

**Industry Report to the  
Federal Energy Regulatory Commission  
on the Future of OASIS**

**Prepared by  
Commercial Practices Working Group  
and the  
OASIS How Working Group**

## **Executive Summary**

### **Background**

The Open Access Same-time Information System (OASIS) is an Internet-based information network which was developed by the electric industry in response to the Federal Energy Regulatory Commission's (FERC) policy on open transmission access. OASIS establishes part of the foundation for competition in the supply of wholesale electricity by openly providing comparable information to all potential users of the transmission system. OASIS supports the posting of available transfer capabilities, as well as the offering of transmission and ancillary services with their associated prices and terms. OASIS allows users to reserve capacity on the transmission system, purchase ancillary services, resell transmission service to others, and to sell ancillary services from third party suppliers.

### **Purpose of the Report**

This report is a first step in the establishment of a framework for the long-term development of OASIS beyond the initial Phases 1 and 1-A. Central to this purpose is understanding the evolving information needs of all OASIS users, including transmission customers, transmission providers, operating and reliability entities, FERC, and others. There is also a need to understand the role of OASIS in relation to emerging market structures and within a still-evolving regulatory framework.

This report is intended to achieve the following objectives:

- Review the present status and lessons learned from Phase 1 OASIS and recently proposed improvements for Phase 1-A,
- Pose several broad policy issues which require clarification by the Commission before the future scope and development strategy for OASIS can be fully determined,
- Review the industry's understanding of the needs for further OASIS development, and
- Propose a plan to serve as a starting point for managing the ongoing OASIS design and development process.

### **Results to Date**

OASIS became operational on January 3, 1997, and presently has reached 22 nodes shared among 167 transmission providers. OASIS provides measurable progress toward non-discriminatory availability of information necessary for transmission access. OASIS also reinforces accountability of both transmission providers and customers through the transparency of standard, publicly available electronic processes.

Despite the significant progress made in the development of OASIS, most customers are not satisfied with the results, with the exception of a few nodes that work reasonably well. The transmission customers' perspective on the overall effectiveness of OASIS may be summarized as follows:

- OASIS requires too many steps, is burdensome, slow, and not easy to use;

- OASIS is not adequate to support next-hour market activity;
- Available Transfer Capability (ATC) information on OASIS is not sufficiently reliable for commercial use;
- Many providers are not compliant with the computer-to-computer protocols defined in the OASIS standards;
- OASIS graphical displays are not standard across nodes and the information provided on these displays varies;
- There are inconsistencies among providers, in some cases even on the same node, in the naming of transmission services and in defining transmission paths;
- There are inconsistencies in business practices across the nodes; and
- Some providers are not cooperative in assisting OASIS customers.

These issues and others are discussed in detail in this report so that the Commission may fully understand the nature of these concerns. Some of the issues have already been resolved in a planned upgrade to OASIS, called Phase 1-A. These plans have been filed by the OASIS How Working Group and are currently under review by the Commission. Most of the issues, however, are not yet resolved and are targeted in the action plan described below.

### **Policy Questions**

Prior to defining a future scope and design for OASIS, there are several essential policy decisions that must be resolved by the Commission as a matter of clarification for the industry:

- To what extent should and will wholesale electricity markets evolve:
  - to Regional markets, with processes and infrastructure standardized within the Regions but not between Regions, or
  - to national/North American/Interconnection-wide markets with standard interregional processes and infrastructure (of which OASIS is currently one)?
- Can a framework for adapting tariffs be established to allow business processes to evolve? The framework must be consistent with the results of the first decision above and responsive to market needs.
- Can a framework of incentives be established, beyond regulatory mandate, to encourage transmission providers to maximize the market's access to the transmission network and to develop a robust OASIS system?
- Should all users of the transmission system, including native load served by resources external to a control area, be required to reserve transmission on OASIS?

### **Industry Action Plan**

The action plan proposed by this report consists of three components: resolution of key business practice issues, OASIS design and development, and OASIS management organization. The approach is more systematic and user-driven than OASIS development has been to date.

The action plan for resolving OASIS business process issues includes the following steps:

1. The Commercial Practices Working Group (CPWG) will immediately send a letter requesting that the NERC Board of Trustees commit additional resources to accelerate the resolution of inconsistencies with ATC calculation and coordination.
2. The CPWG will file with the Commission by March 31, 1998 a draft set of guidelines to clarify OASIS business practices in Phase 1-A, including resolution of issues left over from Phase 1.
3. The CPWG will prepare a draft report defining a next-hour business model by April 30, 1998 and will file with the Commission a final report by August 31, 1998.
4. The CPWG will evaluate the need for posting of transmission status information in Phase 2 OASIS and report the results to the Commission by August 31, 1998.
5. The CPWG will evaluate long-term alternatives for transmission reservation and scheduling beyond Phase 2, possibly including flow-based and other alternative approaches, and report these results to the Commission by December 1998.

The CPWG will also complete these additional activities to resolve broader open access issues:

1. Publish a set of open access performance indices.
2. Draft a national service agreement as a possible mechanism for transmission reservation and scheduling.

The OASIS How Working Group will complete the following steps toward the development of OASIS Phases 1-A and 2:

1. File a transition plan describing the migration from Phase 1 to Phase 1-A by March 31, 1998.
2. File detailed specifications for OASIS Phase 2 by November 30, 1998.

The Phase 2 specification will develop the highest priority aspects of an expanded Open Access Market Interface, which, in addition to current OASIS functions, adds energy transaction scheduling, constraint management (curtailment notification and redispatch options), and next-hour reservation and scheduling.

Furthermore, the CPWG will investigate the options for a formal management organization to support development of open access business practices and OASIS standards. This management process is proposed to also include an industry-managed open access complaint resolution process.

The action plan and schedule presume that FERC approves Phase 1-A by November 30, 1997 for implementation by May 31, 1998. It also presumes acceptance by the Commission of the concepts identified in this report and clarification of policy issues as requested.

## Table of Contents

Executive Summary	i
Table of Contents	iv
Section 1 — Introduction	1
1.1 Background	1
1.2 Purpose of this Report	3
1.3 Consensus Process for Preparing this Industry Report	4
Section 2 — Current Status and Quality of OASIS	5
2.1 Current Status of OASIS	5
2.2 Success Criteria for OASIS	5
2.3 Status of OASIS: FERC/Public Perspective	6
2.4 Success of OASIS to Date: Users' Perspective	7
2.5 Success of OASIS to Date: Transmission Providers' Perspective	11
Section 3 — Phase 1-A OASIS Plans	15
3.1 Goals of OASIS Phase 1-A	15
3.2 FERC Requested Changes	15
3.3 Industry Initiatives to Improve OASIS Phase 1-A	17
Section 4 — Strategic Policy Issues in Planning the Future of OASIS	20
4.1 Overview of OASIS Policy Issues	20
4.2 Policy Issue 1: Regional or Wide-Area Markets?	21
4.3 Policy Issue 2: Adapting Tariffs and Service Agreements to Market Needs	25
4.4 Policy Issue 3: Provider Incentives to Support Market Development and OASIS	25
4.5 Issue 4: Getting All Users of the Transmission System on OASIS	27
Section 5 — OASIS Functional Scope: Options for the Future	29
5.1 NERC Security Applications	29
5.2 Scope of an Open Access Market Interface	31
5.3 Need for User Inputs to Functional Requirements	33
Section 6 — Action Plan, Part I: Resolution of Business Processes	36
6.1 CPWG Activities to Resolve OASIS Business Process Issues	36
6.2 Development of a Business Model for the Next-Hour Market	37
6.3 Solving ATC Problems	39
6.4 Reconciling Business Model with Operating and Physical Models	41
6.5 Customer Confirmation Times	42
Section 7 — Action Plan, Part II: OASIS Design and Development	47
7.1 Phase 2 OASIS Architecture: Centralized, Decentralized, or Hybrid?	47
7.2 Graphical Interface Display Standards	50
7.3 Finding the Appropriate Pace for Adopting Internet Technology	51
7.4 Access Security Management	51
7.5 Audit Logs	52
7.6 Systematic Process for OASIS Project Management	52
Section 8 — Action Plan, Part III: Management Organization	54
8.1 Open Access Management Organization	54
8.2 Compliance Monitoring and Complaint Resolution	56

**List of Appendices**

Appendix A	List of Transmission Providers Offering Service Over OASIS	A-1
Appendix B	Rosters of the Commercial Practices Working Group and the OASIS “How” Working Group	B-1
Appendix C	Letter to the Industry Soliciting Inputs to the Report	C-1

**List of Figures**

Figure 5-1	Framework for an Open Access Market Interface	32
Figure 5-2	Users of an Open Access Market Interface	34
Figure 6-1	Reconciling Commercial, Operating, and Physical Models	41
Figure 7-1a	Centralized Infrastructure for Open Access Market Interface	48
Figure 7-1b	Decentralized Infrastructure for Open Access Market Interface	49
Figure 7-1c	Hybrid Infrastructure for Open Access Market Interface	50

**List of Tables**

Table 1-1	FERC Requested Comments in Phase 2 OASIS Report	2
Table 2-1	OASIS Success Criteria	5
Table 5-1	Open Access Market Interface Requirements (Representative Examples)	35
Table 7-1	Systematic Steps for OASIS Design and Development	52

## Section 1 – Introduction

### 1.1 Background

The Open Access Same-time Information System (OASIS) is an Internet-based information network which was developed by the electric industry in response to the Federal Energy Regulatory Commission's (FERC) policy on open transmission access. OASIS establishes part of the foundation for competition in the supply of wholesale electricity by openly providing comparable information to all potential users of the transmission system. OASIS supports the posting of available transfer capabilities, as well as the offering of transmission and ancillary services with their associated prices and terms. OASIS allows users to reserve capacity on the transmission system, purchase ancillary services, resell transmission service to others, and to sell ancillary services from third party suppliers.

OASIS became operational on January 3, 1997, and presently has reached 22 nodes shared among 167 transmission providers. Most of the transmission providers are FERC-regulated public utilities who are obligated to comply with OASIS requirements. However, a significant number of non-jurisdictional transmission providers also participate in OASIS, including several Canadian utilities. The transmission providers offering services on OASIS are listed in Appendix A by provider name and by node. Several transmission providers developed their own OASIS nodes, but most utilized the services of commercial information system vendors.

The jurisdictional transmission providers were required to develop their OASIS systems in accordance with the OASIS Standards and Communication Protocols Document (S&CP), which was issued by the Commission under Docket No. RM95-9-000 on September 10, 1996. These standards were developed by the OASIS "How" Working Group (How WG), a voluntary and independent industry group which has facilitated the design, development, and implementation of OASIS since August 1995.

The How WG initially worked closely with a counterpart OASIS "What" Working Group (What WG), which defined the OASIS information needs up until the time the group was retired in early 1996. Since April 1997, the newly formed Commercial Practices Working Group (CPWG) has taken on the responsibility of proposing business process solutions for OASIS, as well as other aspects of transmission access. Both the How WG and CPWG are open, non-discriminatory forums which utilize a public process to achieve consensus-based results. Membership rosters of the CPWG and How WG are provided in Appendix B. These two groups have served as the principal forum for the preparation of this report on the future of OASIS, in addition to the public comments received.

OASIS is being developed in phases, with the initial system that went into operation in January 1997 known as Phase 1. Because OASIS was anticipated to serve as a commercial business information system, the How WG recognized the importance of minimizing project risks by focusing the initial scope on the highest priority functions required by FERC regulations and the *pro forma* tariff, namely those related to posting and reserving transmission capacity. Phase 1 OASIS was designed to rely on proven, commercially available Internet technologies and to

minimize entry barriers to authorized customers through the use of common Internet web browsers.

With this “keep-it-simple” approach in Phase 1, compromises were made with respect to OASIS functionality and features. Phase 1 OASIS was not designed to handle next-hour reservations in support of a short-term energy market. It allows the reservation of transmission capacity, but does not provide facilities to schedule the flow of energy across that capacity. Only limited progress was made in assuring security mechanisms that would allow OASIS to be considered a financial-grade business system. The user-provider interactions are not dynamic - the interactions rely on a passive approach of posting status changes to a reservation request, which the customer must later query to determine a response. No standards for graphical displays were developed.

These are just a few examples of the capabilities left unfinished in OASIS Phase 1 for the purpose of meeting the most urgent of FERC’s objectives in an aggressive time schedule. As a result, the concept of Phase 2 OASIS was established as a place holder for improvements which were deemed important, but which could not be completed in Phase 1. The Commission, in its Order 889, requested the industry to provide a report on plans for Phase 2 OASIS within 7 months of the start of OASIS. The initial due date for this report was August 4, 1997.

In the meantime, the Commission’s March 1997 Rehearing Order on OASIS (889-A) required specific changes to OASIS, particularly with respect to transmission service price negotiation and discounting. Additionally, the industry had identified some urgent, short-term improvements to OASIS based on the first several months of experience. The FERC and industry improvements were merged into a proposed upgrade of OASIS, called Phase 1-A, which was filed with the Commission on August 11, 1997 and is anticipated for implementation six months after Commission approval. Details of these Phase 1-A improvements are provided in Section 3 of this report.

Also in the 889-A Order, the Commission reiterated its request for a Phase 2 OASIS report and asked specifically for comments on several items addressed in this report.

<b>FERC Requested Comments in Phase 2 Report</b>	<b>889-A Reference</b>	<b>Report Reference</b>
Adding more active capabilities to OASIS in Phase 2	IV, G, 6	3.3
Inclusion of transmission service scheduling	IV, G, 10	5.2, 5.3
Confirmation time limits	IV, I, 1, a	6.5
Use of DUNS number as the only field to identify parties	IV, I, 3	3.3
Permissible deviations from the hourly posting requirement	IV, I, 5	2.5

**Table 1-1 FERC Requested Comments in Phase 2 OASIS Report**

## 1.2 Purpose of this Report

Up to this point, the design of OASIS has been principally in response to regulatory requirements (although Phase 1-A does include some industry-suggested improvements). It is premature to propose a further scope for OASIS Phase 2 at this time without first strategically assessing the long-term future of OASIS. It is also necessary to recognize that the evolution of OASIS does not end with Phase 2 if it is to succeed as a commercially acceptable vehicle for implementation of FERC's open access policy. One must consider factors that will influence the evolving business process and information needs of open access participants. The shape of emerging wholesale and retail electricity markets will guide the industry's needs for information system infrastructure.

Therefore, in lieu of an OASIS Phase 2 specification, this report is a first step in the establishment of a framework for the long-term development of OASIS beyond the initial Phases 1 and 1-A. It takes a broad perspective by reviewing the experience of OASIS to date and begins the process of identifying the future needs for OASIS from the perspectives of various types of users. OASIS users may include transmission customers and providers, operating and reliability entities, emerging Regional independent system operators (ISOs) and exchanges, FERC, and others. At the heart of this report is a need to clearly define the role of OASIS within future market scenarios and an evolving regulatory framework.

This report is intended to achieve the following objectives:

- Review the present status and lessons learned from Phase 1 OASIS and recently proposed improvements for Phase 1-A;
- Pose several broad policy issues which require clarification by the Commission before the future scope and development strategy for OASIS can be fully determined;
- Review preliminary concepts regarding the future scope and requirements of OASIS; and
- Propose a plan for managing the ongoing design and development process, including the following elements:
  - Create a management organization capable of effectively drafting and coordinating the implementation of consensus-based standards for open access business processes and information systems;
  - Initiate a systematic process to evaluate the evolving functional needs of OASIS users, resulting in a continuously updated functional specification;
  - Incrementally develop design specifications, including business process and information flow diagrams, system architecture and communications requirements, software interface requirements, and graphical display guidelines;
  - Establish a project coordination team to facilitate the scheduling, development, and deployment of future phases of OASIS; and
  - Develop and implement a set of open access performance indices to identify problems with OASIS implementation and a dispute resolution process to solve these problems.

From the Commission, the following is respectfully requested:

- Resolution or clarification of the policy questions raised in Section 4; and
- Confirmation that the proposed scope and plans outlined in Sections 5–8 are acceptable to the Commission.

### **1.3 Consensus Process for Preparing this Industry Report**

This report has been prepared principally through the discussions of the How WG and CPWG. Additionally, industry-wide inputs were actively solicited by the distribution of a report outline and questionnaire shown in Appendix C. This outline offered a set of thought provoking questions regarding experience with and the future needs for OASIS. Written responses were sought for a 30-day period from August 6 to September 5, 1997. Written comments were received from the 38 entities listed in Appendix D.

A draft of the report was prepared and then discussed at two public workshops attended by a total of 300 persons on September 17–18 and September 25–26, 1997. Comments from these workshops were used to prepare a final draft for review by the How WG and the CPWG. The draft was then publicly posted for a final round of comments from October 13–30, 1997. Comments received were reviewed and incorporated into the report as necessary.

The report is intended by the CPWG and How WG to be a best effort at consensus of all segments of the industry. Obviously full consensus on such a broad and difficult set of issues is not possible. Opposing views are provided throughout the report as appropriate, and unresolved issues have been left as open questions to the Commission.

## Section 2 – Current Status and Quality of OASIS

### 2.1 Current Status of OASIS

OASIS is an Internet-based reservation system established to support the Commission’s goal of non-discriminatory access to transmission networks. A standard information model and computer interface was designed to make OASIS appear as a seamless reservation system across all transmission providers. However, standards were not established for the graphical displays used by neither customers nor the back-end systems necessary to support OASIS.

OASIS supports the posting of transmission and ancillary services products, the posting of available transfer capability, and processes to allow a transmission customer to reserve capacity on the network and purchase ancillary services. OASIS also supports secondary resale of transmission service and third party postings of ancillary services.

Customers are able to use OASIS to access transmission information or to make reservations through one of two methods:

- They may view information on a graphical display and submit requests using one of several commercially available Internet Web browsers, or
- They may establish automated, computer-to-computer queries.

### 2.2 Success Criteria for OASIS

In order to understand the effectiveness of OASIS to date, one needs to consider measures of success from several different perspectives. Dividing stakeholders into three major categories, OASIS success criteria may be projected as follows:

Stakeholder	OASIS Success Factors
FERC/Public	<ul style="list-style-type: none"> <li>• Enable open and non-discriminatory access to bulk electric systems through same-time access to information.</li> <li>• Enable monitoring of market activities through transparency of this information.</li> <li>• Promote competition in wholesale energy markets.</li> </ul>
Transmission Customers	<ul style="list-style-type: none"> <li>• Enable the purchase of transmission rights on an equal basis with other entities, including regulated utilities.</li> <li>• Enable the purchase of transmission rights in a simple, efficient, and timely manner.</li> <li>• Enable the effective management of risk associated with transmission access.</li> <li>• Enable the optimization of wholesale energy markets.</li> </ul>
Transmission Providers	<ul style="list-style-type: none"> <li>• Cost effective compliance with regulatory and reliability requirements.</li> <li>• Enable optimization of transmission service revenues.</li> <li>• Allow for cost recovery.</li> </ul>

**Table 2-1 OASIS Success Criteria**

### **2.3 Status of OASIS: FERC/Public Perspective**

OASIS is a major accomplishment for the electric industry. It provides measurable progress toward non-discriminatory availability of information necessary for transmission access. OASIS also reinforces accountability of both transmission providers and customers through the transparency of standard, publicly available electronic processes.

As one of the first large-scale uses of the public Internet for business-to-business commerce across North America, OASIS is a significant technological achievement. OASIS was developed on an accelerated schedule, going from mere concept in August, 1995 to an operational network of computers 17 months later. The choice of the Internet has minimized access barriers for customers and facilitated rapid development and deployment by providers. OASIS was designed through an open, consensus-based process with representation from both users and providers. The success of this open process exemplifies the value of allowing the industry to draft technical standards in support of regulatory policy.

In the area of market development, the results to date have been mixed. The market for transmission services purchased from primary providers has increased substantially since the start of OASIS. In the initial two months, most of these reservations (90–95%) were made by merchants affiliated with the transmission provider. This was most likely the result of the affiliated merchants being better prepared for the startup of OASIS. The affiliated merchants were also generally acting on behalf of loads and generation resources and perhaps felt a stronger need to be ready to use OASIS on January 3, 1997. Since these early months, however, reservation activities in the primary market have picked up across all segments of transmission customers, both affiliated and non-affiliated. However, to date there is only limited activity in the secondary resale of transmission services.

In preparing this report, an assessment was made of the current monthly volume of OASIS transmission reservations. Monthly figures were obtained from 15 of the 22 OASIS nodes. The results were then extrapolated to obtain the following estimates for the total monthly volume of reservations on OASIS:

- Total number of reservation requests — 47,000 per month
- Number of reservations confirmed — 39,000 per month (83% of requests)
- Number of reservations to affiliated entities — 27,000 per month (69% of confirmed reservations)
- Number of reservations confirmed through secondary resale — less than 100 per month

Nearly all purchases of ancillary services are those required by the transmission provider as a condition of purchasing transmission capacity, with the exception of a few OASIS nodes which support more active ancillary services markets.

