issues may arise that require addressing.

Expansion to include the entire 8th Congestion Management Region. The coordinated auction is to be implemented to include all territories of the 8th Congestion Management Region. This includes the signatories to the Energy Treaty, Bulgaria, Greece, Hungary, Romania, Slovenia, Hungary, and the future interconnections to Italy (but not the current interconnections).

3. Monitoring the Coordinated Auction Office

Once the CAO is established and functioning, monitoring should continue. This monitoring will focus on two areas. The first area of monitoring is the operation of the coordinated auction mechanism. This monitoring will focus on helping ensure the auction mechanism is functioning in order to facilitate effective and efficient economic outcomes. The second area of monitoring is the governance and administration of the CAO. This monitoring will focus on whether governance is independent of market outcomes and whether governance is in accordance with CAO charter, by-laws, and other relevant laws.

The subsection outlines the elements of monitoring the CAO. These elements are likely to undergo revision as the CAO advances toward implementation. We propose monitoring at least

three areas: (1) inputs to the auction mechanism, (2) auction results, including anticompetitive outcomes; and (3) governance and transparency.

Inputs to Auction Mechanism. As discussed above, the auction mechanism itself is based on sound rationing principles – a uniform single price auction is an effective way to conduct a closed-bid procurement auction. However, the auction relies on critical inputs that will require transparency and monitoring. The main inputs are the PTDF matrix and the AMF values. The PTDF matrix indicates what part of a transaction will flow over constrained facilities. If this is not properly established, some participants may face adverse discrimination. The AMF (or Available Maximum Flow) is the basis for establishing the transmission limits in the auction mechanism. Like the PTDF matrix, an improperly-estimated AMF value can unnecessarily restrict access to regional trading.

PTDF Matrix. The PTDF matrix is estimated based on a simulation of regional transfers. It involves complex and resource-intensive modeling. Hence, it would not be advisable to establish a monitoring tool which relies on replicating the PTDF calculations. Instead, a practical approach would involve a broad-level screening of the PTDF matrix. We propose two such screens. One would compare the PTDF matrix over time to detect a substantial change from one period to the next. Generally, the PTDF matrix should be relatively stable unless significant changes to the base case dispatch occur. We would attempt to detect significant changes to the PTDF matrix. Significant changes would be addressed through inquiries to the CAO. The second screen would involve comparing the PTDF values within the PTDF matrix to determine whether similarly-situated source-sink pairs have comparable PTDF values. While we recognize that close geographical proximity does not necessarily imply close electrical proximity, such a screen would identify a subset of source-sink pairs that would merit further investigation, which might be as simple as consulting a transmission map. More involved follow-up may be judged necessary and involve the CAO technical staff or the TSOs.

Available Maximum Flow Values. The AMF value is a critical aspect of the CAO because it determines the transmission constraints within the auction mechanism. As discussed above, an AMF value that is too low will restrict regional trades unjustifiably. Recall that Available Maximum Flow is defined as:

$$AMF = TMF – FRM – NF – UOF - AAF$$

Where TMF is total maximum flow, FRM is flow reliability margin, NF is natural flow, UOF is uncertain outside flows, and AAF is already-allocated flows. Each of these estimated values have the potential to unnecessarily restrict AMF. Four of them, TMF, FRM, NF, and OUF, can be influenced through the discretion of the TSOs. We have so far been unable to determine the nature of FRM, although in some documents it appears it will be a fix proportion of each critical branch. We withhold judgment as to whether this value can or should be monitored. AAF is the sum of all allocated uses of the critical branch from prior period auctions, e.g., yearly auction results will occupy capacity available for the monthly auctions. Provided the auction mechanism is functioning well (which effective monitoring can help ensure), we do not currently see a need for direct monitoring of the AAF value. However, direct monitoring of the other three variables is appropriate.

a. *Total Maximum Flow*. The TMF is the basis for the AMF. It is calculated based on the voltage and thermal rating of the transmission facility that is defined as the critical branch (i.e., either a line conductor or a transformer). The voltage on a facility is a matter of objective observation and is not reasonably within the discretion of the TSO. However, we conclude that some discretion remains concerning the thermal rating (i.e., the amperage). While the amperage is reported in the base case and may remain relatively fixed over time, it depends on factors that require the judgment of the TSO. Most clearly, the amperage will depend on the age and condition of the equipment and may depend on the status and quality of other network components.

