



National
Association of
Regulatory
Utility
Commissioners



USAID
FROM THE AMERICAN PEOPLE

DRAFT – 12/01/06
REVISED DESIGN CONCEPT

FOR

**MARKET MONITORING PILOT PLAN FOR SOUTH EAST EUROPE
WHOLESALE ELECTRICITY MARKET**

Sponsored by
United States Agency for International Development (USAID)

And the
National Association of Regulatory Utility Commissioners (NARUC)

Authored by
Potomac Economics, Ltd

**POTOMAC
ECONOMICS**

Table of Contents

Table of Contents	ii
I. Introduction	3
A. Origins of the Pilot Plan.....	3
B. Overview of the Pilot Plan.....	6
C. Market Monitoring and Market Transparency.....	8
D. Open Process.....	9
II. Market Monitoring Issues in South East Europe	9
A. South East Europe Electricity Market Structure.....	9
B. Market Monitoring Issues	10
1. Cross-Border Transmission Capacity Market.....	10
2. Wholesale Generation Market	11
III. Market Monitoring Plan	12
A. Phase I – Initial Monitoring of Cross-Border Transmission Capacity	12
1. TSOs Incentives and Conduct	13
2. Cross-Border Transmission Capacity Allocation	16
3. Wholesale Generation Market Monitoring Activity in Phase I	16
4. Activities in Phase I.....	17
B. Phase II – Advanced Monitoring of Cross-Border Transmission Capacity and Initial Monitoring of Wholesale Generation Markets.....	17
1. Cross-Border Transmission Capacity Market.....	18
2. Initial Monitoring of Wholesale Generation Markets.....	22
C. Phase III – Advanced Monitoring of Wholesale Generation Market	23
D. Other Elements of the Pilot Plan.....	23
1. Monitoring Market Behavior and Market Rules.....	23
2. Data Confidentiality	24
E. Data Procurement Process	24
F. Pilot Plan Schedule	25



This publication was made possible through support provided by the Energy and Infrastructure Division of the Bureau of Europe and Eurasia under the terms of its Cooperative Agreement with the National Association of Regulatory Utility Commissioners, No. EE-N-00-99-00001-00. The opinions expressed herein are those of the authors and do not necessarily reflect the views of the U.S. Agency for International Development or the National Association of Regulatory Utility Commissioners.

Introduction

The Revised Design Concept document reflects substantial revisions to the Preliminary Design Concept document presented to participants at the Market Monitoring Design Workshop for the USAID South East Europe Market Monitoring Pilot Plan held in Brussels on November 16, 2006. The main purpose of this revised document is to respond to comments and suggestions raised at the workshop. The Workshop elicited significant and valuable input and, accordingly, has precipitated substantial revisions to key elements of the Pilot Plan.

Origins of the Pilot Plan

The Pilot Plan concept originated at the 8th Athens Forum¹ in June, 2006 when the USAID, in the interest of advancing efficient energy markets in the region, proposed a market monitoring project for South East Europe. The proposal was well-received and the Forum invited USAID to move forward on a “pilot case”.

The proposed Pilot Plan comes at a time when broad support is coalescing around the move toward greater integration and liberalization, especially through data transparency and more efficient cross-border transmission capacity allocation. Market Monitoring, with its direct impact on data transparency as well as helping to ensure the development of competitive markets, can help advance the goals of integration and liberalization in South East Europe.

As part of the Athens Forum, the Treaty establishing the Energy Community (the “Treaty”) entered into force in July 2006. Among the key elements of this Treaty was a commitment to advance the competitive structure of the electricity markets. It is widely

¹ The South East Europe Energy Regulation Forum, also known as the “Athens Forum” and referred to in the Treaty establishing the Energy Community as the “Electricity Forum,” is comprised of representatives of the European Commission; governments, regulators and transmission system operators of the countries of Southeast Europe; the Council of European Energy Regulators (CEER); the European Transmission System Operators (ETSO); the Union for the Co-ordination of Transmission for Electricity (UCTE); and representatives of donors, electricity producing companies, and consumers. The Forum is co-chaired by the European Commission and a representative of the president in office. Meetings occur at the least biannually. The South East Europe Energy Regulatory Process was launched by the signature of the Memorandum of Understanding on the Regional Electricity Market in South East Europe and its Integration into the European Union Internal Electricity Market (the Athens Memorandum of 15 November 2002).

recognized that a critical aspect of developing competition is a market monitoring function to create market transparency, facilitate open-access, and detect market power and other market abuses.²

As explained more below, a key benefit of market monitoring is the direct impact on data transparency. And data transparency is something that is widely-recognized as critical to market development. The recent conference convened by the European Electricity Transmission System Operators (ETSO) on market transparency, as well as clear endorsement in other venues by ETSO makes this clear.³ But others have emphasized the issue as well. For example, the European Regulators' Group for Electricity and Gas (ERGEG) produced an extensive study discussing the importance of market transparency. ERGEG is an advisory group to the European Commission on market restructuring. ERGEG produced an extensive study discussing the importance of data transparency.⁴ ERGEG data transparency propositions were generally endorsed by the European Federation of Energy Traders (EFET). Moreover, EFET suggested an even stronger move toward transparency.⁵ EURELECTRIC, a group which represents the interests of the European electricity industry, also offered a qualified endorsement of the ERGEG propositions on data transparency.⁶

Another compelling development in favor of market monitoring has been the Commission's Regulation 1228, which requires certain data promulgation that is a critical

² 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.

