

Making It Work

Pieces of the Electrical Puzzle



No one can deny the deregulation of the electric industry is now in full bloom. While the outcome is unknown, the industry is already fundamentally different than it was prior to the 1992 Federal Energy Policy Act.

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From the initial open access directives of Federal Energy Regulatory Commission (FERC) aimed at early mergers, to last year's more comprehensive Mega-NOPR, experience has confirmed the wisdom of the saying, "you can get much more with a kind word and a gun than with a kind word alone." Concepts foreign to utility managers just a few months ago, such as the Independent System Operator, are now considered a given. Even a move as radical as retail wheeling has gone from "not in my lifetime" to "how fast should we do it?"

While consensus is hard to find, some basic, industry-wide agreement seems to be forming as follows:

- There will be a more competitive regional energy market.
- All players will have open, impartial access to the transmission network.
- The ownership of transmission will not provide any intrinsic benefit to the owner's energy trading.
- There will be some separation between the control of the transmission network and the energy transaction dispatch to assure impartiality and open access.
- Retail users, at least large users and most likely aggregated small users will have access to the transmission network and be able to participate in the competitive energy market.
- There will be regional transmission planning or at least regional coordination of transmission planning.
- There will be an alphabet soup of new entities created to coordinate the operation of the network. Among them: RTGs, ISOs, Poolcos and others

either existing or in the process of being formed.

- Security and reliability will continue to be the touchstones for evaluating any system reorganization.
- There will be a (continued) transition period to allow industry laggards to catch up with industry leaders before they lose significant amounts of regulatory protection.
- There will be some form of stranded cost recovery.

How will the pieces of the puzzle fit with each other?"

Of prime concern to all of us is the need to make the electrical supply system work reliably and economically. Even before announcing the Primergy merger of Wisconsin Electric Power Co. and Northern States Power Co., Wisconsin Electric issued a position paper in November 1994 proposing its views on the final outcome of industry changes.

It envisioned the formation of transmission and distribution entities that were to remain regulated. It also included unregulated Retailcos that provide enhanced energy services to the ultimate users. And finally a Poolco, an independent regional entity that would both operate the transmission network and managed the energy market. The Poolco borrowed heavily from the concepts of Professor William Hogan, with locational prices serving to combine the allocation of transmission rights and energy trading.

But no such neat, coherent view of the industry is likely to carry much weight in a melee involving vast

political and commercial interests, federal, state and provincial regulators, utilities, IOUs and public power entities, IPPs, marketers and brokers.

Indeed, it is much easier to carry out the rational privatization of a public system than reorganize the highly participative North American electric energy behemoth.

By stops and starts, finding light at the end of the tunnel

At the end of a transition period, it is in everyone's interest to have the surviving rules, regulations and commercial and reliability arrangements fit into the jigsaw puzzle supporting a highly reliable, competitive electric energy industry. We believe some of the proposals (including our own), if properly structured, are capable of achieving this feat.

A few basic concepts: Let each part do its job.

There must be a rational and economic coordination of institutions with overlapping responsibilities. The larger regional institutions should not do what the smaller, local institutions can do better, and no institution should do what the market can handle best.

Control Areas

At the core of the North American Electric Reliability Council's (NERC's) reliability approach is the control area — an organization based on an Energy Management System (including System Control and Data Acquisition SCADA hardware, software and extensive telecommunications) that monitors a portion of the transmission network, usually owned by the control area operator.

Grouped into Regional Reliability Councils, each control area bears distinct responsibility for matching generation resources to load on a real time basis (generation dispatch), coordinating the use of the transmission network and monitoring its reliability as well as the conditions of individual pieces of equipment (e.g. transformer oil temperatures). The control areas are responsible for assuring there are adequate reserves to meet reliability criteria and for the coordination of the maintenance of equipment and right of ways. In addition, transmission operators are responsible for procedures intended to protect public and worker safety. All

of these essential operating functions exist now and will in the future.