## 2.4 Success of OASIS to Date: Users' Perspective

Most transmission customers are not satisfied with the results of OASIS to date, with the exception of a few nodes that work reasonably well. The principal concerns expressed by customers are summarized as:

- OASIS requires too many steps, is burdensome, slow, and not easy to use,
- OASIS is not adequate to support next-hour market activity,
- Available Transfer Capability (ATC) information on OASIS is not sufficiently reliable for commercial use,
- Many providers are not compliant with the computer-to-computer protocols defined in the S&CP templates,
- OASIS graphical displays are not standard across nodes and the information provided on these displays varies,
- There are inconsistencies among providers, in some cases even on the same node, in the naming of transmission services and in defining transmission paths,
- There are inconsistencies in business practices across the nodes, and
- Some providers are not cooperative in assisting OASIS customers.

These concerns expressed by customers raise serious challenges to any claims of success in OASIS to date. These issues merit further discussion and analysis below:

- *OASIS requires too many steps, is burdensome, slow, and not easy to use.*

Customers comment that the additional burden of reserving transmission on OASIS is not productive and impedes business, particularly for the short-term market. There are actually several components to this problem.

The first is that the OASIS reservation process adds as many as 7–14 new steps as prerequisites to the end goal of scheduling energy flow on the transmission network. These additional steps may be viewed by some as a burden necessary to achieving the goals of FERC's open access policy. However, customers feel that an increased level of inputs from end users during the design phase would have resulted in a more efficient process. To the credit of providers and the How WG, inputs from end users were sought during the open design and development process, but user participation was minimal.

A second issue in the apparent slowness of the OASIS process is the static nature of the reservation process. Although there are time limits on provider responses to reservation requests, these limits vary from 30 minutes for hourly service to hours and days for long-term service. A customer may enter a request then wait for a period of time for the provider to evaluate the request and post a response. This sort of break in the chain of interactions is not sufficient for a same-day or next-hour market. Even for long-term service, the appearance to the user is that the reservation process is very slow. This problem can be alleviated by further automation of the back end processes and reduced human intervention in the provider's

acceptance of a reservation request. This issue will be partially addressed in Phase 1-A through a dynamic notification of a change in status of reservations.

A third component of this problem is related to the apparent slowness of the Internet and/or the OASIS node computers themselves. Computer and communication delays appear to occur predominantly in two places. The first is in the Internet service provider of the customer. Generally, the Internet facilities into the OASIS nodes have proved to be adequately sized for the volume of information flow. Customers may upgrade their Internet provider services at their own option and expense. The other major source of delay has been in the database software running on the OASIS node server. In fact, the volume of interactions with the database is not limited to customer interactions, but also includes a much larger volume of interactions associated with the updating of ATC values by the providers. The volume of customer and provider interactions has slowed the response time of some nodes and even crippled several nodes in the first two months of operation. Since then many of the nodes experiencing problems have upgraded to larger and faster computers, but node performance continues to be a cause for concern.

- *OASIS is not adequate to support next-hour market activity.*

The How WG did not consider in the design of OASIS a requirement to support a next-hour process. It was the understanding of the How WG during the design process that OASIS would be required in Phase 1 to only support transmission reservations on a day ahead or long-term basis. The Commission provided a clarification in December 1996 that all reservations were to be confirmed on OASIS, even those in support of the next-hour market. Providers were allowed the option of posting reservations within one hour if their OASIS node was not capable of supporting customer input for the next-hour. While this requirement to accommodate the next-hour market was correctly intended, it did not in fact solve the basic problem that customers are experiencing today on OASIS — that OASIS is not designed for next-hour business.

The next-hour process of reserving and scheduling use of the transmission network, which is the highest volume activity of the market, is actually a different process than the long-term acquisition of transmission rights for which OASIS was designed. For OASIS to provide any measure of success in support of a next-hour market, the process of reserving transmission and scheduling the energy flow must be more fully integrated into a streamlined sequence of simple and fast steps. Automated interactions, which take place on the order of seconds and minutes, are needed. As long as OASIS lacks this capability, many customers will continue to be frustrated and a large volume of next-hour business will continue taking place off OASIS.

- *ATC information on OASIS is not sufficiently reliable for commercial use.*

Customer comments note several types of irregularities, which they claim, render ATC information useless for commercial purposes. Sometimes reservations are requested against posted ATC amounts, only to discover that the posted amount is not really available.

Sometimes the posted amount shows zero availability but reservations continue to be accepted. Confusion arises when a provider posts the minimum ATC amount for a posting period, but the amount of capacity available may actually be different at other times within this period. In some cases, two or more providers post different amounts of ATC for the same interface. There are cases where these differences are valid — such as neighboring systems having different rating requirements. But the appearance of ATC inconsistencies, whether for valid reasons or not, is frustrating to customers.

Some customers claim that these anomalies are not accidental, but that some providers choose to over or under subscribe their transmission network. Some providers, customers feel, are overly conservative in the use of Transmission Reliability Margins and Capacity Benefit Margins, thus restricting access. Other providers, customers say, over sell their transmission and then depend on transmission loading relief procedures to curtail transactions, resulting in severe financial penalties to the customer. The bottom line for customers is that the validity and reliability of ATC information is important to managing risk and profits and these ATC problems must be fixed. ATC must provide a reasonable indication of transfer capability and the rights purchased must come with reasonable assurance that scheduled flows will be allowed to continue without interruption.

It should be noted that ATC validity is not a problem with OASIS itself, but is symptomatic of the dichotomies between the physical capabilities of the transmission system and the contract path method used for commercial business. OASIS is simply the delivery medium and actually serves to highlight the inconsistencies in ATC values. A further analysis of possible causes for these ATC problems is provided in Section 4.

Despite the problems with ATC information, the American Public Power Association makes the following comment regarding the value of ATC postings:

“In spite of the problems cited with ATC postings on OASIS, transmission dependent utilities have found the postings useful in discrediting claims that transmission providers lack market power. Because OASIS ATC postings also show the extent to which the transmission provider is willing and able to foster competition within its service area, ATC postings are clear indicators of the bounds of the relevant geographic market of the transmission provider. When considering both merger applications and market based rate applications, ATC evidence will be introduced at FERC and other regulatory agencies to demonstrate that ATC limitations significantly reduce the potential for competition in the Region. In one case, a utility that consistently posts zero ATC has requested market rate approvals based on market power analysis that assumes large positive import capabilities. While it would harm reliability to post unrealistically high ATC values in order to demonstrate existence of a highly competitive market, it is in the interest of transmission providers to accurately determine the highest reasonable ATC value to support their commercial claims regarding market power.”

Some transmission customers suggest that OASIS should go further than posting ATC, but should also include details of planned and anticipated transmission outages and system configuration. With this information, the customer can forecast risk associated with wholesale offers, and in limited instances perform an independent assessment of transfer capabilities. One Independent Power Producer (IPP), for example, points out that:

“Providing such information will allow IPPs and transmission providers to jointly analyze and solve potential transmission bottlenecks. Working cooperatively, IPPs and transmission providers should be able to operate a more efficient transmission system without compromising reliability...”

- *Many providers are not compliant with the computer-to-computer protocols defined in the S&CP templates.*

Larger customers and value-added information providers who have attempted to establish automated queries to interact with OASIS nodes have faced an arduous process of identifying the unique, non-standard aspects of each node. The S&CP document provides a detailed technical specification for OASIS. Admittedly though, the Phase 1 document was not absolutely complete nor error free since it was a first attempt at defining OASIS requirements. Providers were required to meet that specification by developing their own node or by sharing the responsibility with others.

Commercial vendors of information systems developed most nodes. In the end, providers have developed at least eight different technical solutions for the 22 nodes, each with its own interpretation of the SC&P. Variations in each node were implemented as necessary for each provider to implement its tariffs the way it felt best. These variations, however, make it difficult for customers to access information and make reservations using automated, computer-driven processes. Several nodes adopted a literal interpretation of the S&CP and have achieved a high level of compliance, but most are not fully compliant.

This concern is being addressed in OASIS Phase 1-A, as the S&CP has been improved and strict adherence to the S&CP will be required in 1-A.

- *OASIS graphical displays are not standard across nodes and the information provided on these displays varies.*

No standards were developed for the graphical displays users would encounter with Web browsers. It is ironic that most of the efforts of the How WG in defining the S&CP focused on the computer-to-computer interactions, but in Phase 1 the dominant interface of choice by customers has been the graphical displays accessible with off-the-shelf commercial Web browsers. Providers, either individually or through joint projects, were left to define graphical display requirements of their own. The benefit has been a level of innovation that would not have been possible through standard displays. The down side is that substantial differences in the displays and process interactions from one node to another detract from the apparent seamlessness and add to the customer burden of conducting business on OASIS.

Comments by customers indicate that displays on some of the nodes are more user friendly than others.

- *There are inconsistencies among providers, in some cases even on the same node, in the naming of transmission services and in defining transmission paths.*

Providers have taken liberties in naming services that create confusion for customers. Even the pro forma services can be found as Firm Daily Transmission and Daily Firm Transmission on the same node. There has been a proliferation of over 300 transmission product names on OASIS, but it is difficult to tell if this is just 40 different products with 300 different names or if the products really do vary. Without industry-wide discipline in the naming of transmission products, it is difficult for the customer to determine the nature of the service being bought and to differentiate it from other services that sound similar. This concern has been addressed in Phase 1-A through a standard naming convention for transmission and ancillary services.

- *There are inconsistencies in business practices across the nodes.*

In fact, OASIS serves to underscore the differences in practices as customers try to access information and reserve transmission in a familiar way, but find procedures vary from provider to provider. Some of the variations, which are discussed later in the report under business practice issues, include packaging of ancillary services, application of discounts, use of “sliding windows” of transmission service, and customer confirmation time limits.

- *Some providers are not cooperative in assisting OASIS customers.*

A few customers claim that when they struggle to use OASIS and call for help or clarification, the provider staff is not cooperative. The reverse side of this contention is a perception by some provider employees that the standards of conduct may dissuade provider employees from communicating informally over the phone with merchants. While the standards of conduct may address interactions with affiliated merchants, restrictions on interactions are sometimes being applied to all merchants in a sense of “fairness” by the provider personnel involved. Some of the perceived provider inflexibility may be due to actual constraints imposed by approved tariffs or OASIS requirements. Customers express a view that providers should manage the transmission network “like a commercial business” and should want to take the extra steps to promote maximum use of the network. Some providers have replied that they should not have to hold a customer’s hand when the customer has not made a sufficient attempt to use OASIS the way it was designed.

## **2.5 Success of OASIS to Date: Transmission Providers’ Perspective**

Transmission providers feel that Phase 1 OASIS objectives have been met and that they have taken the steps necessary to comply with the FERC requirements and meet customer needs:

- *Since March 1997 most nodes have been available and reliable according to S&CP performance standards, with the exception of occasional outages of a few individual nodes.*

There was a concern early in January and February 1997 for the readiness of the OASIS nodes and providers to conduct business. Since OASIS was a first-of-a-kind implementation, a significant number of the nodes were insufficiently sized to handle the volume of information that is managed over OASIS. The principal problem was on the back end, where transmission providers were trying to update thousands of ATC values and hundreds of other reservation processes. As a result, it tended to be the nodes with the largest number of transmission providers on the back end who suffered the most and the single-provider nodes who suffered the least.

- *OASIS standards should apply to all transmission providers offering service over OASIS, not just jurisdictional entities.*

One difficulty in assessing provider availability and compliance has been that some OASIS providers are non-jurisdictional, including several Canadian utilities and some federal, state and municipal entities. While these entities are not required to participate in OASIS, if they choose to do so, they must comply with the S&CP in order to assure the effective operation of OASIS. The How WG has been reinforcing this message with providers. While most of the non-jurisdictional entities are no less compliant than the jurisdictional entities, there do remain several examples of clearly non-standard OASIS offerings by non-jurisdictional entities.

- *It was apparent in the first few months of operation that the customers were the least prepared to begin using OASIS. Many did not begin serious preparations to use OASIS until the last few weeks prior to the start date, and others not even until after the start date.*

OASIS training and startup support was provided in most Regions, however, for the most part it was not effective in preparing the thousands of persons who had to start using the system on January 3. Many customers did not realize the magnitude of the change in business process imposed by OASIS until late in the startup process. Customers counter that many aspects of the system were not defined until late and that the testing, training, and startup were too rushed. They also claim there were insufficient seats for all of their personnel in some of the training sessions and that the initial OASIS user registration process was cumbersome.

- *Most customers had not anticipated the support tools they would need within their own shops to effectively manage OASIS reservations.*

Most customers have relied on the graphical interface to conduct business. But this interface was not intended to be the principal tool for high volume customers. These high volume customers are expected in the future to develop more automated interfaces to OASIS.

- *FERC's decision in December 1996 that next-hour reservations had to be on OASIS severely impacted performance in the first three months, since only a few providers could comply at that time.*

Over time, providers have reached the point where the majority of nodes can support next hour reservations in some fashion. However, providers are still concerned about the volume of reservation activity taking place off OASIS, leaving the provider the responsibility to input the reservations after the fact. Reservations occur off OASIS because customers feel it is the only practical way to accomplish next hour business and because some providers do not strictly enforce customer inputting of the reservations.

In response to this concern, the CPWG initially suggested in June 1997 that all OASIS nodes be capable of supporting next-hour reservations by Phase 1-A, that all customers are required to enter all reservations, and that all next-hour reservations be submitted pre-confirmed. However, a CPWG working group has been recently established to reevaluate alternatives for implementing next-hour reservations and scheduling.

- *The Commission provided a clarification in Rehearing Order 889-A on the subject of standardization of nodes. The clarification requires that data elements in the OASIS templates be provided in the exact sequence and number as defined in the standards document. However, the How WG had designed OASIS with modern programming concepts which allow the sequence and number of data elements to be self-defining for each transaction. Providers feel that this restriction on OASIS implementation inhibits innovation and fails to recognize variations in individual provider and Regional tariffs and business practices.*

The How WG had prepared the Phase 1 S&CP as the minimum set of information on OASIS, but felt that innovative growth of OASIS should be encouraged by allowing providers to add functionality. The Rehearing clarification does not allow individual provider or node innovation and requires OASIS nodes to advance in lock step with standards approved by the Commission.

Transmission providers and the How WG feel this will have a negative impact on the long-term growth and vibrancy of OASIS. But the reality is that difficulties in achieving compliance with the Phase 1 S&CP weaken this argument. Phase 1-A, therefore, provides stronger measures to ensure more rigid adherence to the S&CP. In a long-term strategy, however, non-compliance with the minimum standards for OASIS Phase 1 should not be confused with rigid uniformity of OASIS nodes — these are two separate issues.

- *OASIS development and operation have required a very large investment of resources by providers. It is not clear that the cost of investing more to do a better job with OASIS can be recovered.*

There is a distinct difference between meeting the minimum OASIS standards set by FERC and taking additional measures to ensure OASIS becomes the best possible tool for promoting transmission access. Investing additional staff resources, contractor support, and upgraded systems to do the best possible job with OASIS, may not result in recovery of the increased costs.

- *ATC is an engineering approximation at best. Any ATC calculation method is based on assumed conditions and system loading. It is not possible to predict ATC to the degree of precision that customers are demanding unless scheduled uses of the network be known before hand.*

The determination of ATCs is a very difficult issue. Providers are caught between opposing objectives. On the one hand, they want to post reasonably conservative values of ATC to ensure the reliability of the transmission network and avoid unnecessary interruption of transmission service. At the same time, they wish to maximize transmission revenues and aggressively promote the use of their network. The difficulty is in finding an appropriate balance. Individual providers or Regions determine this balance.

Uncertainty in loads, transmission and generation status, and most significantly in market uses of the network make consistently accurate ATC calculation a near impossible task. Recognizing the inability to calculate ATC without knowing transmission uses in advance, some Regions have moved away from reliance on this approach. One Region, for example, evaluates the ability of the network to carry a schedule dynamically when the schedule is submitted.

## **Section 3 — Phase 1-A OASIS Plans**

### **3.1 Goals of OASIS Phase 1-A**

The How WG has filed a revised S&CP document, called Phase 1-A, which is intended to implement short-term improvements requested by FERC in Rehearing Order 889-A, as well as other improvements recommended by the industry based on experience to date. Several of these improvements respond directly to the feedback by users and references to those comments are provided here in Section 3 as appropriate. Other user concerns require more significant changes to OASIS and are discussed in later Sections.

The Commission for public comment has posted the proposed Phase 1-A standards and the comment period closed on September 29, 1997. The next anticipated step is approval of the standards by the Commission. Implementation of Phase 1-A is planned for six months following this approval.

The goals of Phase 1-A are to:

- Implement FERC policy on price negotiation and discounting
- Improve the usability of OASIS for customers by addressing some of the shortcomings identified in Section 2
- Advance the capabilities of the existing OASIS system

Comments received from both customers and providers have been supportive of these proposed changes. Customers particularly appreciate the efforts to standardize OASIS nodes, the dynamic notification, and improved linking of ancillary service procurement to the transmission reservation.

### **3.2 FERC Requested Changes**

The following enhancements are proposed in Phase 1-A in response to clarifications in FERC policy contained in Orders 888-A and 889-A:

1. All references to masking have been removed from the S&CP, as requested by the Commission in Order 889-A. There is still an open issue as to whether this applies to unmasking of Source and Sink identity, which is still under consideration by the Commission. Masking of Source and Sink is still allowed in the Phase 1-A S&CP, pending clarification by the Commission. As previously approved by the Commission, all unmasking was to have been implemented on OASIS by August 31, 1997. Changes to the S&CP simply make the standards consistent with this practice.
2. Phase 1-A OASIS replaces PRICE with several new price data elements (BID\_PRICE, OFFER\_PRICE, and CEILING\_PRICE), and allows iterative negotiation of price between the customer and seller of transmission service. The negotiation procedures are clarified by

diagrams showing allowable status changes of a reservation as it proceeds from the initial request through to confirmation. On-line negotiation was a feature requested by the Commission.

3. A data element called `NEGOTIATED_PRICE_FLAG` has been added to the reservation status template to indicate that an agreed upon price is different than the service offer price posted on OASIS. This is a method to achieve open disclosure of any negotiated discounts. The user will be able to search for negotiated discounts given to particular customers for specific products, including searches by path, points of receipt, and delivery, etc. The negotiated price may be lower (L) than the offer price or higher (H) (not to exceed the firm rate cap), in the case of auctions that may result in higher prices (as on constrained interfaces in PJM). The S&CP proposes to require discount disclosure on OASIS only when the negotiated price is different from the posted offer price, not the tariff ceiling price (this is a variation on the FERC definition of a discount and thus requires Commission approval). By posting an offer price next to the ceiling price in the offering template, the seller is already indicating to all potential customers the initial amount of discount below the tariff price.
4. New mechanisms have been added in Phase 1-A to link ancillary services to transmission services in order to facilitate procurement for the customer. A data element called `ANC_SERVICES_REQ` has been added to allow the provider to indicate to the customer which services, according to tariffs, are mandatory (M) and must be taken from the primary provider, required (R) but may be purchased from others or self provided, optional (O), or unknown (U) until a specific transmission reservation request is submitted. The customer, on the other hand, can indicate preferences for ancillary services by completing a new data element called `ANC_SERVICES_LINK`. In this data element, the customer can defer to the provider for mandatory services and for other types of ancillary services can indicate preferred suppliers, assignment reference numbers for previously purchased ancillary services, or indicate provision will be made through self-provision (SP) or arranged in the future (FT).
5. An `AFFILIATE_FLAG` has been added to the `transstatus` template to indicate a reservation made by an affiliated merchant, as requested by the Commission.
6. A new template has been added to allow posting of personnel transfers, as requested by the Commission.
7. A new template has been added to allow posting of incidents in which the provider exercises discretion in the application of tariffs, as requested by the Commission.
8. The S&CP has been modified to require all OASIS nodes conform to a single standard for the sequence and number of data elements in each template. A requirement was also added that graphical displays contain the same information and support the same processes as the templates, although the displays themselves are not required to be standard. As stated previously, the How WG believes these limitations are unnecessary, impede innovation, and reduce the commercial value of OASIS. The S&CP should be the minimum standard for OASIS, with providers allowed to support value-added features and innovation. However,

the Phase 1-A S&CP does comply with the Commission's policy. Standardization of the OASIS nodes in Phase 1-A also responds to one of the customer comments in Section 2.

### **3.3 Industry Initiatives to Improve OASIS Phase 1-A**

The following improvements have been proposed by the industry based on user and provider feedback:

1. The Phase 1-A SC&P require more standardization of transmission service product names and attributes than previously. The S&CP proposes a base set of service attributes and a sequence to be used in naming transmission products: SERVICE\_INCREMENT (hourly, daily, weekly, monthly, yearly), TS\_CLASS (firm, nonfirm), TS\_TYPE (point-to-point, network), TS\_PERIOD (on-peak, off-peak, full period), TS\_WINDOW (sliding, fixed), and TS\_SUBCLASS. For the first five attributes, providers will be required to use a standard value from the S&CP or register a new value on the OASIS web page at [www.tsin.com](http://www.tsin.com). Providers will be able to use product descriptors registered by other providers. As new descriptors become common, they will be considered for addition to the S&CP as standard product attributes. At the request of NERC, a proposal has been prepared to add two more transmission product attributes, which aid in understanding service curtailment priorities: NERC\_CURTAILMENT\_PRIORITY and REGIONAL\_CURTAILMENT\_PRIORITY. This standardization of transmission product names in Phase 1-A is in direct response to one of the customer complaints regarding Phase 1. It is important that this transmission product naming convention also be observed in tariffs filed with and approved by the Commission.
2. For simplification and consistency, all of the transmission services offering templates in Phase 1 have been merged into a single template in Phase 1-A. SERVICE\_INCREMENT is used to determine if the service is hourly, daily, weekly, etc. This is a simplification of the current OASIS.
3. A capability has been added for providers to offer transmission service over sliding windows of time. For example, monthly service could be offered as any 30 consecutive days. The option of whether to offer sliding windows of service has been left to the seller. However, if this type of service is offered, there is now a standard procedure and data elements to support the process. Sliding windows are considered appropriate by the CPWG for weekly, monthly, seasonal, and yearly service, but not for daily or hourly service. This change in the S&CP provides standards for a practice that already exists on about half of the OASIS nodes.
4. The ability to support capacity profiles in reservations has been added. In the Phase 1 S&CP, if one reserved 168 hours of service, with each hour having a different capacity amount, the Phase 1 S&CP required creation of 168 reservations. A CONTINUATION\_FLAG has been added to reservation templates to standardize support for variable capacity profiles in the purchase and resale (reassignment) of transmission capacity. Using continuation records, one will now be able to indicate a sequence of values (a profile) of capacity that will be part of the same reservation. This change is intended to expedite the reservation process and also to incorporate into the standards a practice that exists on some nodes already. The option to offer capacity profiles has been left to the provider.