³ See ESTO Conference on Market Transparency, November 17, 2006, Brussels. See, also, e.g., "List of data European TSOs need to pursue optimal use of the existing transmission infrastructure", European Transmission System Operators, December 2005.

⁴ "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.

⁵ See "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.

⁶ See "Survey on the Implementation of Market Transparency Requirements in Countries Involved in the Athens Process" Eurelectric Ad-Hoc Group on South East Europe, Preliminary Results, June 2006. See also, "Euroelectric Comments on ERGEG Best Practices Propositions", April 2006.

aspect of market monitoring.⁷ In particular, Regulation 1228 emphasized the need to develop efficient cross border trading, a part of which required Transmission System Operators (“TSOs”) to publish key interface data.

To move forward on the Pilot Plan, USAID assembled a team of consultants to develop a market monitoring approach for the region. The team includes Dr. Robert Sinclair of Potomac Economics, a firm that leads in the field of electricity market monitoring in the United States. Also to assist the project, USAID invited Dr. David Newbery, Professor of Economics at Cambridge University in England and Dr. Peter Kaderjak, of the Regional Energy Policy Center (REKK), Corvinus University in Budapest. Both of these individuals are well-recognized experts in electricity market competition and restructuring in Europe and will assist in market power and market design analysis. In executing the Pilot Plan, these three groups will work in a close collaborative arrangement. In addition to these principal organizations, the U.S. National Association of Regulatory Utility Commissioners (NARUC) will provide some limited support and expertise.

As a first step in implementing the Pilot Plan, USAID asked Dr. Sinclair to develop a Preliminary Market Monitoring Design Concept. At the same time, USAID, in conjunction with the National Association of Regulatory Utility Commissioners (NARUC), announced a Market Monitoring Design Concept workshop in Brussels on November 16, 2006. Invitees to the conference included TSO representatives and regulators from each of the entities that are proposed to be included in the Pilot Plan, *viz.*, the countries of Albania, Bosnia & Herzegovina, Bulgaria, Croatia, Macedonia, Montenegro, Serbia, Romania, and for the United Nations Mission in Kosovo (UNMIK).⁸

The conference invitees were provided a draft of the Preliminary Market Monitoring Design Concept document in advance of the workshop. The invitees also received in advance a preliminary list of data that would be proposed to support the Pilot Plan. The invitees were asked to make general comments on the Preliminary Design Concept and to make specific comments on the data requirements.

⁷ Regulation (EC) No 1228/2003 of the European Parliament and of the Council of 26 June 2003 on conditions for access to the network for cross-border exchanges in electricity.

⁸ Hereinafter, for ease of terminology, we use the term “country” to refer to each of the individual entities in the Pilot Plan even though we recognize UNMIK is not an internationally-recognized sovereign state.

The Design Concept Workshop was held as planned on November 16, 2006. All countries were represented. The workshop was successful at eliciting a range of comments, reactions, and concerns by the members of the TSOs and regulators. This Revised Design Concept document has been drafted to respond to the concerns and recommendation received at the workshop.

Overview of the Pilot Plan

The Pilot Plan will undertake data collection and analysis to increase market transparency and to identify anticompetitive market conduct, market flaws, and market power. This pilot approach will be a virtual monitoring of the electricity market activity and not be directly linked to any existing institutions.

The plan is based on the specific market monitoring issues that are identified in Section II. As explained therein, market activity in South East Europe is conducted through bilateral contacts executed at prices negotiated between individual sellers and buyers (in contrast to pool-based markets). Vertical integration is also common in the region and limits most market-based transactions to those between countries. But this market activity also is limited by lack of market transparency and coordination.

Given this structure, market monitoring will be focused on two separate but related markets. The first is the market for cross-border transmission capacity. Monitoring issues in this market will focus on the development of non-discriminatory open-access transmission practices. The second market is the wholesale (international) generation market where the focus will be on unilateral and conspiratorial market power arising from market dominance and vertical foreclosure.

The Pilot Plan will extend through 2007. In order to satisfy concerns raised at the workshop, the Pilot Plan will adopt a phased approach.

Phase I-II: Cross-Border Transmission Capacity Market. The primary focus of Phase I will be the cross-border transmission capacity market, although some limited activity will occur relating to the wholesale generation market. Potomac Economics and REKK will initially rely primarily on publicly-available data to identify key issues and to identify the scope of additional TSO data requirements judged to be needed on a going-forward basis. Our primary reliance on publicly-available data is in response to concerns that the data requests in the Preliminary Design Concept

were too ambitious and could overwhelm TSO staff resources. Accordingly, as discussed in more detail below, we will scale-back our requests for TSO data.

In addition to the activities around the cross-border transmission capacity market, REKK and Cambridge will initiate preliminary collection of publicly-available data on generation markets to make a preliminary assessment of the potential to initiate modeling of generation market power issues.

