



NATIONAL ENERGY TECHNOLOGY POLICY



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Executive Summary

In a restructured energy market, switching energy suppliers must be simple and inexpensive. Customer information must be available to appropriate parties in a timely, accurate, low-cost and easily usable format. Utilities, suppliers, vendors and consumers must be able to exchange vital information in the lowest-cost, most efficient manner possible. Upgrading computer systems to implement Internet-based information protocols that integrate both uniform business rules and uniform data dictionaries is a policy option that will lower energy costs.

If market participants are forced to divert scarce resources to customize billing, back-office, and customer care facilities, and to develop specialized knowledge of different information systems and business rules in each jurisdiction, it drives energy prices higher nationwide. There are a significant number of rules, procedures, processes and business practices, which, if established fairly, efficiently, and uniformly across the country could bring consumers significant cost savings.

The National Energy Marketers Association recommends that effective immediately the federal government and each state government should: (1) encourage and facilitate market participants to use the Internet to transmit all energy-related information and data to the maximum extent currently practicable, (2) encourage an industry-led working group to develop an energy-specific, Internet-based Standardized Information

Protocol, to be adopted and implemented uniformly across the country at the earliest possible date, and (3) implement tax and regulatory policies that encourage infrastructure investments and lower the cost of migration to new Internet-based technologies which integrate Uniform Business Rules and Standard Information Protocols. At a minimum, existing tax credits should be expanded so that expenses incurred to modernize and upgrade computer and information systems, metering systems, billing systems and customer care facilities would be treated as "qualified energy restructuring investments." NEM also recommends that prudence reviews for these "qualified investments" be expedited by state PUCs.

Energy is a necessity, and energy taxes impose a disproportionately higher burden on those least able to afford them. The imposition of new taxes as a result of restructuring is unnecessary, economically inefficient, regressive and will undermine the very benefits that price competition can offer. As energy markets are restructured, energy price competition can increase the competitiveness of local business, attract new business to the state, increase economic activity and operate in a manner similar to a tax rollback for businesses and consumers alike. NEM urges states to use energy restructuring as an opportunity to reduce and simplify the overall tax burden on energy as well as new energy restructuring investments.

I Introduction

The National Energy Marketers Association (NEM) is a national, non-profit trade association representing both wholesale and retail marketers of energy and energy-related products, services, information and technologies throughout the United States. NEM's membership includes: small regional marketers, large international wholesale and retail energy suppliers, billing and metering firms, Internet energy providers, energy-related software developers, risk managers, energy brokerage firms, and information technology providers. Our membership has both affiliated and unaffiliated companies.

NEM is committed to working with representatives of state and federal governments, large and small consumer groups and utilities to devise fair and effective ways to implement the competitive restructuring of natural gas and electricity markets. NEM and its members appear before state Public Utility Commissions, the Federal Energy Regulatory Commission and legislative bodies throughout the nation. NEM members urge lawmakers and regulators to implement:

- Laws and regulations that open markets for natural gas and electricity;
- Rates, tariffs, taxes and operating procedures that lower the cost of energy;
- Standards of conduct that protect consumers;
- Rules to permit competition on the basis of price and quality of service; and
- Policies that encourage new technologies, including the integration of energy, telecommunications and Internet services.

II Standardized Information Protocols and Uniform Business Practices Will Lower Energy Costs

Virtually every other industry that has deregulated has experienced an average price reduction of approximately forty-percent.¹ Annual impacts on the U.S. economy associated with energy price competition range in the tens of billions of dollars per year. Many states and the federal government have initiated the restructuring of natural gas and electricity markets with the hopes of reducing energy costs and increasing both efficiency and economic growth. Full comparability of transmission services and complete unbundling of traditional utility rates and services is underway and will occur within the foreseeable future. However, the implementation of Uniform Business Practices (UBP) and Standardized Information Protocols (SIPs)² coupled with the use of existing Internet technology holds enormous promise for immediate benefits for all consumers.