5. Additional reservation status options have been added: RETRACTED (provider retracts a reservation which has been accepted but the customer did not act on), ANNULLED (both parties mutually agree to back out of the reservation request — i.e., if the request was submitted by mistake), OFFER, and REBID (to support interactive price negotiation).
6. Dynamic notification has been added to allow customers to indicate a method (URL or e-mail) and address to be notified when a reservation status has changed. This will facilitate the interactive negotiation between a customer and seller by reducing the number of customer steps in a transaction and will also reduce unnecessary polling of the OASIS node to check status. This is a major step toward dynamic interactions between customers and providers, thus reducing the overall elapsed time to consummate a transmission reservation. This feature will directly address some of the customer concerns expressed in Section 2 regarding slowness of the reservation process. It should be noted that the approach in Phase 1-A for dynamic notification is an interim measure. The Internet community is developing standards for more robust approaches to broadcast technologies, which OASIS may be able to adopt in the future.
7. A new template was added to support nonfirm secondary service between alternate points of receipt and delivery. In the present, OASIS there is no way to indicate that previously purchased firm service is being used to support nonfirm service between an alternative set of points of receipt and delivery. This is a common business practice today, which is not well supported by the Phase 1 S&CP.
8. The Phase 1-A S&CP was reorganized for clarity and the examples were improved. Sections were added to describe procedures for on-line negotiations, dynamic notification, linking of ancillary and transmission services, and other processes.
9. Error handling was improved to notify users of the nature of errors in their queries, reservation requests, and reassignments on a line-by-line basis. This will improve one aspect of user-friendliness.
10. Company names have been modified to use only abbreviated company codes, which are registered at [www.tsin.com](http://www.tsin.com), instead of the previous 25 character names. This is a simplification and also is consistent with the NERC energy transaction tagging procedure (discussed later in this report).
11. For simplicity, contact information such as company name, fax and e-mail, has been removed from the input template data elements. This information can be readily obtained from OASIS node registration rather than requiring the customer to enter the data for each transaction. Once again, this simplifies and streamlines the OASIS process.
12. The definitions of comma separated values have been modified to be more consistent with the computer industry.
13. The handling of time zones and switches from daylight/standard time have been improved.

In conclusion, the Phase 1-A S&CP does address some, though not all, of the issues raised by users of Phase 1 OASIS. The principal purpose of this interim step in OASIS was to comply with FERC policy regarding on-line price negotiation and discounting.

## **Section 4 — Strategic Policy Issues in Planning the Future of OASIS**

### **4.1 Overview of OASIS Policy Issues**

OASIS has reached a stage of development in which a clear understanding of long range policy goals and user needs is essential. OASIS is a complex system representing an investment on the order of tens of millions of dollars in equipment and staff resources to date. Even more significant than the direct investment in OASIS, is the impact on related systems operated by both transmission customers and providers. As customers and providers continue to develop applications that use OASIS information, the impact of OASIS modifications becomes even more substantial on downstream systems.

Providers are developing back-end systems that automate the calculation and posting of ATC values and which streamline the reservation process. Customers are developing systems to manage portfolios and automate reservations, scheduling, and accounting. In fact, OASIS is at the center of a growing set of business applications used in transmission reservation and scheduling. The evolution of OASIS will directly impact how the industry does business and must be carefully planned.

It is obvious from the user feedback in Section 2 that one of the overriding priorities must be to focus OASIS in the future on the needs of various market participants. Until now, OASIS has been developed principally to meet the goals of the Commission's transmission access policy as stated in Orders 888, 889, 888-A, and 889-A, and other related orders. The future model of OASIS must begin to more fully address the needs of users and to reflect natural market processes if it is in fact to grow as a successful commercial product. As markets evolve they must be supported by information and communications infrastructure that are responsive to market needs.

There are several broad issues, however, which cloud the industry's ability to project a clear vision of the future of OASIS. The Commission poses these questions here for discussion by the industry and consideration. Initial ideas and recommendations that have emerged from discussion of these policy questions by the CPWG and How WG are presented in the remaining portions of Section 4. Clarification is sought from the Commission on these issues prior to development of detailed OASIS specification beyond Phase 1-A.

The four issues of concern are:

- Policy Issue 1: To what extent should and will wholesale electricity markets evolve:
  - to Regional markets, with processes and infrastructure standardized within the Regions but not between Regions; or
  - to national/North American/Interconnection-wide markets with standard interregional processes and infrastructure (of which OASIS is currently a component)?

- Policy Issue 2: Can a framework for adapting tariffs be established to allow business processes to evolve? The framework must be consistent with the results of the first decision above and responsive to market needs.
- Policy Issue 3: Can a framework of incentives be established, beyond regulatory mandate, to encourage transmission providers to maximize the market's access to the transmission network and to develop a robust OASIS system?
- Policy Issue 4: Should all users of the transmission system, including native load served by resources external to the control area, be required to reserve transmission on OASIS?

#### **4.2 Policy Issue 1: Regional or Wide-Area Markets?**

FERC and several state commissions (notably California and Texas) have approved Regional tariffs, market structures, and business processes that are standard within a particular Region but are not uniform across the U.S./North America. The best long-term strategy for OASIS cannot be determined until it is clear to what degree regulators will promote standardization of transmission tariffs, reservation processes, and electric market operations across Regions, versus allowing market diversity on a Regional basis.

Under some emerging Regional tariffs (i.e. New York Power Pool, ISO-New England, PJM, California ISO, and ERCOT), either transmission reservations are not required in the current sense provided by OASIS or a different process is used for reserving transmission. At this point, Regional markets appear to be becoming more diverse from each other rather than more similar. Much of the focus in developing these market processes and infrastructure is on Regional needs, not uniformity with other Regions. There is a dilemma in the planning of OASIS caused by the approvals of these Regional tariffs at the same time that the Commission requires that OASIS be uniformly applied by all providers (Order 889-A).

Full documentation of the variations in tariffs and state regulations would require a voluminous report by itself. Without intending to single out particular Regions or to judge the validity of proposed market processes, two brief examples are provided here to point out the apparent divergence between the current OASIS framework, which is firmly entrenched in a contract path methodology, and emerging market structures under either approved or proposed Regional tariffs. The examples are based on California and New York.

In California, the implementation of the Power Exchange and ISO in January 1998 will adopt a transmission access process in which ATC postings and transmission reservations are irrelevant, as all schedules are accepted. Supply and demand bids will be submitted to the Power Exchange and other schedule coordinators, who submit balanced schedules to the ISO. Further iterations of scheduling are conducted as necessary to balance generation and load, to relieve transmission congestion, and to provide for ancillary services.

This operation in California does not require reserving of transmission paths, as the transmission system is used as an integrated resource associated with all of the energy schedules. Although

this current model does not offer long-term transmission service, the FERC issued an order July 30, 1997 requiring the California ISO to make transmission rights available beginning in January, 1999. Even as this happens, however, it does not solve the dilemma of standard versus non-standard OASIS systems.

For example, in place of an OASIS, the California ISO will be providing a market information system, called WEnet. WEnet has many attributes of an OASIS, including the posting of ATC for interconnections with other control areas as well as internally constrained paths. However, WEnet is substantively different from OASIS in content and function. Examples of information and scheduling processes which do not fit within the current design of OASIS include: forecasts of load by zone, inter-zonal congestion prices, reserve capacity costs, scheduled transmission line outages, potential for over-generation conditions, loop flow forecasts, ancillary services requirements by zone, reserve forecasts, must run generation, generation capacity, voltage control parameters, historic data for congestion, hourly information for demand by zone, and *ex post* market prices.

A similar result can be seen with the transmission tariff proposed in New York, which represents a Locational Based Marginal Pricing (LBMP) model. Whether firm or nonfirm service is required, each entity will pay an access charge calculated by the NYISO, based on the flow distribution associated with the injection and withdrawal point specified for the transaction. Those scheduling firm transactions may do so by paying an additional congestion charge determined by a difference in locational based marginal prices. Nonfirm service is curtailable at the point out-of-merit dispatch occurs as a result of congestion.

With the NYISO, a request for transmission service is created not through a reservation, but by means of a request to schedule a point-to-point transaction. The transaction request is accomplished by providing a day-ahead bilateral or external transaction schedule to the NYISO. All requests for transmission service will be evaluated on a day-ahead basis through a commitment and scheduling process. Accepted point-to-point firm schedules will commit the transmission customer to pay the day-ahead access charge plus any congestion charge.

This implementation of LBMP in New York State will require substantive variations from the standard OASIS currently provided by the New York Power Pool. Under LBMP, it is not necessary to post pre-determined paths and require customers to pay contract path-based transmission service charges. It is only necessary to define point(s) of injection and point(s) of delivery for each transaction and pay a single access charge.

An integral part of the new OASIS software in the NYISO will be a Bid Box. The NYISO Bid Box is a module for customers to input bid information necessary for an economic commitment of units and day-ahead schedules. All information regarding schedules must be input via the Bid Box. This new element of the New York OASIS will also include a capability to buy hedges against congestion costs (i.e., fix a future transmission price). It will provide for posting of LBMP prices, loss information, transmission maintenance schedules, and auction information. These comments and examples are not meant to undermine the value of Regional market entities. Regional entities have and continue to promote effective competition within their boundaries by

standardizing transmission access and market functions. The issue affecting future decisions for OASIS is the degree to which market functions should be Regionalized versus standard between Regions. These examples clearly point out the inconsistency in current FERC policy in approving substantially different Regional tariffs while requiring uniform implementation of OASIS. Resolution of this issue will materially affect the future scope and design of OASIS.

There are two fundamental concerns underlying the regionalization issue. The first is a concern by customers about the burden of conducting business across Regions with diverse business practices. Within an Interconnection, many transactions cross Regional boundaries. Consummation of a single energy schedule may require interacting with several completely different processes and computer systems. This issue appears to be even more pronounced in ISOs that are emerging from tight power pools, as processes have vulcanized around previously established Regional business models, which have worked successfully for years. The question is: What aspects of regionalization enhance competition and efficiency in electric markets and which detract?

The second concern is in the design of OASIS. The Commission has demonstrated that it supports standard OASIS content and protocols, yet approves tariffs, which adopt alternative processes for reserving and scheduling uses of the transmission system. OASIS has been an effective tool for promoting standard information requirements and business process. However, the question now is how much standardization is appropriate between Regions? The answer will drive the scope and functionality of OASIS and/or related industry-wide applications. The Commission's goals with respect to standardization of business process and information requirements must be clearly understood by all in order to proceed with planning the future development of OASIS.

Discussions by the CPWG, How WG, and other inputs received in preparing this report indicate that both provider and customer segments generally prefer that Regional entities play an important role in the development of competitive markets. Both customers and providers in general are averse to forcing "one size fits all" standards when there may be real differences in the physical system or the market to drive diversity. There is a belief that ISOs, exchanges, and other Regional entities should be allowed to continue developing business processes and infrastructure within their Regions. The American Public Power Association tempers this suggestion, however, by pointing out:

"There is no reason that information exchange standards that support interconnected market operations cannot be established, but for the desire of some to create exclusive markets under the veil of sensitivity to Regional differences. Imagine having to pack a wallet full of debit cards while traveling because banks cannot adopt accounting standards and EDI standards. Market structures may differ just as modes of interaction vary between people regionally, but the data interchange should be subject to certain basic standards..."

What criteria then are used to determine the need for Regional versus national standardization? An answer suggested by the CPWG lies in the concept of **barriers to transmission access in**

**interregional commerce.** What challenges are created in reserving transmission and scheduling energy flows which span more than one Region? Does the incremental benefit of a Regional market process outweigh the incremental burden to the customer of obtaining transmission access in more than one Region?

Barriers may be considered in two categories, business process and technical/information system barriers. The business process barriers include variations in tariffs and terminology. One Region requires reservations prior to scheduling, another does not. One schedules on contract path, another does not. One requires certain ancillary services, another does not. The transition of practices on the boundaries of Regions is complex. The sequence of steps in reserving and scheduling transmission varies. Customer confirmation times vary. Terminology is different.

Technical/information system barriers include the use of special computer systems, graphical displays, security log-ons, communications connections and protocols, business forms, and service agreements which are non-standard from one Region to the next. To the extent a customer conducts business across more than one Region, access to multiple reservation, scheduling, and exchange computer systems may be required and the burden of conducting business increases. The burden is not limited just to the immediate cost of performing transactions, but also the cost of having one's internal business systems "tethered" to those of several Regional entities.

Barriers to interregional commerce are not necessarily a problem if there is little pressure from the market to transcend these barriers. For example, diversity between the Eastern, Western, and Texas Interconnections may not be as much of a concern because there is only limited market activity across the DC ties connecting these systems. However, within the Eastern and Western Interconnections, wholesale electricity markets tend to flow freely from one Region or another. The greater the ability of the transmission network to support interregional commerce and the greater the economies of conducting interregional commerce, then greater will be the pressure to remove barriers to interregional business.

One vehicle for diminishing the impact of interregional differences may be the emergence of interregional trading hubs. Several market hubs have emerged in the Western and Eastern Interconnections and serve to facilitate interregional commerce through establishment of standard processes at the hub. The emergence of trading hubs is a natural response of the market to create mechanisms to facilitate trade. There must be an emphasis on allowing markets to drive the need for standardization. Excessive top-down standardization can stifle innovation and market development.

A possible strategy then is to promote the development of Regional market entities, as they are perceived by most providers and customers to contribute significant value toward open access and comparability. Regional tariffs and market processes also contribute to standardization within each Region. At the same time, the industry must identify and prioritize interregional barriers to competition within each Interconnection, and in some cases, among Interconnections. Presuming the Commission accepts the conclusion of this report that some aspects of Regional market diversity are beneficial, then the question becomes: What functions and aspects of

wholesale electric markets should be standard in order to facilitate interregional transmission access? One test may be: Does the incremental benefit of a Regional practice outweigh the incremental burden to the customer of conducting interregional business?

The CPWG proposes to assist the Commission by beginning a process to identify and evaluate the impacts of potential barriers to interregional transmission access. The CPWG, along with the How WG, will strive to develop business process and information system standards which reduce these barriers.

#### **4.3 Policy Issue 2: Adapting Tariffs and Service Agreements to Market Needs**

The FERC *pro forma* tariff drives much of the OASIS process, but many customers and providers consider the *pro forma* tariff to be inadequate for market needs. The issue is how to overcome the limitations of the *pro forma* tariff without promoting a flood of non-standard tariff filings. A balance must be struck between the market determining new business practices and the need for standardization among tariffs, as discussed in the previous subsection.

The CPWG proposes to investigate the development of a voluntary national service agreement, similar to the one currently used by the Western Systems Power Pool (WSPP), as a step toward promoting commerce while achieving the proper balance between the needs for Regional diversity, market innovation, and national standards. This agreement would be drafted by the CPWG and filed with FERC for approval. Participation in the agreement, once approved, would be voluntary. The agreement would represent the best effort by the industry to define effective processes for reserving and scheduling uses of the transmission system. The WSPP document is proposed as the starting point for this activity.

This type of agreement could be used to resolve a number of existing shortcomings with the *pro forma* tariff, including inadequate definition of next hour reservation and scheduling processes. Through the creation of a virtual interconnection agreement, the bulk power market will be facilitated across an Interconnection. Terminology as well as process will be sufficiently standardized to reduce barriers to commerce. The agreement, being voluntary, is not intended to force the displacement of existing provider tariffs and Regional practices, but to provide an additional avenue for the growth of interregional commerce. The agreement would standardize process and terminology. The agreement would also reduce the need to file individual service agreements.

#### **4.4 Policy Issue 3: Provider Incentives to Support Market Development and OASIS**

One of the issues raised by some OASIS users as well as providers is the apparent lack of incentives for the transmission provider to promote the goals of open access. Others note that a regulatory mandate to comply with open access and OASIS requirements should be sufficient — performance measurement is simply a matter of measuring compliance. However, the majority of comments indicate a belief that regulatory requirements alone are not sufficient. There may be a large gap between doing what is necessary to comply with the law and being truly motivated to maximize use of the transmission network in a non-discriminatory manner.

The crux of the problem is apparently an inability of many transmission providers to recover value from doing more than that, which is required by law. The perception is that transmission providers do not benefit in the long term from better open access performance than the law requires. There is a perception that additional investment in OASIS or other activities related to open access is not likely to result in recovery of the additional costs.

The perception is not limited to transmission providers, but is also held by some transmission customers. Some members of CPWG suggest that incentive ratemaking or mechanisms to allow retention of higher transmission service revenues would have a positive effect on provider behavior. These members feel that if the transmission network was run as a business, providers would be much more anxious to cooperate with the needs of the market.

There has been, however, insufficient support for incentive ratemaking in the industry to date. The Commission has indicated it would consider innovative rate proposals subject to certain restrictions.

These concerns may be resolved by changing the way public utility rates are designed. Specifically, transmission providers rates could be established based on revenues and transmission utilization factors during a base test period. Once the rates are established, the revenues actually collected and retained by the provider would depend on the performance of the transmission provider in decreasing its costs and/or increasing its transmission utilization.

The CPWG proposes to take a first step toward resolving this problem by identifying a set of key performance indices, which support the goals of open access. Rather than minimum standards of behavior, these indices would indicate degrees of performance quality. The thought is that the simple act of measuring these broad, results-based indices will alone provide some incentive for improvement. Examples of performance indices might be: the number of reservations confirmed, average response time to a customer request, the frequency in which a posted ATC is not really available, the percent of confirmed reservations which become curtailed, transmission asset utilization factors, customer complaint rates, etc. These measures also may later become the basis for filing of incentive rate formulas. The CPWG does not propose moving directly to an incentive rate proposal at this time until these concepts can be further developed and tested.

In some respects, placing the full operational responsibility for the transmission network with an ISO may solve some of the concern for incentives, if the ISO is truly independent. The ISO serves the members of the market and performance can be managed through the ISO governance framework. ISOs are expected to have sufficient incentive to maximize the use of the transmission system while ensuring short-term transmission system security. The ISO will essentially have monetary incentives to create a lean, fast, effective, user-friendly and reliable transmission information system and to achieve high levels of transmission utilization.

#### 4.5 Issue 4: Getting All Users of the Transmission System on OASIS

The perception of some customers is that in the long term, all uses of the transmission system, including native load and grandfathered transmission contracts, should be on OASIS. This is a policy issue currently in rehearing and litigation. The Coalition for Competitive Energy Markets states:

“There will be insufficient demand for a high quality OASIS until all users of transmission service for all loads (including “native” loads) are required to reserve their system uses through OASIS. When all power industry participants are comparably dependent on OASIS there will be strong demand for improvements to the design and implementation of OASIS.”

This issue is particularly relevant when considering the requirements for reserving and scheduling transmission to supply network native load customers from sources external to that network. Inconsistencies can exist in the acquisition of transmission rights and the curtailment of transmission service in the event the system becomes overloaded. At the core of the issue is: if you have a transmission user with service not covered by a tariff, how can curtailments be managed fairly?

A slightly different but related issue is raised by some IPPs through comments received from the Electric Power Supply Association:

“(An) IPP with a contract to a customer within the provider’s system (finds that relevant) transmission information is not being posted and that (the) IPP not considered (to be) an eligible customer. If an IPP has been curtailed due to constrained transmission, this should be sufficient cause to require posting of any path that would constrain the output of the generator to a load. At a minimum, ATC information and scheduled transmission maintenance should be posted, and study data made available to justify the ATC values.”

One IPP points out further that:

“...transmission providers should post ATC information for any part of their system where a construction or maintenance outage will cause even a temporary constraint on the transmission system ... so that an IPP can take appropriate action should they be affected by the constraint.”

While it is not technically feasible to reserve and schedule all uses of the transmission system at the generator/bus level within a control area, it does appear reasonable to require that the use of the transmission system to import or export resources into and out of a control area be treated in a similar manner for all customers, including the reserving of transmission on OASIS and comparable consideration of curtailment priorities.

The CPWG recommends that FERC policy be clarified or modified to require that all transmission uses to serve native load from external resources and all uses of transmission by independent producers to serve contracted loads be reserved on OASIS in a manner similar to that of other transmission uses.