We expect Phase I will be completed in early 2007 and a summary report reflecting our activities and findings will be drafted after soliciting comments among the participating countries and other key participants.

Phase II of the project will begin when the Phase I report is completed. Phase II is in two parts – (1) advanced monitoring of cross-border transmission capacity markets and (2) initial monitoring of wholesale generation markets.

Advanced monitoring of the cross-border transmission capacity market will use the additional data from TSOs that was identified in the Phase I report. This advanced stage will seek to monitor a range of activities affecting the cross-border transmission capacity market. This advanced stage will represent the development of the full range analyses anticipated under the Pilot Plan including.

The initial monitoring of wholesale generation markets, like the initial monitoring of the cross-border transmission capacity market in Phase I, will rely primarily on publicly-available data, although some non-public data likely will also be request in small measure. We will use this initial data as well as any findings from Phase I to identify key issues and to identify the scope of any TSO data requirements judged to be needed on a going-forward basis.

A summary report reflecting these findings will be drafted and circulated among the interested parties for comments. We expect this draft report at the end of the first quarter. By staggering the analysis of the cross-border transmission capacity market and the wholesale generation market, the Pilot Plan reflects requests to initiate the market monitoring on a reduced scale with targeted issues and screens.

The advanced monitoring of cross-border transmission capacity in Phase II will continue throughout 2007 with a major report to Athens Forum in June and October to provide updates. The initial wholesale generation market monitoring will continue through the second quarter when a subsequent Phase III will begin.

Phase III: Advanced Monitoring of Wholesale Generation Market. Phase III will begin in the second quarter of 2007 and will run until the end of 2007, in parallel with the remainder of Phase II. Activities in Phase III will be shaped by commentary received from our reporting in Phase I. We anticipate the work will include modeling of regional electricity supply to identify potential areas of market power concern that would help focus monitoring analyses.

A report phase three progress will be provided during the summer of 2007. This report will contain data analysis, screens, and a summary of key competitive findings. In addition, a major progress report given at the fall Athens Forum.

Market Monitoring and Market Transparency

The discussion heretofore has made reference to market transparency goals but has not distinguished this goal from market monitoring. Market monitoring, to the extent it makes market data available to the market that otherwise was not available, clearly aids transparency. However, this does not mean market monitoring is essential for data transparency. Such data could have been made available to the market through standard regulatory rules. Moreover, market monitoring may result in data being made available to the market monitor that may carry the restriction that it not be released to the market. In the sense, then, market monitoring and market transparency are distinct.

However, market monitoring can advance market transparency in critical ways. This is primarily because the market monitor requires useful data with clear economic content. Some data, in the absence of market monitoring may not have been produced by market participants or may be produced but not stored. When market monitoring systems are established, market participants are then encouraged or required to develop more useful data. In addition, the market monitor processes data and clarifies the economic content of the data that otherwise, in raw form, may not reveal useful market information. Therefore, this additional data analysis results in additional market transparency.

Open Process

The Pilot Plan will be an open and continuous process of seeking feedback from stakeholders through the Athens Forum. We expect constructive feedback from a variety of organizations. Primarily we seek commentary from the individual countries, but we also will solicit input from, among others, the Southeast Europe Transmission System Operators (SETSO), the SEE Regulatory Working Group (or its successor), EFET, EURELECTRIC ERGEG, and the European Union. We anticipate the Athens Forum will be important in securing feedback, but we will seek feedback from a variety of venues.

Market Monitoring Issues in South East Europe

In this Section, we identify the key market monitoring issues in South East Europe. Inevitably, the focus of market monitoring will depend on the overall market structure in the region. Accordingly, we first provide an overview of the regional market structure. Based on this, we identify the markets to monitor and propose an overall monitoring structure.

South East Europe Electricity Market Structure

The electricity market in South East Europe has been undergoing structural changes in recent years. The industry was generally characterized by a government-owned, vertically-integrated market structure with generation, transmission, and distribution within a single state-owned enterprise. Power sector reforms have resulted in gradual unbundling and privatization that has moved the region toward an environment more receptive to regional electricity market competition.

While these moves toward restructuring have increased the promise of competitive markets, most of the market activity is the result of trade between countries, as opposed to intra-country markets. This is because, in general (but with important exceptions in the cases of Bulgaria and Romania), vertical integration between generators and supply⁹ companies hinders any

⁹ The term “supply” in this context refers to the local retail provider that meters and bills individual end users and operates some low-voltage equipment in the local area. In the U.S., this is usually referred to as the local distribution company.

meaningful wholesale trade within individual countries.¹⁰ Instead, wholesale trade is conducted primarily across borders.^{11, 12}

The cross-border trade in South East Europe allows countries with generation deficits to draw upon excess resources in neighboring countries. Trading typically involves the vertically-integrated national utility and is conducted through the national TSOs. These entities were established in each country in accordance with Commission Directive 2003/54, requiring that each country in the region establish an independent Transmission System Operator (TSO) to ensure fair and transparent network access. The TSO accepts import and export schedules (typically from traders acting as intermediaries) between the individual national utilities. While there has been good progress in establishing TSOs in each country, the degree to which they have become effective varies and, in general, the TSOs are still in the process of developing their main functions, including ensuring information transparency.¹³

Market Monitoring Issues

Based on the foregoing, we identify two separate but related markets where monitoring can have its greatest benefit. The first is the market for cross-border transmission capacity and the second is the market for wholesale generation. We also discuss market transparency and its relation to market monitoring.