   We propose a screening device that would group together facilities with comparable technical parameters (e.g., voltage, function) and then compare the TMF among them. The facilities with the lowest TMF among the peer group will

have relatively low thermal limits. For example, all 400 kV line conductor critical branches would be grouped together and all 400 kV-300 kV transformers would be grouped together, etc. Within the groups, an outlier TMF value would be subject to further analysis, especially usage patterns, e.g., is the facility important in restricting flow to areas where the incumbent supplier make large sales? Data to perform this screen should be easily made available by the CAO or by the TSOs.

b. *Natural Flow*. NF is the existing flows on the critical branches in the base case in the absence of inter-regional transfers. In other words, it is the result of the base case dispatch. The base case dispatch will depend on the assumed level of load at each location on the network and the assumed level of output of each generator. The load forecast at each location as well as the generation mix identified to meet load is established by the TSO. Under- or over-forecasting of load at certain locations as well as under- or over-forecasting of generation at each generator can have the result of artificially loading critical branches in the base case. This can result in understating or overstating the AMF on the critical branches. The natural flow values can be monitored by determining whether the values reported in the base case are relatively consistent with operating time-frame values. One screen is the comparison of the load forecast to actual load. A second one is the comparison of the merit-order dispatch in the base case to the actual dispatch in real time. These screens are straightforward and the data for both screens should be easily made available.

c. *Uncertain Outside Flow*. We would like more information regarding how these values will be established. At present, we cannot determine whether there is sufficient transparency to monitor these values.

Auction Outcomes. As stated above, we generally endorse the economic logic of the auction mechanism. That does not mean that the outcomes of the auction will always be optimal. For example, the uniform-price auction requires the absence of bidder dominance. And, as explained

above, there is no guarantee that inputs to the auction mechanism can be assuredly objective. In this section we propose screens that can be useful in assessing the auction outcomes.

Monitoring of Critical Branch Usage. The auction mechanism focuses on the physical flows available on critical branches. Accordingly, the actual flows on the critical branches should be monitored to determine whether actual flows approach the critical branch limit. This will aid in detecting the any divergence of the underlying inputs compared to actual experiences. If constraints are arising in the auction mechanism when in actual operation this is not the case, adjustments should be made to bring the underlying models into line with actual system experience.

This type of monitoring metric is currently used under the Pilot Plan and can be adapted for the coordinated auction. The main objective of this monitoring metric would be to validate the critical branch limits used in the auction mechanism. Auction rationing occurs when a critical branch is expected to be congested as a result of the regional transaction. If participants are paying for access to constrained facilities, the actual flows should indicate that the facilities are actually at or close to their limit. The metered flows on each critical branch would be required for this metric along with the constrained critical branches identified in the auction.

Clearing Prices. Clearing prices provide an indication of the value of congestion. The existence of clearing prices on the various critical path paths would provide increased transparency and aid in market monitoring. It would provide a natural screening mechanism for monitoring market prices and detecting anomalous behavior, such as withholding generation and transmission.

Buyer Market Power. Dominant buyers of transmission or a group of dominant buyers may find opportunity to manipulate the purchase price of transmission capacity. In a procurement auction, buyer market power (known to economists and *monopsony* or *oligopsony* power) is exercised when a buyer or group of buyers restricts purchase volumes or purchase prices in an attempt to control the auction outcome. To monitor the potential for this kind or strategy, individual bidder data would be required to discern potential pricing patterns that are consistent with collusion or underbidding. Bidder concentration and uniform bidding are the main indicators of collusion, although it is not necessarily determinative.