ERCOT has already moved partially in the direction of posting on OASIS all network uses of transmission. These services are not reserved in the true sense, since they are automatically approved and compensation is pre-determined. However, the posting of all uses does help to place network users on a more comparable footing with other users.

In making this recommendation, however, the CPWG recognizes there are serious concerns of the obligations under state jurisdiction that providers have to bundled retail customers. The Edison Electric Institute in its comments to this report opposes the CPWG recommendation as follows:

“The issue of treatment of native load immediately treads into changes in the federal/state relationship, not to mention obligations EEI members have to serve their native load customers. The issue of treatment of native load is too important, particularly in view of a utility’s state-mandated obligation to serve customers, for EEI to accept this proposed policy change to be made merely as an outcome of some limited discussions dealing with OASIS implementation.”

Continuing on this issue, the comments state: “EEI does not support CPWG’s recommendation that FERC policy be clarified or modified to require that all transmission uses serve/serving native load from external resources and all uses of transmission by independent producers to serve contracted loads be (posted) on OASIS in a manner similar to that of other transmission uses. Additionally, the (CPWG request for clarification or modification of FERC policy) does not reflect the fact that this recommendation was not unanimous among members of CPWG. In fact, discussion was so contentious on this specific issue, that (some) members of CPWG threatened to file at FERC a dissent on this specific issue if this recommendation (was made).”

It should be pointed out that no recommendations by CPWG in this report imply a unanimous opinion, only that a recommendation was approved in accordance with accepted CPWG voting procedures.

## **Section 5 — OASIS Functional Scope: Options for the Future**

This Section begins the process of defining the functional scope of OASIS beyond Phase 1-A. The Commission had requested in Orders 889 and 889-A that the industry propose a scope for Phase 2 OASIS and considers the incorporation of methods for electronic scheduling of energy. While it is clear the industry is not prepared to offer a detailed specification for Phase 2, it is appropriate to begin in this report a dialog of the future scope of OASIS in Phase 2 and beyond. Determining detailed functional and performance requirements demands a systematic process of defining regulatory, market, and user needs. This systematic design process is outlined further in Sections 6 and 7.

### **5.1 NERC Security Applications**

Before looking at the scope of OASIS Phase 2 and beyond, it is necessary to review the evolution of the energy transaction and transmission service curtailment procedures that already exist or are emerging. The North American Electric Reliability Council (NERC) has a responsibility to develop and implement standards and guidelines that assure the reliability of the bulk electric systems in North America. This scope of responsibility encompasses both the scheduling of energy interchange between control areas and the implementation of transmission loading relief procedures necessary to prevent cascading outages. These are just two of the hundreds of aspects of reliability facilitated by NERC. While NERC was historically made up of nine (now ten) Regions, which in turn were made up of electric utilities operating in North America, NERC and the Regions have recently opened membership to additional transmission customer and electricity end user segments.

At the directive of its Board of Trustees, NERC has been developing security procedures necessary to the reliability of interconnected bulk electric systems. These functions are intended to ensure the continued reliable operation of power systems under emerging electricity markets promoted by FERC's open access policy. These initiatives include:

- Establishment of Regional security coordinators,
- Development of operating and engineering standards related to interconnected operations (ancillary) services,
- Development of system operator certification and training accreditation programs;
- Establishment of an ATC Implementation Working Group, and
- Development of processes and systems to support system security in the reservation and scheduling of the transmission network.

It is this last area which is of particular relevance to the development of OASIS. The ATC activities are also relevant and are discussed later in Section 6 of this report. Specific NERC functions related to the future scope of OASIS include the following:

- An interim procedure and template has been developed by NERC for the "tagging" of energy interchange transactions. Tagging is a process by which a merchant provides the physical details of an energy interchange transaction to the control area operators who are responsible

for implementing the interchange schedule by adjusting the amount of generation within their control areas. The transaction tag is not a commercial instrument for trading energy and has no provision for commercial terms such as price.

The transaction tagging information must be conveyed in order to allow the control area operators to perform the energy interchange scheduling function between control areas in a secure manner, as specified in NERC Operating Policy 3 on Interchange Operations. Without this information, flows on the system would be indeterminate and the capability to evaluate the security of the transmission network would be inadequate. Control area operators would not have sufficient information to balance generation and load and account for energy flows across ties in a precise manner.

While this interim transaction tagging process is manual and of limited capability, it is widely recognized that the process must be automated. Use of the NERC template to convey transaction details is required only for interchange transactions, which are submitted more than four hours ahead of the transaction start time. For short-term transactions (less than four hours), the transaction details may be provided by phone or fax.

- The NERC security applications provide a systematic method for off-loading the transmission network in the event of overloads or security violations. In order to effectively manage relief procedures, all transactions must be entered as previously described through the transaction tagging process.

At the heart of the security process is an interim Interchange Distribution Calculator (iIDC), which is being implemented in the Eastern Interconnection. This program estimates the flow distribution of each energy interchange transaction. The flows are estimated by the use of simple power transfer distribution factors. These factors usually produce reasonably accurate estimates of the flow impact of each transaction, unless the configuration of the transmission network has changed or nonlinearities occur due to the electric system being stressed. The term “interim” implies this application is a temporary system until more sophisticated flow-estimation tools can be implemented on a wide-area basis.

Although transmission is generally reserved on the basis of a contract path and energy flows are scheduled along the contract path, the actual flow will follow numerous parallel paths according to the laws of physics. The estimated flows are calculated by the iIDC. Each interchange transaction that has been scheduled is sent by the control area operators to the security coordinator, where it is entered into the iIDC and the flow impacts are calculated. This information is available to security coordinators and other operating authorities performing security functions. If a portion of the system becomes overloaded, it is then possible to view the contribution of each transaction to the overload and to curtail transactions that provide effective relief, according to transmission service priorities.

Normally, if the operating problem is within a single transmission provider or ISO, curtailment can be handled according to the transmission service priorities and service agreements of that provider/ISO. However, the iIDC is necessary when multiple providers and Regions are

impacted by transactions due to parallel flows off the scheduled contract path. In this event, the NERC security coordinator procedures may be implemented to coordinate effective relief across multiple systems.

This process has been established in the Eastern Interconnection. The ERCOT and Western Interconnections apply their own procedures for managing transmission relief. A more fully automated IDC capability is under development.

- NERCnet is a dedicated, high performance communications network to support a variety of security applications. The initial application being developed for NERCnet, and the initial motivation for this dedicated communications network, is the Interregional Security Network, or ISN. The ISN is a network of communication nodes running over NERCnet which serve to exchange real-time operating data and operations planning data between security coordinators. The ISN, which is partially developed, is scheduled for full implementation by January 1, 1998. The previously described energy transaction details and IDC information may be exchanged by security entities over the ISN and/or NERCnet.

While there are many other aspects of the security process being developed by NERC, these four components are the most relevant to the future of OASIS: transaction tagging procedure, IDC calculation of flow impacts, transaction curtailment procedures, and the dedicated communications network, NERCnet. They are considered further as the future scope of OASIS is discussed further.

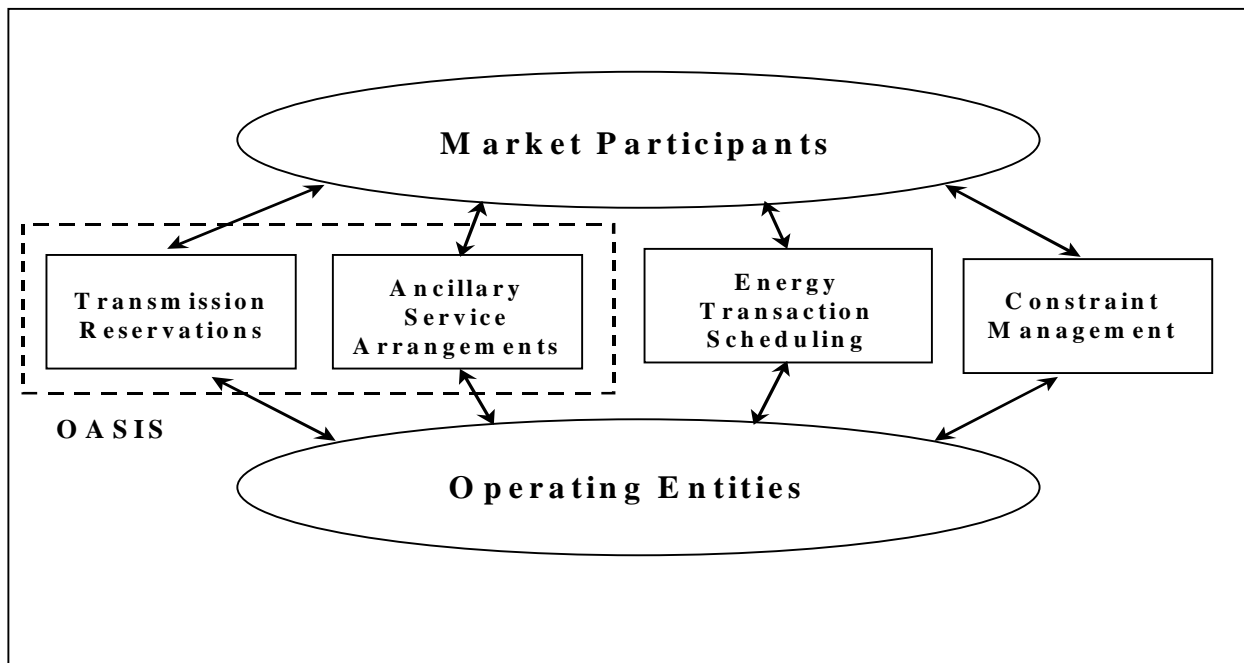
## **5.2 Scope of an Open Access Market Interface**

It is necessary to define a general framework for considering the future scope of OASIS. One may think of OASIS as part of an overall information interface, which is needed between market participants and providers. Until now the scope of that interface has included transmission reservations and the procurement of ancillary services. The question is what should the scope of this market/provider interface include in the future? Should OASIS be expanded to add new functions? Should OASIS retain its current scope and be integrated with other related applications, such as those being developed by NERC and Regional entities?

It seems most appropriate to focus a federally regulated market information interface on enabling non-discriminatory access to the transmission network. This interface should promote availability of the transmission network, competitive pricing of transmission and ancillary services, and accountability for all provider and customer participants.

The scope of the market interface may be best understood using a “transportation” analogy. As seen in Figure 5-1, there are four principal functions required to support transportation of energy across provider and Regional systems. A customer reserves transmission capacity along a scheduled path and arranges ancillary services necessary to support expected transmission uses. The scheduled path could be based on a contract-path model as is common today, a flow-based model, or other models. Then, the customer schedules the energy interchange with operating entities who cause the energy to physically flow. In the event the transmission system becomes

overloaded, curtailments of transmission service or system redispatch may be required. The first two functions, transmission reservations and ancillary services procurement, are already available through OASIS. The energy transaction scheduling and curtailment procedures have currently been implemented as interim reliability functions by NERC. The term “Constraint Management” is used below to indicate that transmission relief may include other alternatives to curtailment, such as redispatch.



**Figure 5-1 Framework for an Open Access Market Interface**

It is appropriate that the FERC jurisdictional Open Access Market Interface shown in Figure 5-1 includes the aspects of these four functions necessary to promote comparable transmission access. These functions must be sufficiently standardized to facilitate interregional transportation of energy and sufficiently automated to facilitate the activities of the commercial market.

Additionally, there is a fifth function which is not shown in the diagram, but implied a next-hour transaction function. The next-hour transaction function allows the reservation, ancillary services, and scheduling functions to take place in an abbreviated, integrated, yet technically complete process.

The five functions for the Open Access Market Interface can then be summarized as the following set of interactions between transmission customers and providers:

- Reservation of transmission service
- Procurement of ancillary services
- Scheduling of energy interchange transactions crossing Regional/provider boundaries

- Streamlined process for integration of next hour business, including transmission reservation, ancillary services, and energy scheduling
- Curtailment notification

Equally important as defining what the scope of the Open Access Market Interface includes, is noting what it does not include. Commercial aspects of the market operations are independent of the transmission reservation and energy scheduling aspects. The performance of energy market functions should not be managed through a federally mandated information interface, since the nature of energy markets must be more Regional and flexible. The challenge is to devise an architecture that allows sufficient insulation of the transmission information systems from the market functions, so that the former may be managed in a more standard way. At the same time, these systems must be integrated to minimize the burden to users. Below are examples of functions that should not be managed over OASIS in the future, but instead should be integrated with OASIS through well-defined interfaces:

- Market auction
- Market-driven scheduling and energy trading
- Market settlements
- Energy futures markets

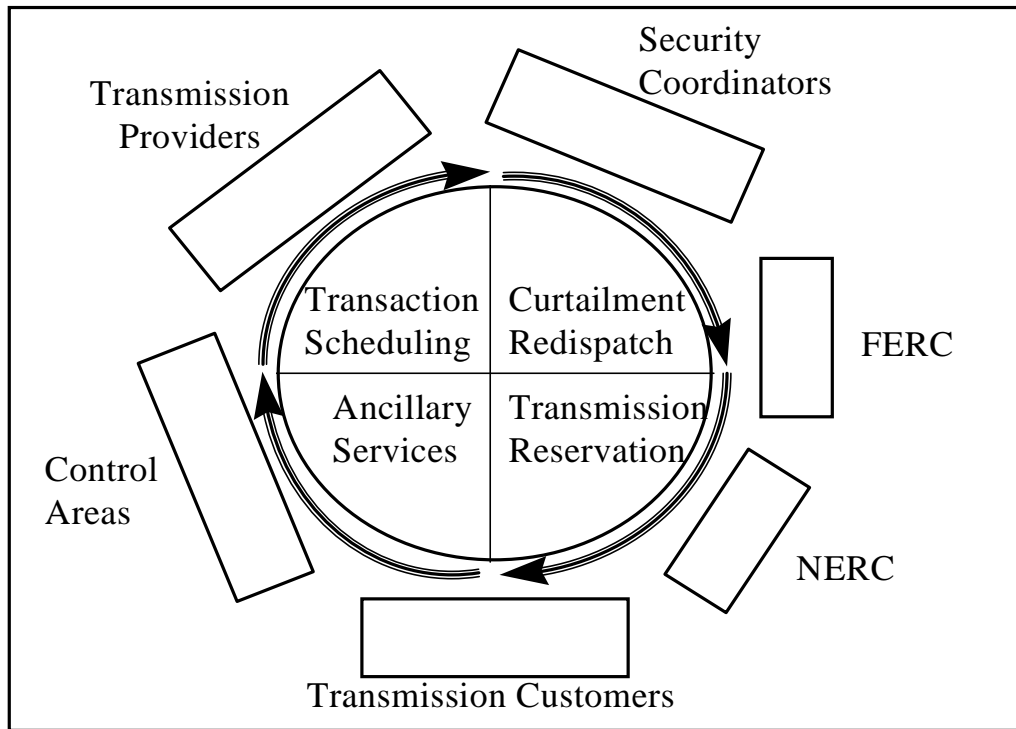
The Open Access Market Interface also specifically excludes control area interchange scheduling, which is managed through energy management system computers in the control areas, and security applications, which define and are necessary to manage the constraint management process.

### **5.3 Need for User Inputs to Functional Requirements**

While the previous subsection outlines the scope of an Open Access Market Interface in broad functional terms, there is a need to understand each of these functions in greater detail. To date, the requirements of OASIS have been defined in response to regulatory policy, with the How WG principally using inputs from the What WG and regulations to design OASIS. Inputs from users were sought, but direct participation in the Phase 1 and 1-A design process has been generally lacking.

The How WG and CPWG recommend a thorough analysis of the functional and performance requirements of each of the five principal functions listed previously. This analysis should be completed as a prerequisite to beginning design of OASIS beyond the proposed Phase 1-A specifications. This needs analysis requires direct input from users, or future versions of OASIS will experience the same frustrations as seen in Phase 1. It is recommended that user-oriented focus groups be established now to develop the detailed requirements for each of these functions. The automated business processes must emulate natural procedures needed by the market. Any automated reservation and scheduling system must be easier and more efficient for users than today's instrument of choice, the telephone.

At the second public workshop conducted on September 25–26, 1997, 170 participants brainstormed user needs in small breakout groups and reported back the results. The product of this discussion provides a good first step in understanding users' requirements. The discussion was framed around the following diagram, which depicts users of an Open Access Market Interface to include transmission customers and providers, control area operators, security coordinators, FERC, NERC, and others. The discussion focused on identifying the information needs of each user class.



**Figure 5-2 Users of an Open Access Market Interface**

A preliminary summary of user functional needs resulting from the workshop is provided in Table 5-1 below. Once again, this list is intended to be demonstrative of the scope of the major functions of the Open Access Market Interface, and is not a final, consensus-based list of needs. This list of needs will be further detailed and delivered as a functional specification as part of the development process described later in Section 7 of this report.

**Table 5-1 Open Access Market Interface Requirements (Representative Examples)**

User	Examples of User Requirements
Transmission Customer	<ul style="list-style-type: none"> <li>• Ability to enter, modify, confirm, and view reservations*</li> <li>• Ability to enter, modify, confirm, and view energy schedules</li> <li>• Fast, simple, dynamic interactions with short response times (seconds to minutes)</li> <li>• Integrated user interface for reservation and scheduling; single point of data entry</li> <li>• Customer option to schedule and reserve transmission as one step, or to reserve transmission first and schedule energy later</li> <li>• Customer option to pre-confirm reservations* and schedules</li> <li>• Interaction time limits for both providers* and customers</li> <li>• Ability to enter, modify, confirm, and view requests to purchase ancillary services*</li> <li>• Link ancillary services procurement to transmission service reservation*</li> <li>• Ability to post secondary capacity for resale*</li> <li>• Ability for third party to post ancillary services*</li> <li>• Reliable ATC information and data to back up studies</li> <li>• Transmission status details: system configuration and facility status</li> <li>• Information to support risk analysis: transmission historical availability; likelihood of curtailment</li> <li>• IDC flowgate loading and available capacity margins</li> <li>• Pricing, discount information, including options*</li> <li>• Immediate notification of curtailments with reasons</li> <li>• Options to avoid curtailment; redispatch options</li> <li>• Customer options on means of receiving curtailment notice</li> <li>• Advance notice of pending or possible curtailments</li> <li>• Study mode interface/ transaction feasibility</li> <li>• Capability to buy/sell transmission futures</li> <li>• User-friendly graphical interface</li> <li>• Retain automated, computer-driven query capability*</li> <li>• Single point of security access/logon</li> <li>• Protection of business sensitive information*</li> <li>• Audit logs and historical information*</li> <li>• On-line and off-line help and documentation*</li> <li>• Maps to show schedule path connectivity</li> <li>• Data checking and input verification*</li> <li>• Low end access for smaller customers (Internet)*</li> </ul>
Transmission Provider	<ul style="list-style-type: none"> <li>• More automation and integration of back end processes</li> <li>• Connectivity of reservation and scheduling information between OASIS nodes</li> <li>• Source and sink identification for reservations* and schedules</li> <li>• Information from neighboring transmission systems to manage ATC/curtailments</li> <li>• IDC output for ATC analysis and updates</li> <li>• Regional coordination of ATC calculation</li> <li>• Automated ATC updates</li> <li>• Automatic summary of scheduled uses of network, match schedules to reservations</li> <li>• Recover purchased but unused transmission capacity for resale in spot market</li> </ul>
Control Area	<ul style="list-style-type: none"> <li>• Download of energy transaction details to EMS and accounting systems</li> <li>• Download transaction details from other systems for security applications</li> <li>• Automated energy schedule confirmation/checkout</li> <li>• Transaction approval process</li> <li>• Standard loss accounting methods and ramps</li> <li>• Fast, automated curtailment notification</li> <li>• Redispatch coordination</li> </ul>
Security Coordinator	<ul style="list-style-type: none"> <li>• Sharing of system information, including transaction details and system status</li> <li>• Anticipated network uses, including day ahead and longer term reservations and schedules</li> <li>• Transmission priority of each schedule</li> <li>• Fast, automated curtailment notifications</li> <li>• Coordination of redispatch and emergency response</li> <li>• Source/sink by control area or zone</li> <li>• All IDC data</li> <li>• Load forecasts, weather forecasts, load and generation scheduled, topology of the network</li> </ul>
FERC	<ul style="list-style-type: none"> <li>• Information to monitor market behavior and compliance*</li> </ul>
NERC	<ul style="list-style-type: none"> <li>• Information to monitor reliability performance</li> </ul>
Other Users	<ul style="list-style-type: none"> <li>• Report transaction details for accounting</li> </ul>

**\* Indicates functions that may fully or partially exist in Phase 1 or 1-A.**

## **Section 6 — Action Plan, Part I: Resolution of Business Processes**

This is the first of three sections describing an action plan for resolution of business practice issues and management of OASIS design and development. The approach is more systematic and user-driven than OASIS development has been to date. The plan is discussed in three parts: resolution of key business practice issues, OASIS design and development, and management organization.