Cross-Border Transmission Capacity Market

Cross-Border Transmission capacity is a market that is controlled by a regulated monopolist, the TSO. The market monitoring issues in this market are not related to making the market more competitive -- introducing multiple suppliers of cross-border capacity is not only impracticable but probably undesirable given its natural monopoly characteristics. Instead, the market

¹⁰ For a detailed discussion of intra-country relationships see, "Study of the Obstacles to Trade and Compatibility of Market Rules", Southeast Europe Electrical Technical System Support Project (SEETEC), Canadian International Development Agency, June 2006, pp. 2-4 -- 2-5.

¹¹ One estimate is that this cross-border trade accounts for 17% of electricity supply in the region. The estimate is for the year 2004. See, *Id.*, p. 2-14.

¹² Potomac Economics performs the market monitoring function for several utilities in parts of the U.S. where this type of market structure prevails, *viz.*, for the Arizona Public Service Company, the MidAmerican Energy Company, the Oklahoma Gas and Electric Company, PacifiCorp, and the Public Service Company of New Mexico.

¹³ See, SEETEC, *Op cit.*, at 3-12

monitoring issues relate to facilitating maximum and non-discriminatory access. This highlights the relatedness of this market to the generation market – in particular, successful monitoring in the cross-border transmission capacity market can increase competition in the generation market.

Indeed, market monitoring can have its most significant impact in the cross-border transmission capacity market. Primarily, this will involve helping TSOs identify mechanisms to improve access to cross-border transmission capacity. This impact can be significant in part because it promotes the type of trading that dominates market activity. But monitoring can have a significant impact also because monitoring TSO functions is one of the most developed and proven aspects of market monitoring. Moreover, monitoring cross-border trade is something that has been explicitly endorsed by EC Regulation 1228.¹⁴ Accordingly, a key component of the market monitoring data requirements include requests for data and processes for calculating and allocating interface capability between countries and allocation within countries experiencing internal congestion which impedes cross-border trade. For our data requirements in this regard, we have adopted the data transparency regulations of Regulation 1228, with specific descriptions of data where needed. We note that cross-border trading includes cross-system transactions that do not terminate or originate within a given country but that must schedule over the transmission facilities.

Wholesale Generation Market

The prevalence of within-country vertical integration indicates that further restructuring is needed to unbundle the relationship among TSOs, generators and suppliers (local distribution entities). If local suppliers had direct access to other regional generation companies, facilitated by TSO policies, then a more vibrant wholesale market would develop with the attendant economic benefits. This effort, however, requires additional political decisions at the national level.¹⁵ A main role of the market monitoring program in this instance is to aid in transparency of national market data to support analyses that can inform national policies on structural changes.

¹⁴ Regulation (EC) No 1228/2003, *op cit*.

¹⁵ We note that market monitoring is not restricted to periodic monitoring of specific behavior of participants. A critical element of market monitoring is to identify structural issues that impede the development of competitive markets.

However, given the dominance that is prevalent in the generation sector within each country, we seek to monitor the activities of generators at two levels. First, we are concerned with horizontal market power whereby market outcomes are manipulated through control of a significant portion of total supply. Second, we are concerned that control of key generation facilities may enable a generator to create and exploit network congestion. Accordingly, we propose to monitor individual market participant behavior that can affect the competitive outcomes in generation markets.

Market Monitoring Plan

In this section, we explain the market monitoring plan. A market monitoring plan establishes the key monitoring objectives and the framework within which analysis is used to meet these objectives. The monitoring objectives consist of (1) detecting anticompetitive conduct and flaws in market rules through data analyses, (2) analyzing individual participant behavior to detect market power, and (3) improving market transparency. The individual monitoring strategies determine the underlying data requirements and, accordingly, the critical element of a monitoring plan is the data requirements.

As discussed above, and as is true for any market monitoring plan, the market structure of the market to be monitored determines the monitoring focus. We identified two markets where monitoring would have its greatest benefit: the cross-border transmission capacity market and the wholesale generation market.

The market monitoring plan will be accomplished in phases. We do this in order to alleviate the burden on TSOs under what is a voluntary Pilot Plan. Our decision to use a phase-in approach is an effort to respond to commentary from TSOs at the November workshop.

Phase I – Initial Monitoring of Cross-Border Transmission Capacity

Given the critical aspect of cross-border transmission access, the first phase of the project will focus primarily on the market for cross-border transmission capacity. A small amount of work will be initiated concerning the wholesale generation market.

During the Design Workshop, the participating TSOs that indicated significant data is available related to the calculation and posting of cross-border transmission capacity. For this reason, and

to respond to TSOs' requests for greater clarity and reduced data collection burden, we will initiate this first phase using mostly publicly-available data with only a limited amount of data requested from TSOs.