Although there may be efficiencies gained by combining some of the smaller control areas, the basic control area functions have a local character and reflect a real need to address local issues in a local fashion. In summary, these control area functions benefit significantly from being performed locally. Furthermore, most of these functions are irrelevant to the implementation of impartial, comparable open access and should remain with the control areas.

The Regional Reliability Councils (RRCs)

Initially organized by the traditional utilities, most RRCs have already opened to broader membership. MAIN (Mid America Interconnected Network) is open to all entities which can seek a FERC 211 order; MAPP (Mid-Continent Area Power Pool) is currently voting on a restructuring proposal which will accomplish this.

The operating and engineering activities of the RRCs help coordinate the functioning of the network. Although each RRC has its own specific characteristics and its organization may differ widely (some, like MAPP, are pools, others, like MAIN are not), all RRCs comply with NERC's policies and principles and follow similar reliability criteria.

Wisconsin Electric and Northern States Power are each committed to participate in their respective RRCs. Our companies have led the effort to open participation in the councils and to form RTGs within the councils. MAIN's RTG efforts are on hold pending the Mega-NOPR order. The reorganization proposal being considered by MAPP includes an RTG under the MAPP umbrella.

Of all the activities performed within the reliability councils, one has special bearing on the impartial application of open access and comparable use of the network: the development of line load relief procedures. Intended as a rapid action means of preventing area-wide cascading failures, these procedures are firmly endorsed by system operators. There may be conflict, however, over their suspected misapplication to provide preferential treatment to some transmission users. We believe involving an Independent Tariff Administrator in applying of load relief procedures will improve their efficacy and allay fear of gaming.

The Independent Tariff Administrator

The Primergy companies are committed, as part of their merger filing, to the formation of an ITA. This is intended to be a regional, independent entity with authority to implement those transmission control functions directly related to impartial, comparable open access for all users of the transmission network.

While the difference between the Primergy concept of an ITA and that of an ISO may seem largely semantics, it isn't. The term "operator" connotes a variety of very specific control room functions such as operation of breakers, checking of equipment temperatures and pressures, and detailed work procedures intended to protect employees working on equipment as well as the public. These functions are irrelevant to the implementation of comparable access for all transmission users. In addition, we are confident that although the ISO may be assigned to dispatch generation as in tight pools, generation dispatch is not a function the ISO must perform to ensure comparability.

The emphasis on tariff administration points out our belief that the functions related to the provision of open transmission access should be embedded in the open access tariffs governing use of the transmission system.

To ensure comparable open access, an independent entity must administer the tariff, not operate breakers.

Functions requiring independent administration are:

- Handle all requests for transmission service
- Determine available transfer capability
- Accept or deny all requests for transmission service
- Monitor the reliability of the network and the control areas' compliance with NERC and reliability council principles, guides and procedures
- Coordinate the actions of the control areas during emergency situations
- Identify and order generation redispatch that can open up transmission capability to meet requests for transmission service. Apply the tariff requirements to distribute the costs involved in redispatch.
- Identify necessary transmission expansion and participate in the production of a coordinated regional transmission plan.
- Post information in a regional EBB/RIN available to all users at the same time.
- Adjust (lower) transmission prices as permitted by the tariffs to promote utilization during low activity periods

In addition, we believe the ITA will be instrumental in abandoning the contract path concept and creating grid-wide tariffs that, in turn, will facilitate the resolution of third-party impacts.

Requirements for an Effective ITA Information

In order to develop predictive models that are reasonably accurate, the ITA needs information and the hardware and software to handle it. This information comes in the form of forecasts of daily and weekly system loads, purchases and sales, and planned outages. The ITA also needs some of the data continuously being gathered by the SCADA systems of the control areas. This includes line flows, voltages, loads and generator outputs — a relatively small portion of the information contained in the EMS databases. Given the dynamic nature of the transmission network, all information must be shared electronically.