The action plan for resolving OASIS business process issues includes the following steps:

1. The CPWG will immediately send a letter requesting that the NERC Board of Trustees commit additional resources to accelerate the resolution of inconsistencies with ATC calculation and coordination.
2. The CPWG will file with the Commission by March 31, 1998 a draft set of guidelines to clarify OASIS business practices in Phase 1-A, including resolution of issues left over from Phase 1.
3. The CPWG will prepare a draft report defining a next-hour business model by April 30, 1998 and will file with the Commission a final report by August 31, 1998.
4. The CPWG will evaluate the need for posting of transmission status information in Phase 2 OASIS and report the results to the Commission by August 31, 1998.
5. The CPWG will evaluate long-term alternatives for transmission reservation and scheduling beyond Phase 2, possibly including flow-based and other alternative approaches, and report these results to the Commission by December 1998.

In addition to these steps to resolve OASIS issues, the CPWG will complete these additional activities to address broader open access issues, as discussed previously in Section 4:

1. Publish a set of open access performance indices.
2. Draft a national service agreement for transmission reservation and scheduling.

The basis for these actions is discussed further in the subsections below.

### **6.1 CPWG Activities to Resolve OASIS Business Process Issues**

The existing regulations and *pro forma* tariff have left voids in understanding how to implement transmission access business processes. Examples include transmission service product definitions, time limits on customer confirmation in making a reservation, use of sliding windows to define service offerings, and the manner in which ancillary services are tied to transmission service.

Recognizing this problem, the industry has formed an independent Commercial Practices Working Group. Resolution of business practice issues remains one of the biggest concerns with OASIS Phase 1. This concern is heightened by the emergence of new business practices from individual provider and Regional tariffs, which are non-standard, compared to the current business model defined by OASIS.

The CPWG is currently working to standardize OASIS and related open access business practices in the following areas:

- Standard product names and attributes (a proposal was filed for Phase 1-A),
- Linking ancillary services to transmission (a proposal was filed for Phase 1-A),
- Standard definition of a week and on/off peak periods,
- Customer confirmation procedures/time limits,
- Use of sliding windows of service, including rules for bumping priorities,
- Commercial ramifications of transmission loading relief (curtailment) and redispatch procedures,
- Definition of hourly business model, and
- On-line price negotiation and discounting practices.

The CPWG proposes to clarify current confusion in the operation of OASIS by developing a set of business process guidelines, which define acceptable practices during OASIS Phase 1-A. Recognizing that resolution of business practice requires acceptance by diverse interests, this work is expected to take several months to complete. A proposed “draft business process guideline document” to accompany OASIS Phases 1-A will be filed with the Commission by March 31, 1998. This is approximately two months before the anticipated cutover from OASIS Phase 1 to Phase 1-A.

## **6.2 Development of a Business Model for the Next-Hour Market**

One of the challenges in developing an effective OASIS beyond Phase 1-A is creating a streamlined reservation and scheduling process that supports the next-hour market. Unlike the gas industry, which schedules on a day-ahead basis, robust hourly trading is critical in electric markets to capture efficiencies from hourly (and even sub-hourly) volatility in price, demand, supply, and system conditions. In fact, volume wise, more transactions are scheduled in the same-day electric markets than all day-ahead and longer transactions. Yet, OASIS operation in Phase 1 and 1-A is not designed for and does not adequately support hourly trading. Regulations and the *pro forma* tariff also fail to provide sufficient definition of this aspect of electric market operations.

As a first step in advancing a next-hour process, the CPWG proposes to develop a business model for next hour reservation and scheduling. The focus is on creating a streamlined, dynamic process that merges the reservation and scheduling sequences. The process must be automated and the number of human interactions minimized, consistent with retaining accountability and control. The process must be adaptable in the future to sub-hour trading.

One promising prospect for designing a next-hour process is to allow an energy schedule to drive the transmission rights procurement. For example, assume a customer wishes to schedule in the next hour a 100 MW flow from control area A to D with two wheels between. The customer may have no existing transmission rights or only partial rights to support the transaction. The four transmission providers involved review the schedule request and if capacity is available,

then the remaining necessary transmission reservation records are created automatically by OASIS upon the approval of the schedule by all four providers. The customer could pre-confirm the entire schedule and transmission package or confirm it after all approvals are received. In effect, transmission reservations are given simultaneous with the schedule approval. The entry of the schedule information would be substantially streamlined compared to today's requirement to input four reservations and then schedule the energy flow.

While the CPWG is focused on business process design and identifying user needs, they do have concerns about the ability of the OASIS infrastructure to support the next-hour business. For this reason, the CPWG does not feel it is appropriate at this point to commit that the next-hour reservation and scheduling will be conducted over the existing OASIS infrastructure. These technical concerns will be discussed with the How WG once the process definition is complete. As an example, two concerns are expressed here for future consideration:

- Since OASIS was developed with long-term reservations in mind, the question arises whether OASIS is the right tool for the next hour market. Can the Internet infrastructure and current OASIS nodes be adapted to meet the more dynamic, minute-to-minute transactions of the next-hour market?
- There is a greater impetus for standard procedures and display look and feel for the next-hour market. Customers need to be able to execute transactions and associated reservations in a streamlined process without being slowed by Regional variations in the process. A single standard graphical user interface may be necessary to facilitate the next-hour market.

Developing a model for next hour business is more than simply an OASIS design issue, it also creates tariff issues. The next hour process is inadequately defined by the *pro forma* tariff. Introduction of this process may therefore require revisions to the tariff or a new *pro forma* tariff. An example of a tariff issue is the strike price of transmission service when a reservation is made automatically in response to a schedule request and the priority of this service relative to pre-arranged reservations. While the next-hour function is important, customers also need to retain the long-term reservation capability of the existing OASIS, in order to manage their transmission access rights for periods of days, weeks, months, and years ahead.

Concepts for the next-hour business model will be drafted for presentation at a workshop tentatively scheduled for January 1998, and a draft report will be completed by April 30, 1998. This report will provide a description, process flow diagrams, and user requirements for a next-hour reservation and scheduling process. This report is intended to serve as an input to the How WG as to whether a next-hour reservation and scheduling can be incorporated into the design of Phase 2 OASIS, and if so, what performance requirements are necessary. The final version of this report will be filed with the Commission by August 31, 1998.

### **6.3 Solving ATC Problems**

The validity of ATC information may be the single most significant problem on OASIS today. Nearly all customers in their written comments and discussions at the workshops have

reemphasized the importance of ATC to the goal of comparable access. Posting of accurate ATCs provides the customer with information needed to manage risk and maximize the economic value of each transaction. Reliable ATC means that all the transmission capacity that is available is posted, all that is posted is really there when it comes time to reserve it, and there is a high probability that the use of those transmission rights will not be curtailed. Without this information, customers claim they cannot do business effectively. Yet the experience to date with OASIS, as indicated by the customer feedback in Section 2, is that the validity of ATC data has been lacking. One cynical comment may serve best to paint the severity of the problem: “Comparable access to garbage is of no help to my business.”

It should be noted that lack of ATC validity is not a flaw in the design of OASIS, but is more a symptom of a number of difficulties in the determination of ATC, as outlined below:

- Reserving and scheduling transmission on a contract path basis does not even closely resemble the physical impact on the system. For 100 MWs reserved and scheduled on a path, 30 may flow on the contract path, 40 on another path, 15 on a third, eight on another, etc. This is particularly challenging when reservations and schedules on neighboring systems cause unknown flows on a system not even aware of the transaction. Without a full sharing of all the reservation and schedule details, including source and sink, it is impossible to determine accurately the remaining capacity of facilities. And even with this information, the task is technically difficult. With these technical limitations, providers tend to think of ATC as more of an index of availability, rather than an absolute number.
- With the dominance of the same-day market, it is difficult to determine the loading pattern of the transmission network until all scheduled uses are known. For many transactions, this is not until the hour ahead. With this dynamic nature of scheduling uses of the transmission network, it is a challenge to collect the information on a Regional basis and analyze the impact on transmission capability margins in a matter of minutes. This difficulty may have been resolved to some extent by at least one Region through the use of an on-line impact calculator that evaluates the effect of each schedule as the customer enters it.
- Because of the effect of parallel flows, ATC is a wide-area phenomenon. The market needs ATC information that is supported by coordination and data exchange between Regions. More coordination is needed within and between Regions on methods for calculating ATC and reconciliation of the results. The NERC ATC Implementation Working Group is working at this time on resolving coordination and implementation issues.
- Providers take differing interpretations of the meaning and proper implementation of Transmission Reliability Margin and Capacity Benefit Margin. Customers believe that some providers are overly conservative while others are overly optimistic. On the one hand, transmission access is withheld and on the other, it is given more freely than curtailed. The curtailments can cause the customer financial penalties on the energy side of a deal.

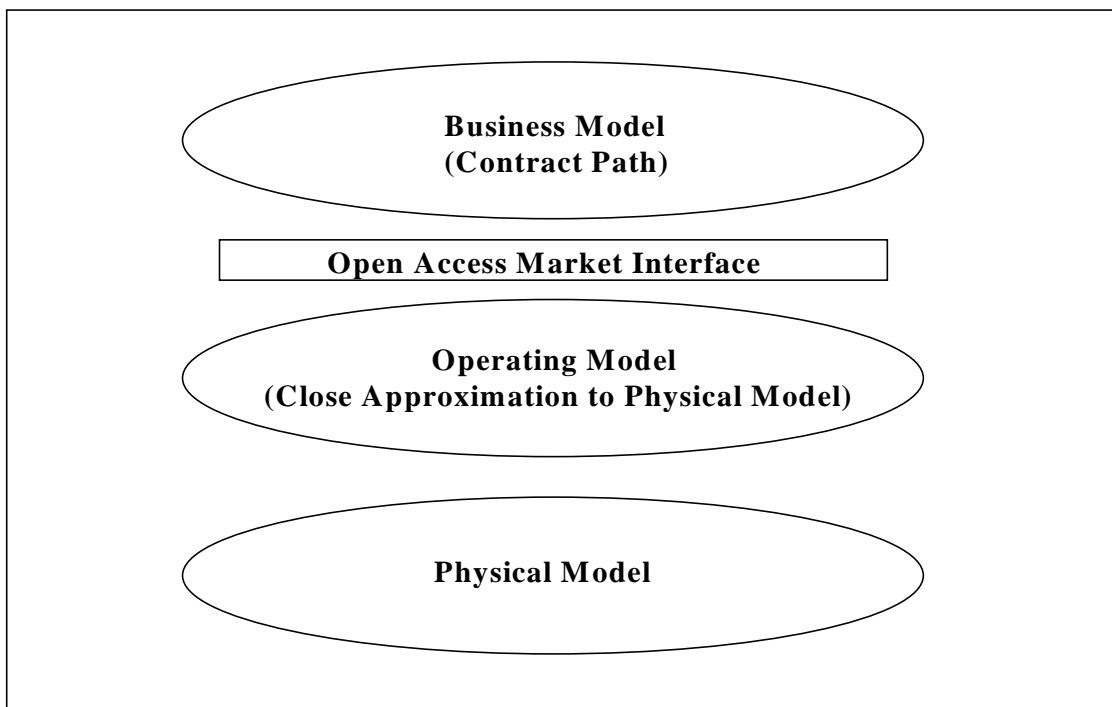
- Aggregation of ATC on a monthly or yearly basis for purposes of posting on OASIS may hide the true profile of available capacity during the period, since the posting is usually the minimum for the period.

While determining valid ATC information is technically challenging, particularly in a contract path reservation model, its importance cannot be diminished. The following steps are recommended to improve this area of open access performance:

- The NERC Board of Trustees is requested to accelerate the efforts of the NERC ATC WG to resolve inconsistencies in ATC calculation methods and implementation of those methods. The ATC WG is scheduled to review ATC implementation procedures by March 1999. The CPWG has prepared a letter to the NERC Board of Trustees recommending the commitment of additional resources to accelerate this process.
- The CPWG is to investigate long-term needs for ATC. For example, are there alternatives to the posting of ATC which could accomplish the same objectives? Are the ATC posting periods appropriate? How can the OASIS interface design be enhanced to facilitate the customer's determination of capacity along a proposed transaction path? Should ATCs be posted for all paths or just the ones that are constrained? Should the ATC postings be provided on commercial paths or on the physically constrained interfaces that are used as a basis for curtailments, as designated by the NERC IDC flowgates? What requirements are there associated with designation of source and sink in a reservation and being able to change source and sink at a later point in the schedule process? What are the qualities of good ATC and how does one measure those qualities?
- The CPWG is to investigate the possible need to add transmission status information to OASIS postings to allow customers the ability to assess transfer capability and the likelihood of curtailment. Some transmission providers (ISO-NE, PJM) already post transmission outage schedule information. While there is growing agreement that transmission status, including system configuration and planned outages is appropriate for posting on OASIS, customers and providers are strongly split as to whether this information should also include generator status. The providers feel that disclosure of information regarding the status of a public utility's generators would place these units at a severe competitive disadvantage. Some customers feel that lack of this information places them at a disadvantage in knowledge of system status. EEI states that the issue of transmission status information on OASIS has already been argued and ruled upon by FERC and that CPWG should not address this issue at this time.
- The CPWG, How WG, and ATC WG are to cooperatively investigate the functional and design requirements of an automated process to update ATCs for the short-term market, through the sharing of reservation and schedule information among providers and Regions. Possible adaptation of a model similar to that used by one Region in the Midwest or use of the NERC IDC will be investigated. Customers would have the capability to perform their own assessments of the impact of their proposed transaction using this tool in a study mode.

#### 6.4 Reconciling Business Model with Operating and Physical Models

One of the issues central to the problems with ATC is the wide difference between the commercial models of the transmission network used for reservations and provider compensation versus the operational models which are used to evaluate security and determine the need to curtail service. The diagram below shows that there are actually three sets of models involved. The operating models are necessarily reasonable approximations to the physical system. They are sufficiently accurate to estimate system flows, voltages, and the level of system loading at which the system might transition into cascading outages following a contingency. The commercial model, however, with its roots in contract path methodology, does not closely resemble the operating or physical models.



**Figure 6-1 Reconciling Commercial, Operating, and Physical Models**

In its comments, APPA notes the need for better knowledge of the operating models:

“(Knowledge of) the physical market is a necessity that many market participants must interact with on an hourly basis. It is foolhardy to assume that the industry can leap out of the existing contractual structures... into a simplified market model that further removes market participants from coming to terms with physical limits.”

While this dichotomy between the commercial and operating models may be satisfactory for scheduling and compensation purposes, there is a breakdown when transmission uses are

constrained or curtailed for reliability purposes. Transmission customers need to be able to reserve and schedule the transmission system with the expectation that energy will flow as planned. However, system security is evaluated based on operating models of the network, not a contract path based business model. This requires bridging the gap between the operating model and the business model, with sometimes-unpredictable results for the customer. A customer would prefer knowledge ahead of time of the physical limitations of the network and the likelihood of curtailment on particular constrained interfaces or paths.

There are at least two possible strategies for resolving the incongruities between the physical models and the commercial models:

- Calculate and post ATCs on physically constrained interfaces; use the IDC or other physical model approximation to calculate ATCs; calculate ATCs on a wide-area basis; provide transmission status details to allow customer verification.
- Move to the use of a flow-based commercial model of the network, which is a closer approximation of physical system behavior. This implies flow-based reservation and scheduling. There are numerous difficult policy and tariff issues to work out in this approach, particularly with respect to compensation approaches. Customers are concerned about pancaking of rates under the flow-based approach as well as the provider's loss of incentive to provide discounts if compensation is based on actual flow.

The CPWG proposes to investigate these and other alternatives as possible long-range strategies for reservation and scheduling beyond Phase 2. NERC is also developing a prototype model to demonstrate the technical feasibility of implementing a flow-based reservation and scheduling model. The results of these investigations will be reported to the Commission by December 1998.

As a corollary to this work, it is appropriate to investigate the requirements for standardizing the representation of the network, including path names, topology (connectivity of the paths used for reservation and scheduling), and providing system maps on OASIS to facilitate the scheduling of transmission between two points in the network.

## 6.5 Customer Confirmation Times

The *pro-forma* tariff is silent on a time limit for customers to respond to an acceptance from the transmission provider regarding requests for nonfirm service or short-term firm service. FERC has recognized this problem as stated in Order 889-A:

“The requirement that a customer confirm its request for service appears in the OASIS Standards and Protocols document (and not in the Open Access *pro forma* tariff or 18 CFR Part 37). Although the easiest approach might be to eliminate the confirmation step, the Commission is reluctant to modify the OASIS Standards and Protocols document at this late date. The Commission is also reluctant to specify confirmation time limits without first soliciting the views of representative

industry segments. Accordingly, the Commission requests that the industry address this issue as part of the Phase II report due on or before August 4, 1997.”

The customer confirmation step is a necessary step in the reserving of transmission service. The principal reason is that most energy transactions require more than one transmission reservation. Customers prefer to retain the flexibility to confirm the purchase of transmission after all transmission approvals necessary to support an energy transaction are received. This helps to avoid financial obligations for services that cannot be used as planned because one portion of the transmission required was not available.

However, the present situation, which requires customer confirmation but without time limits, has the potential for causing problems on constrained interfaces. Priority today is based on the time a completed application is queued, with no financial commitment to pay for transmission service until confirmation (except for deposit requirements for firm transmission service). Customers submitting a completed application for transmission service on the OASIS who receive an acceptance from the transmission provider, could possibly delay confirming the request prior to the scheduling deadline, or withdraw the request at a time that would prohibit other customers from making reservations, while at the same time not incurring any charges. This problem is especially acute for firm transmission service on constrained interfaces.

One simple remedy to this situation would be to award the reservation priority to the first to confirm, rather than the first to apply. Customers wanting to ensure priority at the time of the application could “pre-confirm” the request. However, in many cases a customer may be trying to arrange service across multiple systems (or arrange both the energy and the transmission from different providers). Thus, it may not be financially feasible to pre-confirm until the availability through each system is determined. If transmission were not available on one system in the chain, the customer would be required to pay for transmission on other systems on which transmission providers accepted the pre-confirmed reservations. Therefore, any solution must balance these two interests.

#### **Position of Transmission Providers**

The vast majority of transmission providers support a priority system based on first to confirm. Providers believe that such a system is administratively simpler and will work better with a system where transmission customers negotiate prices on the OASIS. In fact, many providers believe that time of application is meaningless when customers negotiate prices because only the “winning price” counts. However, most of those providers could work with a system that was based on first to submit a completed application with confirmation requirements combined with a right of first refusal.

#### **Position of Transmission Customers**

Transmission customers desire a system that awards priority to the first to apply, with confirmation requirements combined with a right of first refusal if a transmission provider receives requests for transmission service in excess of the ATC. This would allow customers time to arrange transmission service through multiple transmission

systems while avoiding financial commitments in the event transmission service was unavailable on one system, making the entire transaction impossible.

The CPWG proposes some elements of time limits for customer confirmation based on a principal of using time limits similar to those imposed on transmission providers to approve the service. However, the CPWG has not reached conclusions regarding a confirmation process for hourly or next-hour service. As described previously, the short-term business process is being rethought by CPWG, with initial draft concepts to be presented in a draft document in April 1998. For long-term service, the following partial recommendations are provided by CPWG:

**Nonfirm Transmission Service**

If the Commission were to retain a system where priority is based on first to apply but require confirmation (with right of first refusal) in the event the transmission system is constrained due to competing requests, the CPWG recommends confirmation limits based on those in Section 14.2 of the Order 888-A *pro forma* tariff for matching long-term requests.

<u>Service</u>	<u>Time Limit to Exercise Right of First Refusal</u>
Hourly	[Undetermined at this time]
Daily	Within <b>2 hours</b> after notification by the transmission provider ( <i>or earlier if necessary, to comply with scheduling deadlines provided in section 14.6</i> )
Weekly, Monthly	Within <b>24 hours</b> of notification by the transmission provider (or earlier if necessary, to comply with scheduling deadlines in Section 14.6)

**Short-term Firm Transmission Service**

If the Commission were to retain a system where priority is based on first to apply but require confirmation (with right of first refusal) in the event the transmission system is constrained due to competing requests, the CPWG would recommend confirmation limits based on those in Section 13.2 of the Order 888-A *pro forma* tariff for matching long-term requests, except for next day firm service.

<u>Service</u>	<u>Time Limit to Exercise Right of First Refusal</u>
Daily (Next Day)	No later than two hours before the scheduling deadline, or within one hour if notified within two hours of the scheduling deadline
Daily, Weekly, Monthly	Within 24 hours (or earlier if necessary, to comply with scheduling deadlines provided in Section 13.8)

*Note: Notification should be given by the transmission provider using methods such as OASIS, phone, facsimile, or e-mail. Each transmission provider should indicate on OASIS what method(s) it will utilize to issue the notification. It is recognized that notification using OASIS is presently available, but may not be practicable until such time as an automated notification procedure is available on OASIS.*

These confirmation limits are in addition to the 15-day limit stated in Section 17.5 of the Order 888-A *pro forma* tariff.

It is necessary to clearly understand the definition of “earlier if necessary to comply with scheduling deadlines.” Both transmission providers and transmission customers need certainty in order to operate. As stated above, Sections 13.2 and 14.2 of the *pro forma* tariff require matching within 24 hours, or earlier if necessary to comply with scheduling deadlines. However, the problem discussed previously will persist if a customer can wait to exercise its right of first refusal up to the scheduling deadline. Thus, the CPWG recommends that for the purposes of confirmation, the words “or earlier if necessary to comply with scheduling deadlines” be defined in the OASIS Standards and Protocols document as “no later than two hours prior to the scheduling deadline or within one hour if notified within two hours of the scheduling deadline.” This will allow time for later requesting customers to themselves confirm their requests prior to the scheduling deadline if the first customer does not confirm.