The EU market opening process seeks to maximize the availability of cross-border capacity to the market and to allocate this maximum capacity in a non-discriminative manner. Under this vision, the TSO is a critical, but neutral player ensuring system security and providing the access to and allocation of the transmission rights between control areas. The TSO has also a natural monopoly over the control and allocation of the system's interface capacity. This is why it is of critical importance but it also why it is a source of potential competitive concern.

The competitive concerns are both indirectly and directly connected to the central TSO role as a market gatekeeper. The indirect concerns arise when the TSO must rely on data and assumptions from other market participants, mainly from the incumbent generation company. The incumbent generation company may have a clear interest in affecting inter-regional trade in some way or another and may have the ability to do so by providing incorrect data to the TSO that would affect the calculation of ATC. The direct concerns arise when the TSO has objectives other than providing non-discriminatory access. Direct actions may take the form of denial of access to cross-border border capacity as well as the physical withholding of ATC. Such actions may be attempts to comply with local regulations aimed to achieve local benefits but hinder inter-regional trade. The actions may also be the result of deliberate TSO policy to satisfy non-neutral objectives that undermine the open access transmission goals.

TSOs Incentives and Conduct

To better focus the analysis of TSO incentives and conduct, we assume a straightforward causal relationship that can explain the relationship. In particular we assume that TSO characteristics are translated to actual outcomes through adverse incentives and conduct. This Task should work along the following line of assumed causality between company characteristics and anticompetitive conduct:

Characteristics of TSO	–	Incentives and Conduct	–	Outcomes
(observable)		(to be determined)		(observable)

Characteristics of TSOs. As we explain above, it is a common that each TSO serve as gatekeepers between systems and they have a natural monopoly over allocating transmission rights. Beyond this, TSOs and their governance might differ according to a number of important characteristics, a combination of which is assumed to affect their motivations and potentially their behavior. The most relevant characteristics are as follows:

- Ownership structure (mix of state vs. private ownership)
- Unbundling status
- If integrated, the holding's position on the local wholesale market (influence on local prices)
- Market environment: located in a net importing (high priced) or net exporting (low priced) country
- Regulatory environment: relation of regulated transmission and transit charges and auction revenues to company revenues

Adverse Incentives and Conduct. Adverse incentives come from the need to satisfy some non-neutral TSO or regulator objectives. These objectives are assumed to be of financial or political in nature, like, e.g. increasing company profits compared to the baseline case (normal neutral behavior); maximizing "corruption rents" from anticompetitive conduct; or preventing local firms from import competition. If those incentives are embodied in actual conduct, such conduct will, in the end, affect prices, TSO profits and/or corruption revenues.

A major financial motive for a TSO for anticompetitive conduct is to extract the potential rent from electricity trade. Assume that an hourly price differential of \$5/MW exists between two national markets (assuming one control zone per country). Then a business opportunity for trade from the low-priced zone to the high priced zone emerges. However, such a trading opportunity or rent can be extracted only by using the physical assets controlled by the TSO. A number of market and regulatory conditions will influence how the \$5/MW rent from trading a MW will be shared by the seller, buyer, trader, consumer and the TSO.¹⁶ In order to increase its share, the

¹⁶ For example, If the price differential is \$5/MW in a transparent auction, traders will pay for using the capacity right close to \$5 and this will be revenue for the TSO that is later socialized to consumers.

TSO might be motivated to increase congestion at the border and/ or increase transit charges. Increased congestion at the interface might result in a monopoly profit for the TSO on the transmission rights market. In addition, if the TSO is part of an integrated holding, increased congestion at the border can decrease competitive pressure on allied generation on the domestic wholesale market thus allowing higher profits for affiliated generation.

Finally, anticompetitive conduct in setting transit charges and in allocating transmission rights can serve the allied generators to compete on external markets on a preferential basis.

What follows is an illustration of how the different combinations of TSO characteristics might change the incentives to the TSO. An important Task under the Pilot Plan is to develop a comprehensive review of the environment for each TSO. Our illustration is provided in Table 1.

Table 1

		Ownership status	
		Majority privately owned	Majority state owned
Unbundling status	Ownership	A	B
	Integrated	C	D

The Table groups together TSOs according to their ownership and unbundling status. Under such a grouping the following stylized characterizations about A-D types of TSOs can be given.

Type “A” TSO is supposed to be a profit maximizing entity. If allowed, it might behave as a monopolist in allocating transmission rights in order to maximize capacity auction revenues. A result will be under-utilized and overpriced CB capacity.

Type “B” TSO might be motivated to maximize corruption revenues from non-transparent trade. An indication might be heavy physical flows with close to zero capacity allocated to the market.

Type “B” TSO, if located at a low price region, might be ordered by its owner to reduce interconnection capacity to save cheap electricity for local use.

Type “C” or “D” TSO in a high-price region might restrict capacity in order to prevent integrated generation from competition.

We also recognize that the allocation of interface capacity is not the sole authority of a single TSO but at least the result of a process between two TSOs. In more complex cases of coordinated allocation schemes (e.g. coordinated auctions) the final allocation of numerous interface capacities can be considered as a result of a multi-player game across a number of affected TSOs. The Pilot Plan will be executed while paying attention to such games associated with interface capacity allocation.