Governance. Monitoring will extend to the governance of the CAO to ensure that governance is separated from the economic outcomes of the auction. In general, while TSOs should be interested in maximizing the grid usage subject to reliability requirements, an independent TSO should not be interested in the success or failure of any individual bidder. The governance structure will be reviewed to determine any such conflicts of interest. The ongoing action of the CAO management will also be monitored to detect any actions that unnecessarily distorts competitive access to the grid.

4. Summary of Market Monitoring Guidelines for the CAO.

The following is the market monitoring analyses and data required for the monitoring of the CAO.

i. Monitoring the PTDF Matrix used in the auction mechanism.

- compare the PTDF matrix over time to detect any substantial change from one period to the next.
- compare the PTDF values within the PTDF matrix to determine whether similarly-situated source-sink pairs have comparable PTDF values.

Data required: The periodic PTDF matrix from the CAO

ii. Monitoring the Available Maximum Flow Values.

- Total Maximum Flow Values – construct a screening mechanism comparing facilities with comparable technical parameters (e.g., voltage, function) and then compare the TMF among them. Determine the cause of outlying values.

  Data requirements: TMF values, voltage, and amperage for each critical branch.

- Natural Flow Values – compare load forecast to actual load and base case dispatch to actual merit-order dispatch.

  Data required: load forecast, actual load, base case dispatch, merit-order dispatch.

- Uncertain Outside Flow. At present, we cannot determine whether there is sufficient transparency to monitor these values or not.

iv. Monitoring Auction Outcomes.

- Monitoring of Critical Branch Usage. Compare the actual flows on the critical branches to the critical branch limits to validate the congestion used in the auction mechanism.

  Data Requirements: The metered flows on each critical branch would be required for this metric along with the constrained critical branches identified in the auction.

v. Auction Prices. Clearing prices provide an indication of the value of congestion.

Data requirements: Auction prices for each source-sink

vi. Buyer Market Power. Bidder concentration and uniform bidding are the main indicators of collusion, although it is not necessarily determinative.

Data requirements: Individual bidder data

vii. Governance. An independent TSO should not be interested in the success or failure of any individual bidder. The governance structure will be reviewed to determine any such conflicts of interest.

C. Modes of Monitoring

We have proposed that the monitoring function be placed within the ECRB. In this section we discuss in more detail the basis for this proposal. While we have arrived at this conclusion based on the discussion below, these are our own conclusions only. The SEE regulators shall determine their own position based on the proposals below and other information and consideration as they find appropriate. The establishment of a regional monitoring plan also should not inhibit individual regulatory authorities from conducting their own monitoring activities.

Within practical considerations, the CAO monitoring could be conducted by any of three entities: a consortium of regulators, a consortium of TSOs, or the CAO itself. We find that a consortium of regulators is the most suitable entity and the ECRB the most convenient group.

Rationale: Signatories to the Energy Community treaty are explicitly bound to the provisions of Regulation 1228/2003 addressing access to cross-border network capacity. Moreover, Article 9 of Regulation 1228 provides:

> The regulatory authorities, when carrying out their responsibilities, shall ensure compliance with this Regulation and the guidelines adopted pursuant to Article 8. Where appropriate to fulfil the aims of this Regulation they shall cooperate with each other and with the Commission.

Moreover, Regulation 1228 is generally intended to establish rules for the setting and allocating of cross-border capacity, which is precisely the function of the CAO. Hence, cooperation among regulators to implement the provisions of 1228 is precisely envisioned within the Directive. While a consortium of regulators separate from the ECRB is a conceivable alternative, there does not appear to be any significant benefits from creating such an entity. In addition, the ECRB has

developed significant expertise over time in the course of working with the CAO IG and this expertise would be retained under an approach where the ECRB is responsible for monitoring.