### **Minority Opinion Expressed by Some Providers (Not Approved by CPWG)**

The majority of the CPWG recommends confirmation times (if the Commission chooses not to institute a first to confirm priority system) for daily, weekly, and monthly firm and nonfirm transmission service but does not make any recommendation of confirmation times for hourly, including next hour, nonfirm transmission service. A number of transmission providers on the CPWG disagree with this recommendation to the extent that it does not provide any recommendation of confirmation times for hourly nonfirm transmission service.

Rather than maintaining the status quo with no confirmation times for hourly nonfirm transmission service, which as stated in Section 6.2 of this report comprises a majority of

transactions, the minority recommends the following which had been discussed at earlier CPWG meetings:

1. Next Hour Transmission Service

a. All next hour nonfirm requests should be submitted as “pre-confirmed.” The reasoning for this recommendation is that there is usually not enough time for the operator to receive the initial request, respond, wait for “confirmation” and then accept a schedule for transactions that are being reserved for service during the next hour (note that NERC Policy 3, effective July 1, 1997, requires schedules to be submitted 20 minutes prior to start of a transaction).

b. Although the above recommendation had been discussed, there is a second option that will provide greater flexibility for customers. This option requires confirmation “immediately upon notification.” This approach makes no differentiation in confirmation time and procedures between next hour nonfirm and other hourly nonfirm. Such a requirement would apply only when a transmission path is constrained and thus would not require pre-confirmation of all transactions.

2. All Other Hourly Nonfirm Transmission Service

Confirmation would be required immediately after notification by the transmission provider.

**Justification**

1. Without standard confirmation times for hourly nonfirm transmission service, transmission providers would need to file individual proposals for confirmation times with the Commission. This could result in different confirmation times between transmission providers that could create additional problems for the hourly market.

2. If a transmission customer could tie up a constrained interface by requesting hourly nonfirm transmission service and not confirming, the transmission system would be underutilized. With hourly transmission service, there is no way to allocate the service to another customer once the scheduling deadline has passed. Requiring competing customers to request daily nonfirm transmission service or offer a higher price allows the first-in-time customer to force its competitors to pay a higher price for hourly service at no cost to that customer.

3. The Commission presently has a procedure in Section 14.2 of the *pro forma* tariff for an hourly nonfirm transmission customer with the right of first refusal to act when a later applying customer requests transmission service of a longer term. The minority recommendation simply recognizes that confirmation times for hourly service should be the same as that in Section 14.2 (except for the option of pre-confirming next hour service).

## **Section 7 — Action Plan, Part II: OASIS Design and Development**

It is premature to propose a detailed design to progress OASIS toward the Open Access Market Interface described in Section 5. It is important to allow the process of defining user needs to run its course before critical design decisions are made. This Section proposes a plan for developing the detailed requirements for the evolution of OASIS toward the Open Access Market Interface. Several key decision points are discussed first, then the design process is outlined.

### **7.1 Phase 2 OASIS Architecture: Centralized, Decentralized, or Hybrid?**

OASIS to date has been developed with a decentralized architecture. The use of the public Internet has allowed individual providers and Regions to develop and maintain their own solutions, which are then available to customers through the common medium of Internet web browsers or through computer-based queries. This approach has the following advantages:

- Responsibility of developing and maintaining an OASIS system remains with the accountable jurisdictional providers,
- Multiplicity of OASIS solutions has led to technical and business process innovation, and
- Project funding commitments have been made by the responsible providers, avoiding the need to generate an industry-wide funding pool for OASIS development.

At the same time, there are disadvantages that are evident in the results to date:

- Non-uniform interpretation of regulations, tariffs, business processes, information requirements, and technical standards,
- Variations in the degree of commitment by providers, resulting in good to mediocre implementations of OASIS, and
- Non-standard access requirements and graphical displays, detracting from the intended seamlessness of OASIS.

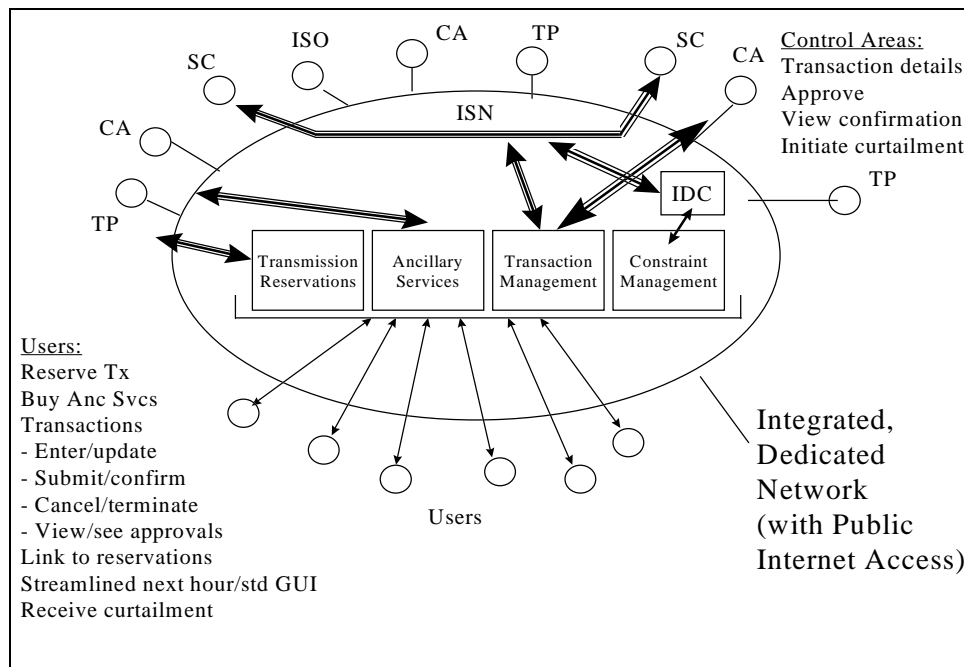
Moving OASIS toward the Open Access Market Interface raises new challenges, which must be considered in evaluating the appropriateness of continuing the decentralized strategy. Development of the proposed automated electronic interchange transaction scheduling function adds the following complexities that seem to encourage a centrally managed project with a single core solution:

- The energy transaction database must be tightly integrated so that all operating entities and transmission customers are accessing identical transaction data (subject to restrictions on access to sensitive data).
- The system must operate in the next-hour time horizon, performing transactions in minutes and seconds.
- Reliability of the transmission network depends on the performance and reliability of the scheduling function.

- Energy schedules cross provider and Region boundaries, thus requiring an integration of information access across multiple nodes. OASIS nodes have not been integrated on the back end in Phase 1 or 1-A and must be to accomplish the scheduling function.

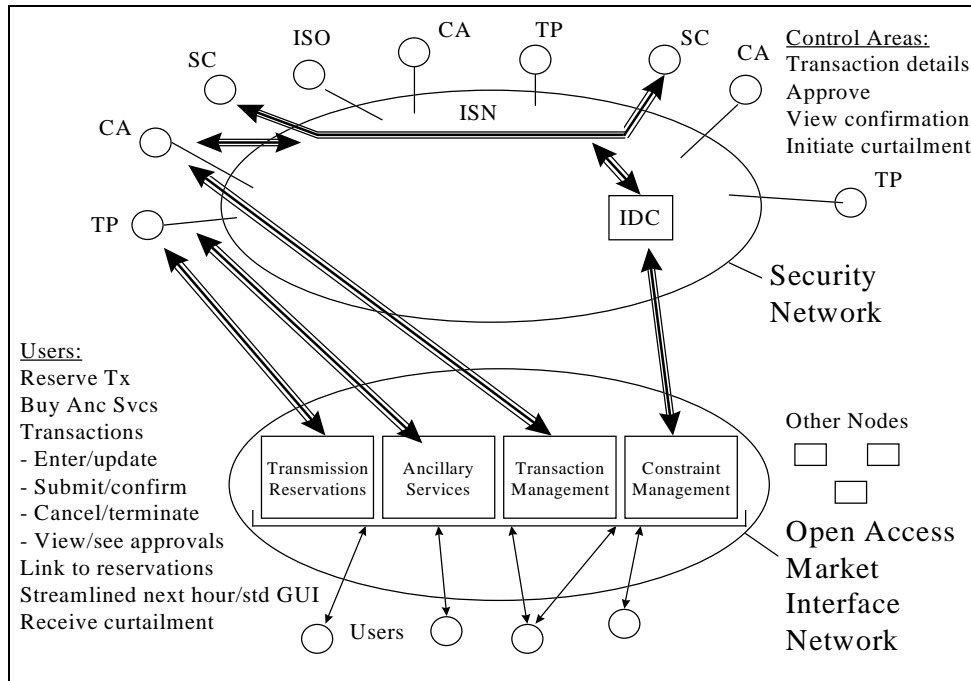
There is, however, support by some in the industry to continue with a decentralized project approach and solution. These proponents of a decentralized architecture claim that well-defined interface standards can accomplish the same objectives while retaining the advantages of a decentralized implementation. Experience with Phase 1 OASIS, however, points out a potential flaw in this argument, since the resulting solutions today vary substantively in content and protocol despite the existence of the S&CP standards.

An alternative to centralized or decentralized may be a hybrid that centrally implements core database engines while user interfaces are implemented in a decentralized manner. The three options are depicted in Figures 7-1a, b, and c. In the centralized configuration (Figure 7-1a), OASIS and the new open access functions are moved into a dedicated network (Intranet). Reservations, schedules, ancillary services and curtailment notifications are handled through central databases and software. Although these applications would likely be implemented in a dedicated Intranet, public Internet access would continue to be available to users. These open access applications would interface with NERC security applications, such as IDC and the ISN as needed to manage reliability.



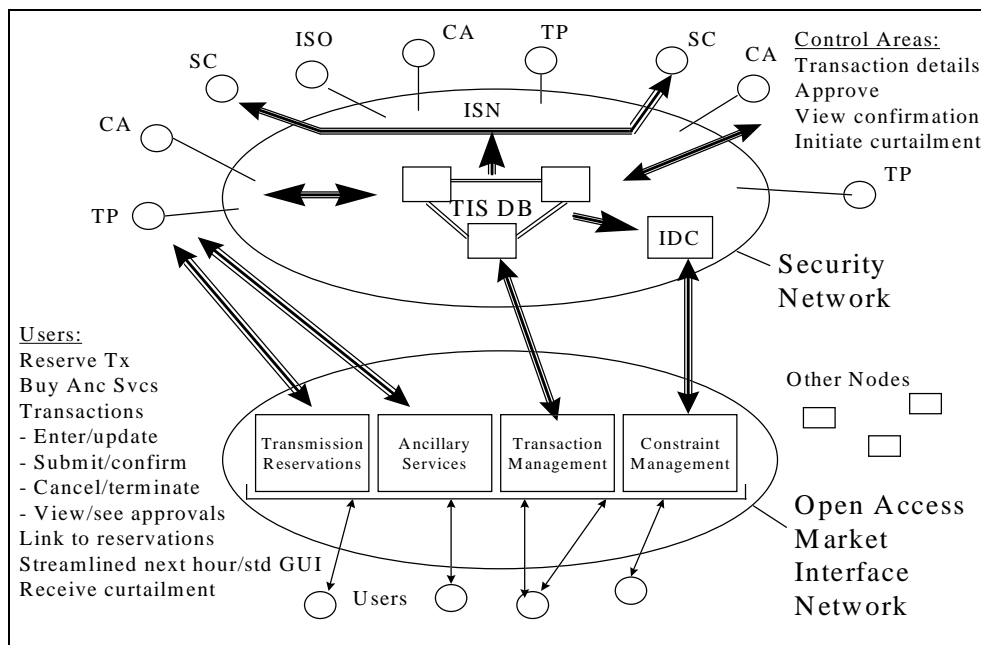
**Figure 7-1a Centralized Infrastructure for Open Access Market Interface**

The decentralized approach in Figure 7-1b places the scheduling and curtailment notification functions alongside the OASIS functions on the current OASIS nodes (or on an alternative platform) and integrates these applications through the public Internet or private connections as needed. NERC security applications would be implemented separately on a dedicated network, with interfaces to the Open Access Market Interface as needed to obtain reservation and schedule details and to provide system status or curtailment notification.



**Figure 7-1b Decentralized Infrastructure for Open Access Market Interface**

The hybrid approach in Figure 7-1c provides for a dual set of networks that work more closely together than the previous figure. The transaction scheduling database engine is implemented on the dedicated network, as it serves both operating and market users. The user interfaces, however, for scheduling as well as reservations, ancillary services, and curtailment notification, are provided on the current OASIS network. This approach has the advantages of providing clear delineation of security and market interface functions and allows them to reside on appropriate type networks. This approach also builds on the existing OASIS infrastructure and the nascent NERC network.



**Figure 7-1c Hybrid Infrastructure for Open Access Market Interface**

Consensus has not been reached on selecting one of these system architectures for Phase 2 OASIS, and, in fact, it is premature to make a decision until the functional requirements of users have been fully defined. Whatever the final decision on architecture, there may be a need to centrally develop some core database structures or applications for the performance-critical components of the scheduling process, particularly in support of the next-hour market. Detailed interface requirements would be required for all components developed in a decentralized manner. For example, in the hybrid architecture, the Transaction Information System (TIS) database engine would be developed centrally (by Interconnection or wide area) as a single solution with explicitly defined interfaces between the Open Access Market Interface and the TIS and IDC databases. The customer interfaces and applications would be developed using a decentralized approach.

## 7.2 Graphical Interface Display Standards

Another key issue in planning further OASIS development is deciding whether or not to develop standards for user displays. While the How WG understood the advantages and disadvantages of going in either direction, the reality is that the decision not to develop display standards was more a consideration of what could be accomplished by Phase 1 than a clear choice based on merits. This decision must be resolved before proceeding to Phase 2. The outcry of user dissatisfaction with Phase 1 OASIS would point to the need for standards based on current “best practices.” However, the counter argument is that these standards would stifle innovation, and the best nodes today would not be as good as they are by following prescriptive standards. This decision will remain important if customers continue to prefer the Internet web browser interface to computer-driven queries, as they have demonstrated to date.

A suggestion that warrants further investigation is that standard user interface software be developed for performance-critical processes like next-hour reservation and scheduling and that displays for other functions, like long-term reservations, remain within the purview of the provider's discretion.

One of the greatest difficulties on creating display standards for any aspect of the Open Access Market Interface is the wide variation in tariffs and business practices.

### **7.3 Finding the Appropriate Pace for Adopting Internet Technology**

Technology is advancing rapidly in the area of Internet development tools and applications. In OASIS Phase 1 and 1-A, the How WG has taken a conservative approach in estimating the ability of users to access the system. The least common denominator user, for whom the standards were developed, can access OASIS through free or nominally priced web browsers from a connection as simple as a residential phone line.

However, the customer feedback to this point has been to make OASIS faster and easier to use. Over the past two years, there have been significant strides in the development of tools that enable much richer and more efficient user interfaces for applications on the Internet. It is the belief of the How WG that the conservative approach used until now does not benefit users overall, even considering the needs of the smallest OASIS users. The How WG therefore proposes to take a more aggressive position in selecting Internet protocols and tools for Phase 2 OASIS and beyond.

The How WG recognizes the need to not raise the minimum access threshold too high and thus discriminate against the smaller users. However, the purchase of commercially available software and computers that are readily available at any corner computer store should not present an undue burden on access. It is therefore proposed to shift away from the concept of forcing the lowest level of access to be a conservative, older version of Internet browser technology to the latest tools that are generally available to the public at a reasonable cost. Obviously, the sticky part of this approach is finding a basis for figuring reasonable cost.

### **7.4 Access Security Management**

Access controls to OASIS were only loosely defined in the Phase 1 and 1-A specifications. Providers were largely left to implement whatever measures they felt appropriate to protect their OASIS nodes and data. However, this approach may not be adequate in Phase 2 and beyond. First, customer feedback regarding user unfriendliness includes comments regarding the cumbersome steps to obtain security access on some nodes and to log on to multiple nodes to conduct business. Also, integration of the scheduling function requires access to data that may reside on several different nodes for a single transaction. Finally, the next-hour process will require streamlined access to information.

Therefore, a proposal for evaluation in Phase 2 is the implementation of a single access security procedure for all nodes in the Open Access Market Interface. The JTSIN coalition of providers,

representing about one third of OASIS providers, adopted a single solution for access security. While security has been effective, there have been some problems and customers feel the procedure is somewhat cumbersome. There are several issues to resolve here. Can the industry agree on a single access security solution? Can the right solution be found that adequately meets everyone's needs?

### 7.5 Audit Logs

The audit function provided in OASIS Phases 1 and 1-A simply records each data value change in OASIS, including for example an ATC posting value, a price value, or the receipt of a reservation request. This procedure places the entire burden on the customer to find the information needed for audit purposes. Imagine going to your bank to see if a deposit you made was for the correct amount and having the bank give you a microfiche of all the bank's transactions for the last six months. The current OASIS audit capability is not very useful, and it is not actually being used except in a handful of instances across the entire industry.

What is needed is to evaluate the types of information customers anticipate needing and to design a process to capture and store that information in a form that can be easily retrieved by the customer. The concept of capturing every data value change as an on-line audit for 20 or 90 days is not practical, especially to the customers who may need to find a specific item of interest to them. It is suggested that the amount of data be reduced and provided in formats that allow the customer to designate useful query parameters. Feedback from customers is that audit information is necessary, but the query functions need to be better defined.

As an additional note, there may be a need to capture data for reporting the performance of providers, customers, and the node, for the purpose of reporting open access performance indices, as previously discussed. This report information would be aggregated and reported periodically to a management organization (see Section 8).

### 7.6 Systematic Process for OASIS Project Management

The How WG proposes to adopt a systematic approach to future OASIS design and development. The principal components of this ongoing process include:

Step 1	User focus groups identify functional needs and system requirements.
Step 2	CPWG outlines business processes to support new or modified functions.
Step 3	Design team drafts functional specifications and reviews with the user focus groups and CPWG.
Step 4	Design team drafts technical specs and reviews with user focus groups and CPWG.
Step 5	Functional and technical specifications and implementation schedule are filed with FERC for approval.
Step 6	OASIS is upgraded in a coordinated migration process.
Step 7	Evaluate results and need for further changes (return to step 1).

**Table 7-1 Systematic Steps for OASIS Design and Development**

At the present time, Phase 1-A specifications have been filed for FERC approval. To enable effective implementation of Phase 1-A, two additional steps are necessary:

- The CPWG will file business practice guidelines by March 31, 1998, and
- The How WG will file a transition plan describing the migration from Phase 1 to Phase 1-A by March 31, 1998.

A Phase 2 specification will develop highest priority aspects of the Open Access Market Interface described in Section 5, including the addition of energy transaction scheduling, constraint management (curtailment notification and redispatch options), and next hour reservation and scheduling. This specification is proposed for filing six months after the start of Phase 1-A, or tentatively November 1998. As prerequisites to the development of a Phase 2 specification, the following steps will be completed:

- User focus groups define functional and performance requirements by April 30, 1998,
- CPWG defines Phase 2 business processes by August 31, 1998,
- Technical specifications drafted by October 31, 1998, and
- Review completed; technical specifications and implementation schedule filed by November 30, 1998.

These dates assume FERC acceptance of the Phase 1-A specification in November 1997 and a projected Phase 1-A implementation date in May 1998.

## **Section 8 — Action Plan, Part III: Management Organization**

### **8.1 Open Access Management Organization**

Since the inception of OASIS, the How WG has drafted technical standards for approval and adoption into regulation by FERC. The How WG also manages other activities to facilitate OASIS implementation, such as educational workshops, OASIS testing, and maintenance of a central Internet web site at [www.tsin.com](http://www.tsin.com). The How WG is a voluntary group with open membership. It is sponsored through provision of staff resources for facilitation of How WG activities by both NERC and EPRI and through limited funding of technical consultants by EPRI.

While several customer entities were active in the initial development of the OASIS specifications, participation through the past year has been mostly by technical staff representing transmission providers. Customers are able to participate and are encouraged to do so but have not, in general, shown a strong interest in the technical aspects of OASIS. The strengths of the How WG have been its ability to reach consensus and to produce results in a timely manner, as well as an honest desire to simultaneously meet the needs of customers and providers. Its shortfall has been a lack of support and guidance from others more capable of interpreting regulatory policy, tariff requirements, business practices, and the needs of OASIS end users.

The Commercial Practices Working Group (CPWG) has recently begun to take on the responsibility for these latter functions. The CPWG does establish an essential ingredient of a balanced representation between transmission customers and providers. CPWG has already begun to demonstrate its capability to resolve business practice issues by drafting consensus-based business practice standards to support implementation of FERC policy. The CPWG at this time, like the How WG, is an ad hoc, voluntary, and open organization. Staff resources to facilitate CPWG are provided by NERC.

CPWG faces several critical decisions in the coming months. The CPWG is currently evaluating whether to remain an informal organization or to reform itself into a formally chartered, not-for-profit organization with written articles of association. The business practice issues to be resolved are sufficiently difficult that formal rules of membership, representation, and voting may be appropriate. Several members of CPWG, who represent unregulated customer entities in particular, point to the need for a more formal organization and procedures to overcome issues of trust. There is a need to ensure that the interests of all segments, including end users of electricity, are fairly represented.