Outcomes. Adverse incentives and conduct cannot be observed directly. What we can observe under a market monitoring scheme is the outcomes of conduct. Table 2 provides an illustration how we could translate characteristics and outcomes into potential adverse incentives and conduct.

Table 2

		Rate of physical utilization	
		High	Low
Rate of transparent allocation in total scheduled transactions (ATC)	High	Ok	Unused direction Extraction of auction revenues on coordinated auctions
	Low	Incumbents and/or agent trader extract rent	Eg. Low-priced country protects cheap domestic sources from exports

Cross-Border Transmission Capacity Allocation

Assuming that integrated incumbents are influential players in each country, we can assume that the cross border regulation for each country is the results of a) a wish to comply with EU requirements, b) reflects the interests of the TSO and also affected by c) a game played among the TSOs involved in operating an interface. A critical review of the rules for allocating cross-border transmission capacity will help illuminate these issues.

Wholesale Generation Market Monitoring Activity in Phase I

While Phase I will primarily focus on the cross-border transmission capacity market, some limited activity will occur that is focused on the wholesale generation market. This activity will

rely solely on publicly-available data and will focus on identifying the potential for developing a regional market model for the purpose of subsequent phases of the Pilot Plan

Activities in Phase I

In accordance with the foregoing, we propose some specific elements for Phase I. We recognize that good public information exists that explains the process for cross-border capacity allocation. We also recognize the existence of public information on posted capacity. Using these resources, in Phase I, we will set to accomplish the following:

- a. Identify the key calculations in the capacity allocation process and highlight areas where assumptions and data input can adversely affect the market. In particular, the calculation of available transfer capacity (ATC), which is the capacity available to the wholesale power market, can be affected by a wide range of modeling assumptions, including, *inter alia*, the assumed commitment order of generators, the ratings of lines, internal congestion assumptions, and load profiles.
- b. Develop a multi-dimension description of the governance structure of TSOs in South East Europe.
- c. Carry out a series of interviews in search for “stories” or “anecdotes” on the anticompetitive practice the TSOs in the region apply.
- d. Procure Data from TSOs in accordance Appendix A.
- e. Draft a Wholesale Generation Market Modeling Concept that would inform potential development of a regional market model.

We expect to issue a report early in 2007 with our findings. This report will include a proposed set of data requests from the TSOs that would help illuminate the issues identified.

Phase II – Advanced Monitoring of Cross-Border Transmission Capacity and Initial Monitoring of Wholesale Generation Markets

Phase II of the Pilot Plan is in two parts. The first part is the advanced monitoring of cross—border transmission capacity. The second part is the initial monitoring of wholesale generation markets.

Cross-Border Transmission Capacity Market

The advanced monitoring of the cross-border transmission capacity market will begin once the report on Phase I has been published in early 2007. Because the publishing of the Phase I report will reflect the comments of market participants, Phase II will be shaped by the findings from Phase I. Phase II will begin with collection of TSO data that is not publicly available and that was identified as necessary for carrying out the on-going monitoring function. As data is collected, analysis identified in Phase I will commence. It is anticipated that Phase II will extend through 2007.

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

We provide a description of the initial market monitoring and other market analyses to be performed under Phase II of the Pilot Plan. It begins with a description of the potential analyses to be used. The usefulness of each analysis is dependent upon the availability of meaningful data. To the extent possible in light of data availability, Potomac Economics will use the following description as a guide in establishing initial analyses.

Data analyses are focused on detecting anticompetitive behavior with regard to interface availability, including the conduct of generators and traders. As described above, 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 transmission access issues. The latter of these issues is treated in the market transparency subsection below. The market activity during periods of transmission congestion is evaluated through specific analyses.

Congestion can be observed through a variety of indicators, depending on the specific rules and protocol on the TSO. One way congestion may be indicated is through reliability standards and practices that may require transactions to be curtailed. We will seek data that records when such

action is taken. Denial of transmission service may also be indicative of congestion.

Accordingly, data on interface availability is critical in carrying out this analysis.

Analysis of Congested Periods. During periods of congestion, market monitoring should focus on evidence that could reveal whether the congestion is being created artificially in order to exercise market power or otherwise restrict competition. Standard analyses designed to reveal evidence of anticompetitive conduct related to congested periods focus on transmission outages, generation dispatch, power flows on congested facilities, and prices charged for wholesale power.

Transmission Outages

Transmission outages are evaluated in order to determine whether unjustified outages could have contributed to congestion events. In this analysis, the market monitor identifies all outages on the system that coincided with dates when congestion occurred. Each outage is then examined in more detail to determine its effects on congested facilities. This effect is sometimes obvious from the nature of the outage, but sometimes an outage may require a study of load-flow impacts to determine whether the outage may have diverted flow over congested facilities. Typically, discussion with operations personnel at the TSO can provide sufficient insight to determine the impacts of an outage. If the monitor determines the outage has had an impact on congestion, then further investigation into the nature of the outage should be conducted to determine whether the outage was justifiable.