Some of this data will have competitive significance (e.g., generator output) and must remain confidential and restricted to the use of the ITA staff. Since the staff is independent, confidentiality should not be a problem.

Governance

Whatever its corporate structure, the ITA must have a balanced governance. Its board of directors or coordinating committee must fairly represent all the transmission users in the area served by the ITA.

How large an area?

We believe the ITA must serve an area large enough to represent an important market from the economic point of view, and to provide significant benefits as a reliability overseer. On the other hand, the area should be small enough to be manageable. The issue is moot due to the ability to interconnect the ITAs for electronic data sharing. Electronic data will support the formation of multi-regional organizations to monitor broader areas and coordinate the operation of the individual ITAs.

Relation to the other ITA organizations

No matter how large the area covered by the ITA, there will always be boundary issues requiring close coordination with contiguous ITA entities. This coordination will be achieved by linking the ITAs electronically so they can share information on a timely basis.

**Relation to the Regional Reliability Councils.
The MAPP and MAIN cases.**

We prefer to form ITAs coincident with the existing reliability councils. However, other corporate structures for the ITA may be more practical in the short term. Not-for-profit corporations, for example, can be formed by any group of contiguous control areas willing to proceed at a faster pace. These can later be integrated electronically with other ITAs as they are formed, whatever their structure.

Nevertheless, the benefits of involving the reliability councils in the activities of the ITA can be significant:

- Using existing telecommunications and EMS infrastructure, as well as capable personnel. In the case of MAIN, all transmission owners are already linked by a telecommunications system to the MAINnet computers. MAPP is developing similar capability. Using existing facilities, personnel and structures will result in significant cost savings and speed up the implementation.
- Linking the ITA closely to the reliability councils, which are the entities intended to establish reliability guidelines and policies, should improve coordination between the needs of the competitive market and those of operational reliability.
- Take advantage of the broad governance already available in the reliability councils to structure the ITA coordinating committee.

We believe one ITA can function in two reliability councils and two ITAs can overlap. All they need is a common data base. As noted, regional ITAs can be linked electronically to each other or to a central monitoring entity to provide greater coordination and broader reliability monitoring. Incidentally, this would merely represent expansion of a need already existing before the onset of open transmission.

Economic Efficiency

The pro-forma tariffs

The pro-forma tariffs for Network and Point to Point service have the possibility of supporting efficient allocation of transfer capability

- First come-first serve allocation of transfer capability does not necessarily support the system of transmission rights advocated by Dr. Hogan; however, the

generation redispatch function will identify the cost of additional transmission service and will provide an opening for a secondary transmission market.

- Given FERC's reliance on the contract path, third party impacts are not addressed in the tariffs, however, this need can be met with grid-wide tariffs sponsored by the ITA.

The ITA - Poolco

There's been much controversy over Poolcos. The fact that spot prices and bilateral contracts can coexist in a Poolco is well established but often questioned. On the other hand, it should be possible for pools to coexist with non-pooled control areas within the supervision of the same ITA, just as tight pools have coexisted with adjacent non-pooled areas for years.

It's possible to take the ITA step without taking or preventing the Poolco option.

Summary

A perfect solution to the formation of an efficient competitive energy market is highly unlikely. However, an incremental, regional approach may get us close enough for all practical purposes.

The jigsaw puzzle can be fit together and made to work. However, this requires coordination between the institutions being created with those that already exist.

The ITA commitment made by the Primergy applicants will assure equitable, comparable open access to all users of the regional transmission network. It offers a coordinated regional approach to transmission planning and to emergency actions. The ITA will also promote development of network-based transmission tariffs and the equitable resolution of third-party impacts in the transmission network.

Finally, the ITA accomplishes these objectives in a way that is compatible with other existing and developing structures.

"All we can hope for is that when your head stops spinning around, your nose is still pointing forward."

— Sir Thomas More
"A Man For All Seasons"