The other key issue faced by the CPWG is how to ensure that its business practice guidelines and standards are adopted by the industry. In other words, what authority does CPWG have? To some extent, adoption of CPWG guidelines may occur on a voluntary basis if CPWG can provide clear direction in areas where confusion and inconsistency otherwise exist. Since participation is voluntary and the results based on consensus, the thinking is that participant organizations and others would be willing to adopt the outcomes as being reasonable standards for business practices associated with open access.

However, it is also recognized that this “voluntary compliance” approach may have only limited effect. The CPWG has several options in the production of meaningful standards. It may file with the Commission draft business practice standards that support the implementation of regulatory policy for FERC approval and adoption into regulation. This is similar to the process used by the How WG for the OASIS technical standards. CPWG may file comments with NERC requesting revisions to NERC operating and engineering standards, which have commercial impact. Or the CPWG may act as an independent standards organization (similar to IEEE, ANSI, or ASME) and publish its own standards. These approaches, of course, are not mutually exclusive. On this subject, CCEM commented that:

“Whatever standards the CPWG develops, it should be bore in mind that no standard can be implemented independent of filing with and approval by the FERC.”

The Edison Electric Institute in its comments encourages the further development of CPWG and urges:

“All industry parties not currently actively participating in CPWG to join the institutional framework discussions before any formal rules are adopted in this process. After all, the direct and indirect impacts of the CPWG institutional framework will stretch across the entire industry and all participants in the industry need to shape any future organization.”

The CPWG proposes to investigate options for a formal open access management organization to develop business practice standards and guidelines. The investigation will also consider incorporation of the OASIS technical standards development currently performed by the How WG into such an organization. The investigation will review:

- Formation of an incorporated entity to facilitate consensus-based standards development,
- Participation requirements and funding procedures,
- Articles of association, membership qualifications, segment representation, voting procedures, and due process,
- Scope of work, currently envisioned as business practice and technical standards related to transmission open access,
- Organization, currently envisioned as possibly including three functions: business practices, technical standards, and compliance monitoring/dispute resolution,
- Work product format and delivery process, and
- Basis for authority.

## 8.2 Compliance Monitoring and Complaint Resolution

Compliance was a key issue raised at the FERC staff technical conference on OASIS in July, 1997. This issue has become prominent because of some of the concerns listed previously in Section 2 by customers and providers. Recognizing the need for compliance monitoring after early complaints about the implementation of OASIS, the How WG in March, 1997 requested NERC to establish a program for testing of OASIS nodes and providers. To date, NERC has publicly posted on the OASIS web site ([www.tsin.com](http://www.tsin.com)) the results of seven OASIS tests. Four of the tests were conducted by NERC staff, and three by a value-added information service provider who had been developing automated links to OASIS nodes.

The How WG continues the process of following up with individual providers to investigate any apparent lack of required information or noncompliance with the standards. A number of deficiencies have been resolved with this one-on-one follow-up. Most providers have been cooperative in resolving these issues. Unfortunately, the problems are often so specific that the only way to resolve them is through a time consuming, one-on-one process.

The How WG also established a complaint hotline available by e-mail address on the [www.tsin.com](http://www.tsin.com) web page. Although this service was intended to allow customers to identify cases in which providers were non-compliant or not cooperative, it has not been used for that purpose. The requests for assistance that have been received were more technical, and for the most part of small significance. The lack of use of this capability may be due to customers not being aware (although the service was announced to the TSIN mail exploder and has been posted prominently on the [www.tsin.com](http://www.tsin.com) web page). Or it may be because of an unwillingness to raise such challenges in this type of forum.

Based on the results of OASIS testing to date, the How WG believes that formal testing is not cost effective. Developing and implementing tests are labor intensive and there are currently no provisions for staffing such a function. OASIS is a complex network of systems with a very large number of aspects that could be testable. The number of items that could be tested with available resources would not have a measurable impact on performance.

In lieu of structured testing, the CPWG and the How WG recommend establishment of stronger mechanisms for customer feedback and complaint resolution. Customer satisfaction or dissatisfaction is the ultimate measure of effectiveness. While formal efforts to date to capture customer feedback in an organized process have not been successful, the following steps could reinforce the importance of a customer feedback process:

1. Establish two industry-managed OASIS complaint review panels, one to review complaints regarding technical standards and the other to review complaints regarding business practice. These panels would consist of expert, impartial parties. These panels would review complaints brought to them by both customers and providers regarding OASIS compliance and open access business practices. The review process may include interviewing individuals with specific knowledge of the situation. These panels would work with the parties to reach mutually agreeable resolution or, in the case a party has been found to be non-compliant,

request the offending party to correct the situation. Written procedures of due process would be prepared for the review panels to follow.

2. The Commission would recognize these review panels as legitimate forums for resolution of differences and correction of non-compliant OASIS systems or business practices. The results of each case handled by the review panels would be filed for review by FERC. Any issues, which could not be resolved to the satisfaction of the parties involved, would be forwarded by the review panel(s) to FERC for resolution. The sequence a complainant would use to obtain relief would be: a) first request relief directly from the supposed offending party; b) secondly file a complaint for evaluation by the appropriate complaint review panel; and c) if the review panel results are not satisfactory, appeal the results to FERC. The recognition of these procedures by the Commission and the provision of a regulatory backstop are important to the overall success of this process.
3. The availability of the review process would be widely publicized and prominently displayed on each OASIS node and [www.tsin.com](http://www.tsin.com). A brochure and/or newsletter would be published and distributed to build awareness of the process and to announce results of cases reviewed.
4. The two complaint resolution panels would also monitor the open access performance indices previously described in Section 4 for indications of poor open access performance and could initiate investigations on its own based on these indices.

The CPWG requests feedback from the Commission that a process based on these principals would be acceptable. The approach outlined is believed to be consistent with prior rulings by FERC on dispute resolution procedures. If the concepts are deemed reasonable by the Commission, the CPWG and How WG would develop a more detailed proposal.

## **Appendix A**

### **List of Transmission Providers Offering Service over OASIS**

**List of Transmission Providers on OASIS (by Provider Name)**

1. Allegheny Power	ECAR OASIS
2. American Electric Power	AEP OASIS
3. Arizona Electric Power Cooperative, Inc.	Western OASIS
4. Arizona Public Service Company	APS OASIS
5. Associated Electric Cooperative, Inc.	SPP OASIS
6. Atlantic City Electric Company	PJM OASIS
7. Baltimore Gas and Electric	PJM OASIS
8. Bangor Hydro Electric Company	NEPOOL OASIS
9. Basin Electric Power Cooperative	MAPP / Rocky Mountain OASIS
10. Big Rivers Electric Corporation	ECAR OASIS
11. Bonneville Power Administration	Northwest OASIS
12. Boston Edison Company	NEPOOL OASIS
13. Brazos Electric Power Cooperative	ERCOT OASIS
14. British Columbia Hydro & Power Authority	Northwest OASIS
15. Cambridge Electric Light Company	NEPOOL OASIS
16. Carolina Power & Light Company	VACAR OASIS
17. Centerior Energy Corporation	ECAR OASIS
18. Central and South West Services, Inc.	ERCOT OASIS / SPP OASIS
19. Central Hudson Gas & Electric Corporation	NYPP OASIS
20. Central Illinois Light Company	MAIN OASIS
21. Central Illinois Public Service Company	MAIN OASIS
22. Central Iowa Power Cooperative	MAPP OASIS
23. Central Louisiana Electric Co. Inc.	SPP OASIS
24. Central Maine Power	NEPOOL OASIS
25. Central Vermont Public Service Corp.	NEPOOL OASIS
26. Cinergy Corporation	ECAR OASIS
27. Citizens Utilities Company	NEPOOL OASIS
28. City of Tallahassee, Electric	Florida OASIS Network
29. City Public Service	ERCOT OASIS
30. Cleveland Electric Illuminating Company	ECAR OASIS
31. Colorado Springs Utilities	Rocky Mountain Area OASIS
32. Commonwealth Edison Company	MAIN OASIS
33. Commonwealth Electric Company	NEPOOL OASIS
34. Consolidated Edison Co. of NY	NYPP OASIS
35. Consumers Energy Company	ECAR OASIS
36. Cooperative Power	MAPP OASIS
37. Corn Belt Power Cooperative	MAPP OASIS
38. Dairyland Power Cooperative	MAPP OASIS
39. Dayton Power & Light	ECAR OASIS
40. Delmarva Power & Light Company	PJM OASIS
41. Deseret Generation & Transmission Coop.	PacifiCorp OASIS
42. Detroit Edison Company	ECAR OASIS
43. Duke Power Company	VACAR OASIS

44.	Duquesne Light Company	ECAR OASIS
45.	East Kentucky Power Cooperative	ECAR OASIS
46.	Eastern Utilities Associates	NEPOOL OASIS
47.	El Paso Electric Company	SWOASIS
48.	Empire District Electric Company	SPP OASIS
49.	Entergy	SPP OASIS
50.	Florida Power & Light	Florida OASIS Network
51.	Florida Power Corporation	Florida OASIS Network
52.	Georgia Transmission Corporation	Southern Oasis
53.	GPU Energy	PJM OASIS
54.	Grand River Dam Authority	SPP OASIS
55.	Green Mountain Power Corporation	NEPOOL OASIS
56.	Heartland Consumers Power District	MAPP OASIS
57.	Hoosier Energy Rural Electric Cooperative	ECAR OASIS
58.	Houston Lighting and Power Company	ERCOT OASIS
59.	Hutchinson Utilities Commission	MAPP OASIS
60.	Hydro Quebec	NYPP OASIS
61.	Idaho Power Company	Idaho Power Co. OASIS
62.	IES Utilities	MAPP OASIS
63.	Illinois Power	MAIN OASIS
64.	Interstate Power Company	MAPP OASIS
65.	Jacksonville Electric Authority	Florida OASIS Network
66.	Kansas City Power & Light Company	SPP OASIS
67.	Kentucky Utilities Transmission	ECAR OASIS
68.	Lincoln Electric System	MAPP OASIS
69.	Long Island Lighting Company	NYPP OASIS
70.	Los Angeles Department of Water & Power	LADWP OASIS
71.	Louisville Gas & Electric Company	ECAR OASIS
72.	Lower Colorado River Authority	ERCOT OASIS
73.	Magic Valley Electric Cooperative, Inc.	ERCOT OASIS
74.	Maine Electric Power Company	NEPOOL OASIS
75.	Maine Public Service Company	NEPOOL OASIS
76.	Manitoba Hydro Electric Board	MAPP OASIS
77.	Michigan Electric Coordinated System	ECAR OASIS
78.	MidAmerican Energy Company	MAPP OASIS
79.	Mid-Continent Area Power Pool	MAPP OASIS
80.	Midwest Energy, Inc.	SPP OASIS
81.	Minnesota Power Company	MAPP OASIS
82.	Minnkota Power Cooperative	MAPP OASIS
83.	Missouri Basin Municipal Power	MAPP OASIS
84.	Missouri Public Service	SPP OASIS
85.	Montana Power Company	Northwest OASIS
86.	Montana-Dakota Utilities Company	MAPP OASIS
87.	Municipal Electric Authority of Georgia	SOUTHERN OASIS
88.	Municipal Energy Agency of Nebraska	MAPP OASIS

89.	Muscatine Power and Water	MAPP OASIS
90.	Nebraska Public Power District	MAPP OASIS
91.	Nevada Power Company	SWOASIS
92.	New England Power Company	NEPOOL OASIS
93.	New England Power Pool	NEPOOL OASIS
94.	New York Power Authority	NYPP OASIS
95.	New York State Electric & Gas Corp.	NYPP OASIS
96.	Niagara Mohawk Power Corp.	NYPP OASIS
97.	Northeast Utilities System Companies	NEPOOL OASIS
98.	Northern Indiana Public Service Company	ECAR OASIS
99.	Northern States Power Company	MAPP OASIS
100.	Northwestern Public Service Company	MAPP OASIS
101.	Oglethorpe Power Corporation	SOUTHERN OASIS
102.	Ohio Edison Company	ECAR OASIS
103.	Ohio Valley Electric Corporation	ECAR OASIS
104.	Oklahoma Gas & Electric Co.	SPP OASIS
105.	Omaha Public Power District	MAPP OASIS
106.	Ontario Hydro	ECAR OASIS
107.	Orange and Rockland Utilities	NYPP OASIS
108.	Otter Tail Power Company	MAPP OASIS
109.	Pacific Gas and Electric Company	ENX OASIS
110.	PacifiCorp	PacifiCorp OASIS
111.	PECO Energy Company	PJM OASIS
112.	PJM	PJM OASIS
113.	Platte River Power Authority	Rocky Mountain Area OASIS
114.	Portland General Electric	Northwest OASIS
115.	Potomac Electric Power Company	PJM OASIS
116.	Power Agency of California	SWOASIS
117.	PP&L Transmission	PJM OASIS
118.	Public Service Company of Colorado	Rocky Mountain Area OASIS
119.	Public Service Company of New Mexico	SWOASIS
120.	Public Service Electric and Gas Company	PJM OASIS
121.	Public Utilities Board	ERCOT OASIS
122.	Puget Sound Energy	Puget OASIS
123.	Rochester Gas and Electric	NYPP OASIS
124.	Rochester Public Utilities	MAPP OASIS
125.	Sacramento Municipal Utility District	SWOASIS
126.	Salt River Project	SWOASIS
127.	San Diego Gas and Electric Co.	SWOASIS
128.	Santee Cooper	VACAR OASIS
129.	SaskPower	MAPP OASIS
130.	Sierra Pacific Power Company	SWOASIS
131.	South Carolina Electric & Gas Company	VACAR OASIS
132.	South Texas Electric Cooperative Inc.	ERCOT OASIS
133.	Southeastern Power Administration	VACAR OASIS

134. Southern California Edison Company	SWOASIS
135. Southern Company	SOUTHERN OASIS
136. Southern Indiana Gas & Electric Company	ECAR OASIS
137. Southern Minnesota Municipal Power Agency	MAPP OASIS
138. Southwestern Power Administration	SPP OASIS
139. Southwestern Public Service Company	SPP OASIS
140. St. Joseph Light & Power Company	SPP OASIS
141. Sunflower Electric Power Corporation	SPP OASIS
142. Tampa Electric Company	Florida OASIS Network
143. Tennessee Valley Authority	MAIN OASIS
144. Texas-New Mexico Power Company	ERCOT OASIS
145. Toledo Edison Company	ECAR OASIS
146. Tri-State Generation & Transmission Assn.	Rocky Mountain Area OASIS
147. TU Electric	ERCOT OASIS
148. Tucson Electric Power Company	Western OASIS
149. Union Electric Company	MAIN OASIS
150. United Illuminating	NEPOOL OASIS
151. United Power Association	MAPP OASIS
152. Upper Peninsula Power Company	MAIN OASIS
153. Vermont Electric Power Company, Inc.	NEPOOL OASIS
154. Virginia Power	VACAR
155. Washington Water Power Company	Northwest OASIS
156. Western Area Power Administration	MAPP OASIS
157. Western Area Power Administration	Western OASIS
158. Western Area Power Administration	Rocky Mountain Area OASIS
159. Western Area Power Administration	Western OASIS
160. Western Farmers Electric Cooperative	SPP OASIS
161. Western Resources	SPP OASIS
162. WestPlains Energy - Colorado	Rocky Mountain Area OASIS
163. WestPlains Energy - Kansas	SPP OASIS
164. Wisconsin Electric Power	MAIN OASIS
165. Wisconsin Public Service Corp.	MAIN OASIS
166. WPL Transmission Operations and Services	MAIN OASIS
167. Yadkin, Inc.	VACAR OASIS

**List of Transmission Providers on OASIS (by Node)**

American Electric Power	AEP OASIS
Arizona Public Service Company	APS OASIS
Allegheny Power	ECAR OASIS
Big Rivers Electric Corporation	ECAR OASIS
Centerior Energy Corporation	ECAR OASIS
Cinergy Corporation	ECAR OASIS
Cleveland Electric Illuminating Company	ECAR OASIS
Consumers Energy Company	ECAR OASIS
Dayton Power & Light	ECAR OASIS
Detroit Edison Company	ECAR OASIS
Duquesne Light Company	ECAR OASIS
East Kentucky Power Cooperative	ECAR OASIS
Hoosier Energy Rural Electric Cooperative	ECAR OASIS
Kentucky Utilities Transmission	ECAR OASIS
Louisville Gas & Electric Company	ECAR OASIS
Michigan Electric Coordinated System	ECAR OASIS
Northern Indiana Public Service Company	ECAR OASIS
Ohio Edison Company	ECAR OASIS
Ohio Valley Electric Corporation	ECAR OASIS
Ontario Hydro	ECAR OASIS
Southern Indiana Gas & Electric Company	ECAR OASIS
Toledo Edison Company	ECAR OASIS
Pacific Gas and Electric Company	ENX OASIS
Brazos Electric Power Cooperative	ERCOT OASIS
Central and South West Services, Inc.	ERCOT OASIS
City Public Service	ERCOT OASIS
Houston Lighting and Power Company	ERCOT OASIS
Lower Colorado River Authority	ERCOT OASIS
Magic Valley Electric Cooperative, Inc.	ERCOT OASIS
Public Utilities Board	ERCOT OASIS
South Texas Electric Cooperative Inc.	ERCOT OASIS
Texas-New Mexico Power Company	ERCOT OASIS
TU Electric	ERCOT OASIS
City of Tallahassee, Electric	Florida OASIS Network
Florida Power & Light	Florida OASIS Network
Florida Power Corporation	Florida OASIS Network
Jacksonville Electric Authority	Florida OASIS Network
Tampa Electric Company	Florida OASIS Network
Idaho Power Company	Idaho Power Company OASIS
Los Angeles Department of Water & Power	LADWP OASIS
Central Illinois Light Company	MAIN OASIS
Central Illinois Public Service Company	MAIN OASIS
Commonwealth Edison Company	MAIN OASIS

Illinois Power	MAIN OASIS
Tennessee Valley Authority	MAIN OASIS
Union Electric Company	MAIN OASIS
Upper Peninsula Power Company	MAIN OASIS
Wisconsin Electric Power	MAIN OASIS
Wisconsin Public Service Corp.	MAIN OASIS
WPL Transmission Operations and Services	MAIN OASIS
Basin Electric Power Cooperative	MAPP OASIS
Central Iowa Power Cooperative	MAPP OASIS
Cooperative Power	MAPP OASIS
Corn Belt Power Cooperative	MAPP OASIS
Dairyland Power Cooperative	MAPP OASIS
Heartland Consumers Power District	MAPP OASIS
Hutchinson Utilities Commission	MAPP OASIS
IES Utilities	MAPP OASIS
Interstate Power Company	MAPP OASIS
Lincoln Electric System	MAPP OASIS
Manitoba Hydro Electric Board	MAPP OASIS
MidAmerican Energy Company	MAPP OASIS
Mid-Continent Area Power Pool	MAPP OASIS
Minnesota Power Company	MAPP OASIS
Minnkota Power Cooperative	MAPP OASIS
Missouri Basin Municipal Power	MAPP OASIS
Montana-Dakota Utilities Company	MAPP OASIS
Municipal Energy Agency of Nebraska	MAPP OASIS
Muscatine Power and Water	MAPP OASIS
Nebraska Public Power District	MAPP OASIS
Northern States Power Company	MAPP OASIS
Northwestern Public Service Company	MAPP OASIS
Omaha Public Power District	MAPP OASIS
Otter Tail Power Company	MAPP OASIS
Rochester Public Utilities	MAPP OASIS
SaskPower	MAPP OASIS
Southern Minnesota Municipal Power Agency	MAPP OASIS
United Power Association	MAPP OASIS
Western Area Power Administration	MAPP OASIS
Bangor Hydro Electric Company	NEPOOL OASIS
Boston Edison Company	NEPOOL OASIS
Cambridge Electric Light Company	NEPOOL OASIS
Central Maine Power	NEPOOL OASIS
Central Vermont Public Service Corp.	NEPOOL OASIS
Citizens Utilities Company	NEPOOL OASIS
Commonwealth Electric Company	NEPOOL OASIS
Eastern Utilities Associates	NEPOOL OASIS
Green Mountain Power Corporation	NEPOOL OASIS