Congestion Relief Procedures

Market power can arise through the TSO's management of congestion events if the events are initiated prematurely, late, or without justification. By initiating congestion procedures strategically, the monitored entity can potentially benefit favored generation by raising short-term prices in the region. Hourly data on power flows over key facilities should be analyzed to determine whether the times when flows are close to the operating limit coincide with congestion events. If flows are significantly below the limit and congestion measures are taken, this suggests measures being taken prematurely or without justification. Alternatively, if flows significantly exceed the limit leading up to congestion events, then it may be that the procedures

are being delayed. TSO will have different ways to invoke congestion relief and some may be more far-reaching than others. Accordingly, it may be necessary to analyze the appropriateness of certain actions more closely than others.

Consistency of Short-Term ATC and Physical Flows

The objective of the transmission reservation and scheduling provisions is to facilitate full utilization of the network. TSOs should make transmission capability available on a short-term basis (e.g., hourly) when those holding long-term reservations do not schedule to use their transmission or there is physical capability available in the short-term for other reasons. In these cases, the TSO should make this capability available to market participants. To evaluate whether transmission capability is being withheld, the analyses in this area generally compare the physically available capability (transmission limit minus the hourly flow) to the TSO's daily ATC (or hourly ATC, if appropriate).

Modeling of ATC

Interface capacity will depend on reserved uses of the system for the purpose of servicing the load of the vertically integrated national utilities. Monitoring should ensure that access to transmission for this "native" load does not receive unreasonable preference or that in modeling the reservations, the estimates of available capacity are not biased.

Sales Prices

We examine the sales by the vertically-integrated entity in short-term bilateral transactions. The focus is on short-term bilateral sales contracts because they best represent the spot price of electricity and will most closely reflect market power if it were to arise on the monitored system. Under a hypothesis of market power, high sales prices would be expected during times when transmission congestion occurs.

For this analysis, the balance between sales and purchases can be informative. Typically, anticompetitive conduct is profitable for a supplier when it is making substantial short-term sales of wholesale power (and can therefore profit from higher prices). This does not eliminate the

possibility that a short-term net buyer could still have the incentive at specific times to engage in anticompetitive conduct. We will gather data on sales and purchases to assess net positions.

Dispatch

Generation dispatch is evaluated to determine the extent to which congestion may be exacerbated by uneconomic dispatch patterns. Congestion can result naturally when a utility dispatches its units in a least-cost manner and this does not 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 heat-rate curve), and generator fuel costs.

Transparency of Interface Allocation. In addition to the analyses of congestion events just described, monitoring of interface capacity also requires transparency of the methods used to estimate and allocate available interface capacity. This is one of the main elements of the market monitoring plan. The data requirements subsection below indicates the data that should be made available in order to monitor the processes and make transparent the results. In addition to making this data available to the market monitor, the data should also be posted publicly.

Transparency of Other Market Data. Market transparency is achieved by providing wide access to market data. This includes data on calculation and usage of interface capacity, as well as data on supply and demand. In order to provide transparency, the market monitoring plan will post information to a website in as timely a manner as practicable and at regular intervals.

Confidentiality of some data may be reasonable and the procedures for keeping data confidential will be discussed at the Market Monitoring Design Workshop.

Governance Structure. Pursuant to Phase I findings regarding adverse incentives and conduct, we will develop a qualitative analysis that aims to explain how variations in TSO governance structures affect cross-border capacity allocations.

Initial Monitoring of Wholesale Generation Markets

In the second part of phase II, which will be conducted roughly concurrent with the first part of Phase II, we will begin our initial focus on monitoring of the wholesale generation market.

Generation market power can be either vertical or horizontal in nature. Vertical market power occurs when generation is strategically committed or withheld in an effort to create congestion that is subsequently exploited for the resulting higher prices. Vertical market power in this sense is analyzed under the monitoring of the cross-border transmission capacity market. The focus of wholesale generation market monitoring will be horizontal market power. Horizontal market power can arise either unilaterally when a firm is sufficiently large within the local market that it can raise price through its own actions or it can arise from collusion when two or more firms coordinate in the market to raise prices. This latter form of market power is sometimes referred to as conspiratorial market power.

We will begin our monitoring of the wholesale generation market with publicly-available data as well as a limited amount of TSO data. We are interested in monitoring the potential market power of individual generating entities that may control one or more generating units. Our initial goal is to identify generator size, type, and location. Primarily we will attempt to catalogue existing generating resources and combine this information with publicly-available data on transmission system configuration. This will help identify the most likely areas of market power concerns. This analysis will not be used to draw market power conclusions but will be used to provide guidance in subsequent analysis.

We expect the initial monitoring of wholesale generation market to extend into the second quarter of 2007, ending with a report of our findings and recommended scope for subsequent analysis and data requirements.

Phase III – Advanced Monitoring of Wholesale Generation Market

Phase III of the market monitoring plan will begin after the initial report from Phase II. The reporting on Phase II will reflect comments from market participants regarding analytical issues and data requirements. Accordingly, Phase III will be shaped by Phase II.

We propose to use actual generation and transmission data to model the regional market power issues using modeling techniques to assess the market power potential of individual generators under various types of system conditions. These modeling techniques could help reveal the potential market power of the various generation entities given transmission limits and specific unit characteristics such as technology, capacity, fuel costs, and location. This analysis could, for example, identify the system conditions (i.e., congestion and high load) and the specific units most likely to have market power under those conditions. Because market power typically will arise when congestion occurs on the system and we anticipate screens that are activated when congestion occurs.