Other conceivable alternatives are for the TSOs to monitor the CAO or for the CAO to monitor itself. We do not find these alternative compelling. Under both alternatives, the incentive to rigorously monitor key aspects of the CAO would be weak. For example, regulators have a stronger interest in market power issues than either the TSO or the CAO.

In previous research sponsored by USAID, Ms. Julia Weller produced a study titled "Role of Regulators in Monitoring SEE-CAO" (September 2007). The Weller investigation informed the alternatives presented in "*Action Plan for Establishing the South East Europe Coordinated Auction Office"* (October 2007-Draft). The following options have been derived from the study by Ms. Weller.

Option 1: ECRB monitors the SEE CAO in line with the institutional framework of the Energy Community. This is the proposal of this Market Monitoring Transition Plan. This is also supported by Article 9 of Regulation 1228, as explained above.

Option 2: ECRB could be placed on a supervisory board that monitors the CAO. This must be specified in the CAO Association agreement. Broad powers to monitor could be established. There does not appear to be an advantage of this proposal over Option 1.

Option 3: : Each Regulator to use national laws to monitor CAO (possibly using subcontractor to gather data) via shareholding TSOs. This is similar to Option 1 except contractor would work through individual regulators and not ECRB. There does not appear to be a benefit from excluding ECRB from the process.

Option 4: CAO monitors itself. As noted above, this creates adverse incentives for rigorous monitoring with respect to market power issues. This could be rectified if an independent monitor operating within an official monitoring plan is approved by regulators (ECRB or each regulator independently). With the ECRB-approved monitor, this option is a slight variation on Option 1. This option similar to that used successfully in the U.S.

Option 5: TSOs monitor the CAO. As indicated above, the TSOs lack the incentives to monitor rigorously key aspects of the CAO. The TSOs control the essential facility that enables competition in the industry. In addition, the TSO supplies critical inputs to the CAO. With this pivotal role, it is important that an independent body monitor TSO activities and their involvement with the CAO.

Appendix A

South East Europe Market Monitoring Pilot Plan
Data Request for **June 2008**

- ***Request 6-08-1***
  Please provide actual load for the TSO control area for each hour for the month of June 2008. Alternatively, please indicate whether this data is publicly available (e.g., the TSO website) and indicate where it is located.

- ***Request 6-08-2***
  Please provide the actual hourly power flows over all interconnections for the month of June 2008. Alternatively, please indicate whether this data is publicly available (e.g., the TSO website) and indicate where it is located.

- ***Request 6-08-3***
  For all external interconnections for the month of June 2008, please provide NTC, AAC, and TRM (including AAC present before any monthly auction and AAC from any monthly auction). Alternatively, please indicate whether this data is publicly available (e.g., the TSO website) and indicate where it is located.

- ***Request 6-08-4***

  With respect to UCTE Policy 4 part D "N-1 Congestion Management", please indicate whether day-ahead or real-time measures were taken during the month of June 2008 pursuant to the following Guideline

  G1.6. Capacity reduction and curtailment: cross-border capacity can be withdrawn

- ***Request 6-08-8***
  The Plan seeks the actual scheduling data on each interconnection. There is a particular interest in the daily peak volume of scheduled transactions, including balancing transactions. Please provide the total scheduled volume of transactions across the interconnection for each hour during the month of June 2008 (or if hourly data is not readily available, please provide the peak daily schedules on each interconnection). Only the total scheduled quantity will be sought, this total scheduled quantity should include:
  (1) schedules associated with yearly and monthly AAC;
  (2) schedules associated with any AAC on a time frame shorter than monthly;
  (3) schedules not associated with AAC;
  (3) schedules for balancing transactions; and
  (4) schedules for other purpose, e.g., congestion.