Maine Electric Power Company	NEPOOL OASIS
Maine Public Service Company	NEPOOL OASIS
New England Power Company	NEPOOL OASIS
New England Power Pool	NEPOOL OASIS
Northeast Utilities System Companies	NEPOOL OASIS
United Illuminating	NEPOOL OASIS
Vermont Electric Power Company, Inc.	NEPOOL OASIS
Bonneville Power Administration	Northwest OASIS
British Columbia Hydro & Power Authority	Northwest OASIS
Montana Power Company	Northwest OASIS
Portland General Electric	Northwest OASIS
Washington Water Power Company	Northwest OASIS
Central Hudson Gas & Electric Corporation	NYPP OASIS
Consolidated Edison Co. of NY	NYPP OASIS
Hydro Quebec	NYPP OASIS
Long Island Lighting Company	NYPP OASIS
New York Power Authority	NYPP OASIS
New York State Electric & Gas Corp.	NYPP OASIS
Niagara Mohawk Power Corp.	NYPP OASIS
Orange and Rockland Utilities	NYPP OASIS
Rochester Gas and Electric	NYPP OASIS
Deseret Generation & Transmission Coop.	PacifiCorp OASIS
PacifiCorp	PacifiCorp OASIS
Atlantic City Electric Company	PJM OASIS
Baltimore Gas and Electric	PJM OASIS
Delmarva Power & Light Company	PJM OASIS
GPU Energy	PJM OASIS
PECO Energy Company	PJM OASIS
PJM	PJM OASIS
Potomac Electric Power Company	PJM OASIS
PP&L Transmission	PJM OASIS
Public Service Electric and Gas Company	PJM OASIS
Puget Sound Energy	Puget OASIS
Basin Electric Power Cooperative	Rocky Mountain Area OASIS
Colorado Springs Utilities	Rocky Mountain Area OASIS
Platte River Power Authority	Rocky Mountain Area OASIS
Public Service Company of Colorado	Rocky Mountain Area OASIS
Tri-State Generation & Transmission Assn.	Rocky Mountain Area OASIS
Western Area Power Administration	Rocky Mountain Area OASIS
WestPlains Energy - Colorado	Rocky Mountain Area OASIS
Georgia Transmission Corporation	SOUTHERN OASIS
Municipal Electric Authority of Georgia	SOUTHERN OASIS
Oglethorpe Power Corporation	SOUTHERN OASIS
Southern Company	SOUTHERN OASIS
Associated Electric Cooperative, Inc.	SPP OASIS

Central and South West Services, Inc.	SPP OASIS
Central Louisiana Electric Co. Inc.	SPP OASIS
Empire District Electric Company	SPP OASIS
Entergy	SPP OASIS
Grand River Dam Authority	SPP OASIS
Kansas City Power & Light Company	SPP OASIS
Midwest Energy, Inc.	SPP OASIS
Missouri Public Service	SPP OASIS
Oklahoma Gas & Electric Co.	SPP OASIS
Southwestern Power Administration	SPP OASIS
Southwestern Public Service Company	SPP OASIS
St. Joseph Light & Power Company	SPP OASIS
Sunflower Electric Power Corporation	SPP OASIS
Western Farmers Electric Cooperative	SPP OASIS
Western Resources	SPP OASIS
WestPlains Energy - Kansas	SPP OASIS
El Paso Electric Company	SWOASIS
Nevada Power Company	SWOASIS
Power Agency of California	SWOASIS
Public Service Company of New Mexico	SWOASIS
Sacramento Municipal Utility District	SWOASIS
Salt River Project	SWOASIS
San Diego Gas and Electric Co.	SWOASIS
Sierra Pacific Power Company	SWOASIS
Southern California Edison Company	SWOASIS
Carolina Power & Light Company	VACAR OASIS
Duke Power Company	VACAR OASIS
Santee Cooper	VACAR OASIS
South Carolina Electric & Gas Company	VACAR OASIS
Southeastern Power Administration	VACAR OASIS
Virginia Power	VACAR OASIS
Yadkin, Inc.	VACAR OASIS
Arizona Electric Power Cooperative, Inc.	Western OASIS
Tucson Electric Power Company	Western OASIS
Western Area Power Administration	Western OASIS
Western Area Power Administration	Western OASIS

## **Appendix B**

# **Rosters of the Commercial Practices Working Group and the OASIS “How” Working Group**

## Commercial Practices Working Group Roster

### Members

Dottie Anderson, Chair  
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ERCOT

Paul F. Barber  
Vice President, Transmission and Engineering  
Citizens Power L.L.C.

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Manager, Power Control Section  
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Nicholas A. Brown  
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Timothy R. Bush  
Manager, Pool Operations  
New York Power Pool

Paul M. Cafone  
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Edison Electric Institute

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Steve Garwood  
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Central Maine Power Company

Michael Gildea  
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Charlie Graham  
Clarkson System Control Centre  
Ontario Hydro

Ron Greenhalgh  
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Joseph R. Hartsoe  
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J. Jolly Hayden  
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Electric Clearinghouse, Inc.

Karla Haislip  
Wholesale Power  
Carolina Power & Light

William J. Head  
Manager-Transmission Operations  
Mid-Continent Area Power Pool  
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Richard Ingersoll  
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Joseph J. Krupar  
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PJM Interconnection, LLC

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Director Power Supply  
Florida Power & Light Company

Scott P. Moore  
Director, System Operations  
Central and South West Corporation

Steven Naumann  
Director of T&D Regulatory Services  
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Barbara M. Rehman  
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Bonneville Power Administration

Carroll A. Scheer  
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Andrew M. Serri  
Power Marketing & Trading  
American Electric Power

Julie Simon  
Director of Policy  
Electric Power Supply Association

John Simonelli  
Principal Engineer, Transmission Planning  
ISO New England, Inc.

Bob Staton  
Northern States Power

Dean Ulch  
Principal Engineer  
Southern Company Services, Inc.

Lydia Vollmer  
PECO Energy-Power Team

Dieter Waffel  
Senior Manager, Power Business  
Tennessee Valley Authority

G. L. Whiting, Jr.  
Electric System Operations  
Tennessee Valley Authority

Richard A. Wodyka  
Vice President, System Coordination Division  
PJM Interconnection, L.L.C.

Walter L. Yeager  
Manager, Marketing and Trading Operations  
Cinergy

#### **Observers**

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Chief, Market Oversight and Information  
Branch  
Federal Energy Regulatory Commission

Douglas E. Matyas  
Regulatory Electric Utility Specialist  
Federal Energy Regulatory Commission

Marvin Rosenberg  
Deputy Director, Data & Financial Analysis  
Federal Energy Regulatory Commission

Peter Hirsch  
Electric Power Research Institute

#### **Facilitators**

Gerry W. Cauley, Secretary  
Project Coordinator  
North American Electric Reliability Council

Robert W. Cummings  
Director-Transmission Services  
North American Electric Reliability Council

## OASIS How Working Group Roster

North American Electric Reliability Council	Cauley, G. (Facilitator)
Electric Power Research Institute	Hirsch, P. (Facilitator)
ABB Systems Control	Perrino, D.
American Electric Power	Sorenson, P.
Bonneville Power Administration	Kochheiser, T.
Bonneville Power Administration	Rehman, B.
Carolina Power & Light Co.	Lewis, W.
Carolina Power & Light Co.	Su, J.
Cegelec ESCA	Buttress, J.
Central Maine Power Co.	Garwood, S.
Cinergy	Barth, R.
Commonwealth Edison	Friend, D.
Consultant	Trykoski, M.
Edison Electric Institute	Gildea, M.
Electric Power Research Inst.	Hirsch, P.
Enron/Portland General Electric	Tolbert, L.
Entergy	Saini, N.
Entergy	Thornton, A.
Florida Power & Light	Falcon, R.
Florida Power Corporation	Witthuhn, L.
GPS	Garrett, S.
ISO New England Inc.	Lawrence, W.
ISO New England, Inc.	Simonelli, J.
MAIN, Inc.	Hasenwinkel, D.
MAPP	Sarkinen, K.
National Systems & Research	Van Sant, B.
NERC	Cauley, G.
New York Power Pool	Gribbin, L.
Northern States Power	Lund, E.
Pacific Gas & Electric	Yan, W.
PacifiCorp	Bishop, R.
PJM Interconnection LLC	Mix, S.
Public Service Electric & Gas	Cafone, P.
Salt River Project	Singh, J.
Siemens Power Systems Control	Olfert, W.
Southern Company	Sumrall, S.
Southwest Power Pool	Keaton, J.
Tri-State G&T Association, Inc	Medina, M.
Utility Consulting International	Cleveland, F.

## **Appendix C**

### **Letter to the Industry Soliciting Inputs to the Report**



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## NORTH AMERICAN ELECTRIC RELIABILITY COUNCIL

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Princeton Forrestal Village, 116-390 Village Boulevard, Princeton, New Jersey 08540-5731

August 6, 1997

Dear OASIS Users and Providers:

Attached is a proposed outline of an industry report on the future of OASIS. The final report is to be filed with the Federal Energy Regulatory Commission (FERC) by late September 1997. This report will identify key issues to be addressed in setting the future course for OASIS and recommend specific strategies where consensus can be reached. As an interested OASIS user or provider, you are encouraged to provide inputs to this report. Please forward this outline to others in your organization that have an interest in responding. Responses are also encouraged from user and provider advocacy groups and other interested organizations.

Questions directed to the industry are shown in italics. Please answer as many of these questions as you can, particularly those for which your organization has a strong opinion or expertise. Do not feel obligated to answer all of the questions. Please forward your responses and comments no later than September 5, 1997 to:

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The OASIS How WG and the Commercial Practices WG will review comments and assist in the drafting of the report. These two industry groups are the proposed signatories to the report. Other organizations are invited to endorse the final report if they choose. We anticipate FERC may, after receipt of the report, post it for public comment and perhaps conduct a technical conference the subject.

Thank you for your assistance.

Yours truly,

Gerry Cauley  
Facilitator, How Working Group  
Facilitator, Commercial Practices Working Group

cc: OASIS How WG and Commercial Practices WG  
Enclosure

# Industry Report to FERC on the Future of OASIS

## PROPOSED REPORT OUTLINE (Questions to Industry Shown in Italics)

### Introduction

- Purpose of the report
- Consensus process for preparing report from industry
- Conclusions and recommendations

### Current Status and Quality of OASIS

- *How would you assess the usefulness and performance of OASIS to date? In what ways has OASIS succeeded to date? In what ways has it failed? Does OASIS meet the needs of transmission customers? What could be done to improve OASIS?*
- At the July 18, 1997 FERC Technical Conference, OASIS users commented on the transactional burden of the OASIS reservation process (especially for next hour business), the quality of ATC information, and the lack of cooperation by providers. *What are your comments on these subjects? What comments do providers have in response?*
- *Do we need more formal OASIS testing and compliance monitoring? Who should perform these functions (FERC, NERC, an independent OASIS management group, other)? Would you recommend separate monitoring efforts for different aspects of OASIS (i.e., node availability and functionality vs. ATC information)?*

### Phase 1A OASIS Plans

- The OASIS How WG is filing in August 1997 an updated Standards & Communications Protocol document for OASIS Phase 1A, which is anticipated as a FERC ruling in October 1997 and for implementation in May 1998. One goal of Phase 1A is to respond to FERC requirements in Order 889-A, including unmasking of price and identities, on-line price negotiation, disclosure of discounts given, personnel transfers, exercise of discretion, affiliate flags, and standardization of templates across all providers. Phase 1A also offers several industry initiated improvements, including standard product attributes/names, linking ancillary and transmission service purchases, dynamic notification of reservation status change, additional reservation statuses (WITHDRAWN, DISPLACED, and ANNULLED), capability to offer sliding windows of service, capacity profiles, improved error handling, alternative (secondary) POR/POD, improved handling of time zones and the transition between standard/ daylight time, and consolidation to a single “offering” template. *Do you have any comments on the proposed changes or implementation schedule for OASIS Phase 1A?*

### Related Emerging Information Systems

- NERC Transaction Information System (TIS), Interchange Distribution Calculator (IDC), and other related security processes and tools.
- ISO/Exchange and other Regional information systems. *Please describe ISO/Exchange and other Regional information systems/applications that may complement or supplant the need for OASIS in the future, or are otherwise related to OASIS.*

### Strategic Planning for OASIS

- Why we need a long range strategy for OASIS.
- FERC and several state commissions (notably California and Texas) have approved Regional tariffs, market structures, and business processes that are not uniform across the U.S./North America. The best long-term strategy for OASIS cannot be determined until it is clear whether regulators will promote standardization of transmission tariffs, reservation processes, and electric market operations or allow market diversity. Under some emerging Regional tariffs (i.e., NYPP, ISO-NE, PJM, WEPEX, ERCOT), transmission reservations are not required in the current sense provided on OASIS. At this point, Regional markets appear to be becoming increasingly diverse rather than similar — and much of the focus of these market development efforts is on internal needs, not standardizing with other Regions. At best, many of these Regional entities will standardize as necessary on the boundaries with other Regions. *How will emerging and future electricity market structure(s) influence the need for and functional requirements of OASIS? Is a single electricity market with standard information systems (such as OASIS) reasonable across the U.S./North America or across Interconnections, or will we see distinctly different market structures and information system needs across local Regions and states/provinces? What concrete examples do we have today that emerging Regional market models do not require OASIS or require that OASIS be used differently? If we want seamless, standardized electricity markets, OASIS can be an effective tool to promote standardization of business process. If not, OASIS may not be necessary in the long term.*
- *What are the information system needs for future electricity markets? What are the information system goals of the principal players: federal and state regulators, transmission customers, transmission providers, end consumers?*
- *What impact will retail access have on OASIS requirements, if any? How much will retail access be driven by diverse interests at the state and local levels vs. federal regulation? To what extent will the resulting market structures place uniform or dissimilar requirements on OASIS? Is a national information system, such as OASIS, even considered a factor by state regulators who are forming retail access policy?*
- There is a range of possible scenarios for the future development of OASIS:
  - **Scenario 1 — OASIS becomes the principal information system for North American electricity markets:** Aggressive expansion of OASIS functionality to include energy transaction scheduling; market auction, settlement, futures, and other market information; status of transmission network; and retail access to wholesale market and transmission.
  - **Scenario 2 — OASIS becomes the principal information system for energy transportation:** Expansion of OASIS to include energy transaction scheduling and transmission status information; integrate with other systems — i.e., OASIS is a system for transmission information and reservations, energy scheduling, and ancillary services.
  - **Scenario 3 — OASIS retains current scope and is integrated with NERC transaction information system and other NERC/Regional systems:** Maintain focus of OASIS on current functionality related to transmission reservations and ancillary services; provide interfaces to NERC TIS and other systems.

- **Scenario 4 — Maintain status quo:** OASIS is a separate system for transmission service reservations and ancillary services; limited or no integration with other systems.
- *What preferences do you have regarding the four scenarios outlined above? Can you offer another scenario that you consider better than these? For your preferred scenario on the future of OASIS (one of the four above or your alternative), please provide any details you have in mind for functionality, infrastructure, and interfaces.*
- *What criteria (factors) do you consider most important in determining the best strategy for long-term development of OASIS?*

#### **OASIS Functions: Options for the Future**

- The following are possible functions for OASIS in the future. *Please indicate whether you believe OASIS should support these functions. Provide any details describing your vision of each function you believe should be on OASIS. Offer any additional functions you think would be appropriate for OASIS in the future.*
  - Energy transaction scheduling.
  - Streamlined process combining “next hour” reservation and energy scheduling.
  - Dynamic updates of ATC, i.e. “real-time” impact calculator is used in lieu of calculating and posting ATC values before specific uses are known. Adopt a flow impact calculator similar to NERC IDC.
  - Flow-based reservation and scheduling process.
  - Robust secondary market for transmission service.
  - Robust market for ancillary services.
  - Posting of information on transmission status.
  - Market auction information.
  - Market settlement information.
  - Transmission and ancillary service billing.
  - Market futures.
  - Audit logs *How important is an on-line audit capability and what features are important to customers?*
- *Can we find an appropriate demarcation between applications that belong in OASIS, NERC’s security process infrastructure, and the infrastructures of individual Regions and ISOs?*

#### **OASIS Business Process Issues**

- The Commercial Practices WG is working to standardize OASIS business practices in the following areas. *What other business practice issues do you feel CPWG should be working on related to OASIS?*
  - Standard product names and attributes
  - On-line negotiation process
  - Discounting practices
  - Linking ancillary services to transmission
  - Customer confirmation procedures/time limits
  - Use of sliding windows of service, including rules for bumping

- Commercial feasibility of flow-based reservations and other alternatives
- In contrast to the gas industry, which sees relatively stable prices within a day, electricity markets see very fluid prices within a day or even an hour. This provides an opportunity for electricity markets to create efficiencies in a near real-time basis. *How do we design a reservation and scheduling process that allows the market to reach its full potential for next-hour and same-day business? Now that we have broken reservation and scheduling processes into lots of little steps, how do we put it back together to make the process efficient and less resource intensive?*
- *Is calculation and posting of ATC a useful exercise or an unnecessary burden to the industry? Is there an alternate to the use of ATCs which will address the customer's need to know how much transmission is available and the associated risks and prices, and at the same time provide useful information on system security to the provider? Can we move toward a dynamic model that calculates the flow impact of a schedule or reservation when it is proposed? Can we make flow impact tools and data publicly available for all users to assess their impact on the transmission network?*
- *How important is it for the industry to standardize on Path names and a consistent model for defining Paths in order to allow customers to more logically move energy across multiple systems?*
- *What other OASIS-related information and processes should be standardized?*
- *To what extent do transmission customers really want and need robust markets for ancillary services vs. consider them a necessary step in moving energy? How can we simplify the ancillary services procurement process?*
- *Should special consideration for native load and grandfathered transmission contracts be phased out and all transmission uses be handled over OASIS?*

### **OASIS Infrastructure**

- *To what extent should we build on the current OASIS infrastructure and functionality vs. start over with a new system/approach?*
- *Should OASIS continue to use as its principal communications medium the public Internet or migrate toward a dedicated Intranet? Why? Is it appropriate to use a dedicated Intranet backbone with access available to low end users through the public Internet?*
- *Should we continue to use Internet standards and tools? How quickly should we migrate to more advanced Internet tools and methods vs. continue the present “lowest common denominator” approach?*
- *There are presently 23 OASIS nodes provided by eight different suppliers. Should OASIS evolve toward a single centralized system or remain a decentralized system supported by individual Regions and providers? Should the industry migrate toward a “seamless” OASIS information system (i.e., one solution for all) or remain “seamed” (i.e., multiple solutions that are integrated by well-defined interfaces)? To what extent can we improve usability with “hot links” and other tools to ease OASIS navigation?*
- *To what extent should the industry standardize and develop automated back-end processes for the provider? To what extent should the industry standardize and develop user-ready OASIS customer applications vs. letting customers and the market develop their own applications?*

- Today, only a few OASIS users take advantage of automated, computer-to-computer query processes — most use the web browser interface. *Should OASIS continue to support automated query processes in the long term? Should these query processes be identical on all nodes or should innovation be fostered on the part of individual provider/nodes as long as minimum standards are met?*
- The OASIS How WG and FERC have chosen not to create standards for the OASIS graphical user interface (GUI), yet most users access OASIS through a web browser GUI. *Should the industry begin to develop standards for OASIS GUI processes and displays?*
- *What additional requirements for OASIS performance and security are necessary?*

### **OASIS Project Management Issues**

- *To what extent should the electric industry utilize developments in other industries regarding commerce and security on the Internet? What specific technical developments in other industries should we take advantage of?*
- *Should we develop OASIS and energy scheduling systems separately and then integrate them or develop them as one system? What other systems should be developed jointly with or integrated with OASIS? How should these projects be managed?*
- *What is the appropriate pace of OASIS development? How would you define and schedule major milestones for the future development of OASIS?*
- *What are the major project risks in the future development of OASIS and how do we mitigate those risks?*
- *What issues must be addressed to effectively manage changes on OASIS? Should we require all future implementations of OASIS be backward compatible to previous versions or should we mandate a cut-over date to the new version? Is a transition period in which both the old and new systems supported appropriate and cost effective?*
- *How are OASIS development, management, and standards setting to be funded in the future? How much are we willing to spend on OASIS? What incentives are there for doing a good job? What incentives are there for investing resources in OASIS?*
- *What suggestions do you have for OASIS user training, support, documentation, etc?*

### **OASIS Management Process**

- *Should the CPWG draft business practice standards for the industry? What alternatives do you suggest?*
- *Should the OASIS How WG continue to draft technical standards?*
- *Should a formal OASIS Management Organization be established? What procedures are appropriate for membership and governance? How would this organization be funded?*
- *Should an OASIS compliance monitoring organization/function be established? By whom? Using what procedures? What requirements would you propose for testing of OASIS? What testing methods would you propose which would be both reliable yet non-intrusive to the on-line database?*
- *What mechanisms should we use to ensure customers can provide effective feedback on OASIS usability, performance, and quality?*

## **Appendix D**

### **List of Respondents to the Questionnaire**

## List of Survey Respondents Providing Written Inputs to this Report

Special thanks are offered to the persons below who submitted written comments for consideration in the preparation of this report. Their provision of written inputs in no way implies an endorsement of the final report neither by these individuals nor by their organizations.

### **AES Power**

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### **Allegheny Power**

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### **American Electric Power**

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### **American Public Power Association**

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### **Bonneville Power Administration**

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### **Carolina Power & Light Company**

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Manager - ECC Engineering and Database

### **Centerior Energy**

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Wholesale Power Marketing  
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### **Central Maine Power Company**

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### **Coalition for a Competitive Electric Market**

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### **Commonwealth Edison**

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### **Consumers Energy**

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### **Electric Power Supply Association**

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### **Entergy**

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### **ISO - New England**

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### **LG&E Energy Marketing**

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**Public Service Company of New Mexico**

Thomas V. Hamm

System Operations Superintendent

**Rocky Mountain Area OASIS**

Gerald M. Stellern

Chair, Operating Committee

**Salt River Project**

Jagit Singh

Senior Principal Engineer

**Southern Company Services**

Steven L. Sumrall

**Tenaska**

Scott M. Helyer

Transmission and Marketing Services

**Tennessee Valley Authority**

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**TradeWave Corporation**

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**Wisconsin Public Service Corporation**

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