In Phase III, we will begin collecting data to with the aim of constructing such models that may monitor the conditions that may give rise to this market power.

Other Elements of the Pilot Plan

Monitoring Market Behavior and Market Rules

Potomac Economics will work with Dr. Newbery and Dr. Kaderjak in an analysis of the potential market power and market design issues in the region. This analysis will draw upon, as necessary, analyses produced in the Pilot Plan process as well as data in other existing available analyses. We expect market power studies to be conducted that focus on the withholding of generating capacity as a way to exercise unilateral and conspiratorial market power in bilateral markets. These analyses evaluate actual market conduct to determine whether participants that likely have market power are raising prices when market conditions allow it. Analysis of market rules is important for two reasons. First, market rules can have consequences that reach beyond the particular purpose of the rule. For example, reliability rules can often have market distorting effects when transmission or generation capacity is reserved for such purposes.

Second, region-wide market development can be advanced if rules across jurisdictions are harmonized to the degree possible.

Data Confidentiality

Market monitoring is most effective when all market data is available to the monitoring entity. Furthermore, market transparency goals are advanced when key portions of this data are made available to market participants. We seek broad participation by entities (most likely TSOs) that possess the necessary data. Data withheld for whatever reason, will be indicated in our reporting.

Data Procurement Process

Data requirements will be identified in an open process beginning with the initial Phases when critical monitoring issues and data are identified using publicly-available data. In the process of identifying the key data needed for the advanced elements of the monitoring, the consultants will seek feedback from the TSOs and other participants.

Potomac Economics, in conjunction with REKK, will develop strategies for collecting this data from market participants. As indicated above, it is expected that main source of the key market and operating data will be from the TSOs. To start, then, we will ask each TSO to designate individuals that will serve as points of contact for receiving requests for information from the Market Monitor. The TSOs require constant access to operating data in order to manage security and reliability on the grid. They also manage access to the grid by the generators and, accordingly, have access to generator schedules and loadings. However in some instances, the generator companies will have the technical data associated with individual plants. The electricity market structure in South East Europe varies among individual countries. In some instances the TSO may have all necessary data while in other the data may be in the possession of two or more entities.

Pilot Plan Schedule

The following is an estimate of milestones. All dates are 2007 unless otherwise indicated

Phase I: Initial Monitoring of Cross-Border Transmission Capacity Market (December 1, 2006 – March 15)

December 1, 2006 - January 31:

Collect publicly-available data and issue (limited) data requests related to cross-border transmission capacity market and work on draft analysis and going-forward monitoring scope;

February 15

Circulate Phase I Draft Report among participants.

February 28

Receive comments from participants on Phase I Draft Report

March 15

Publish final Phase I Report

Phase II: Advanced Monitoring of Cross-Border Transmission Capacity Market and Initial Monitoring of Wholesale Generation Markets (March 15 – December 15)

March 1 – March 30:

Issue additional data request pursuant to revised scope from Phase I.

Begin initial data collection for wholesale generation market monitoring

April 15-30:

Begin advanced analysis of cross-border transmission capacity using data collected

May 30:

Initial Draft Report for June Athens Forum circulated among participants

June 15:

Final Draft Report presented to June Athens Forum

June 30

Circulate draft report on Initial Wholesale Generation Market Monitoring

July 30

Final report on Initial Wholesale Generation Market Monitoring

Circulate draft of first Periodic Monitoring Report on Cross-Border Transmission Capacity Market;

Phase III – Advanced Monitoring of Wholesale Generation Markets; Continued Advanced Monitoring of Cross-Border Transmission Capacity Market (August 1 – December 15)

August 1

Begin data collection from TSOs on wholesale generation markets

August 30

Begin advanced analysis of wholesale generation markets

Final Draft of first Periodic Monitoring Report on Cross-Border Transmission Market

October 1

Initial draft of Second Report to Athens Forum

October 15

Final Draft of Second Report to Athens Forum

November 30

Initial draft of First Periodic Monitoring Report on all Market Issues

December 15

Final draft First Periodic Monitoring Report on all Market Issues

Appendix – Data Request for Phase I

In order to respond to concerns raised at the November 16, 2006 Market Monitoring Design Workshop, we have limited our requests for data. As explained in the main body of this document, the initial phases of our work will rely mainly on publicly-available data. However, we make the following limited request because the requested information is important to our efforts to move forward in a timely fashion. We have attempted to identify only data that we anticipate would not be burdensome for the TSO to provide. Please provide this data by January 15, 2007.

Request 1-1

Please provide actual load for the TSO control area for each hour for the month of December 2006;

Request 1-2

Please provide the actual hourly power flows over all external interconnection for the month of December, 2006; *Note: For purpose of the this data request, the term external interconnection means the point in the TSO's transmission network that ties in to the system of an adjacent country.*

Request 1-3

For each generating unit in the TSOs control area, please provide

Unit name,

Unit type, (for example hydro, steam turbine (coal); steam turbine (oil), internal combustion (gas); combined-cycle)

Unit maximum capacity,