Appendix B

Excerpts of Regulation EC 1228 and the Congestion Management Guidelines (Annex to Regulation 1228) relevant to Transition Plan Data Requirements

Regulation EC 1228/2003

Article 5 Section 2

The safety, operational and planning standards used by transmission system operators shall be made public. The information published shall include a general scheme for the calculation of the total transfer capacity and the transmission reliability margin based upon the electrical and physical features of the network. Such schemes shall be subject to the approval of the regulatory authorities.

Article 5 Section 3

Transmission system operators shall publish estimates of available transfer capacity for each day, indicating any available transfer capacity already reserved. These publications shall be made at specified intervals before the day of transport and shall include, in any case, week-ahead and month-ahead estimates, as well as a quantitative indication of the expected reliability of the available capacity.

Congestion Management Guidelines

Section 5.1

TSOs shall publish all relevant data related to network availability, network access and network use, including a report on where and why congestion exists, the methods applied for managing the congestion and the plans for its future management.

Section 5.2

TSOs shall publish a general description of the congestion management method applied under different circumstances for maximising the capacity available to the market, and a general scheme for the calculation of the interconnection capacity for the different timeframes, based upon the electrical and physical realities of the network. Such a scheme shall be subject to review by the Regulatory Authorities of the Member States concerned.

Section 5.3

The congestion management and capacity allocation procedures in use, together with the times and procedures for applying for capacity, a description of the products offered and the obligations and rights of both the TSOs and the party obtaining the capacity, including the liabilities that accrue upon failure to honour obligations, shall be described in detail and made transparently available to all potential network users by TSOs.

Section 5.5

TSOs shall publish all relevant data concerning cross-border trade on the basis of the best possible forecast. In order to fulfill this obligation the market participants concerned shall provide the TSOs with the relevant data. The way in which such information is published shall be subject to review by Regulatory Authorities. TSOs shall publish at least:

(a) annually: information on the long-term evolution of the transmission infrastructure and its impact on cross-border transmission capacity;

(b) monthly: month- and year-ahead forecasts of the transmission capacity available to the market, taking into account all relevant information available to the TSO at the time of the forecast calculation (e.g. impact of summer and winter seasons on the capacity of lines, maintenance on the grid, availability of production units, etc.);

(c) weekly: week-ahead forecasts of the transmission capacity available to the market, taking into account all relevant information available to the TSOs at the time of calculation of the forecast, such as the weather forecast, planned maintenance works of the grid, availability of production units, etc.;

(d) daily: day-ahead and intra-day transmission capacity available to the market for each market time unit, taking into account all netted day-ahead nominations, day-ahead production schedules, demand forecasts and planned maintenance works of the grid;

(e) total capacity already allocated, by market time unit, and all relevant conditions under which this capacity may be used (e.g. auction clearing price, obligations on how to use the capacity, etc.), so as to identify any remaining capacity;

(f) allocated capacity as soon as possible after each allocation, as well as an indication of prices paid;

(g) total capacity used, by market time unit, immediately after nomination;

(h) as closely as possible to real time: aggregated realised commercial and physical flows, by market time unit, including a description of the effects of any corrective actions taken by the TSOs (such as curtailment) for solving network or system problems;

(i) ex-ante information on planned outages and ex-post information for the previous day on planned and unplanned outages of generation units larger than 100 MW.

Section 5.9

All information published by the TSOs shall be made freely available in an easily accessible form. All data shall also be accessible through adequate and standardized means of information exchange, to be defined in close cooperation with market parties. The data shall include information on past time periods with a minimum of two years, so that new market entrants may also have access to such data.

Section 5.10

TSOs shall exchange regularly a set of sufficiently accurate network and load flow data in order to enable load flow calculations for each TSO in their relevant area. The same set of data shall be made available to the Regulatory Authorities and to the European Commission upon request.

The Regulatory Authorities and the European Commission shall ensure the confidential treatment of this set of data, by themselves and by any consultant carrying out analytical work for them on the basis of these data.