NEM has identified a number of low-cost rules, policies, tariff provisions and operating procedures in its National Guidelines³ that can help state and federal governments restructure U.S. energy markets equitably and efficiently. These recommendations include: (1) the proper design and pricing of default service, (2) the implementation of competitively neutral codes of conduct, (3) the proper unbundling of true monopoly functions and related costs from utility rate-bases and (4) the prompt implementation of fair rules with appropriate back-out rates to permit non-monopoly services to be performed by the competitive marketplace.

In addition, there are a significant number of rules, procedures, processes and electronic information protocols, which if established fairly, efficiently and uniformly across the country could bring significant cost savings in a very short period of time. The industry has come together in an unprecedented collaboration on a series of recommendations for Uniform Business Practices (UBP),⁴ the implementation of which can have an immediate and favorable impact on the delivery of energy services. However, the UBP is merely a first step that needs to be implemented nationally as soon as possible. This document outlines additional policy recommendations that will permit competitive suppliers to achieve regional and national economies of scale quickly and efficiently, thereby lowering the costs of energy and related products, services, information and technologies to all consumers in every state across the country.

Technology is the enabler that will allow national economies of scale to be realized quickly. The goals of deregulation are to lower costs, improve the quality of service and provide value-added services to consumers. These goals are attainable if the state and federal governments implement policies that encourage the prompt implementation of uniform, consistent standards, processes, contract terms, and information protocols that allow competitive suppliers to effectively compete in multiple jurisdictions at the lowest cost to consumers. Indeed, the new energy industry has already embraced the power of the Internet to provide consumers a full array of energy products and services as well as a novel array of bundled home automation, risk management, telecommunications, broadband access and Internet-related services. The next step is to standardize the business processes as well as the electronic transfer of vital information by which energy services are delivered.

III NEM's Recommendations for National Standards for the Delivery of Energy Products, Services, Information and Technologies

Over the last five years, it has become clear that the Internet will play an increasingly vital role in the growth of this

industry as well as the U.S. and global economies. The Internet will likely become a significant, perhaps dominant vehicle to aggregate the supply and demand for energy as well as to facilitate the delivery of energy-related products, services and information. It is equally clear that the Internet can lower operating costs, facilitate a wide array of value-added products and services, lower barriers to entry and provide an ideal platform for true price competition.

E-commerce transactions in the U.S. alone are forecasted to grow from \$27 billion dollars in 2000 to \$266 billion dollars by 2004.⁵ As Internet commerce explodes, a restructured energy industry must coalesce around a uniform set of business practices and Standardized Information Protocols to facilitate the delivery of lower cost energy services. The retail energy industry does not have a bricks and mortar base (i.e. an energy store on every corner) that will strand prior investments or impede the speed with which restructuring can occur. However, there are and will be considerable investments necessary in information systems, billing, metering, back-office and customer care networks that must be encouraged and must facilitate the lowest cost delivery of energy services to consumers.

A. The Federal Government Should Implement Uniform E-Commerce Standards

Seamless, low-cost, efficient data and information exchange is the key to lowering the cost of energy and related services as well as enhancing reliability.⁶ The passage of the Electronic Signatures in Global and National Commerce Act⁷ provides that e-contracts are as binding as paper contracts. Congress deliberately pre-empted state governments in the development and implementation of e-standards to facilitate e-commerce. Clearly, the impact and import of global Internet commerce on the U.S. economy and the competitiveness of U.S. businesses is and will continue to be too important to risk the potential incompatibility of 50 different e-standards for e-commerce.

While the federal government clearly has the authority to establish national standards for information exchange over the Internet, states can and should help lead in the development and implementation of both Uniform Business Practices (UBP) and Standardized Information Protocols (SIPs). Indeed, it was state leadership that culminated in the model code entitled, "Uniform Electronic Transactions Act"⁸ that led to enactment of the federal Electronic Signature law in the first place.

Standardized Information Protocols must be implemented nationwide at the earliest possible date. These information protocols must be consistent, low cost, Internet-based, flexible, widely-accepted, ubiquitous and standardized to allow competitive suppliers of all sizes to offer energy and related products, services, information and technologies at the lowest price to consumers.

Standardized Internet-based information protocols will facilitate consumer access to accurate, reliable, real-time energy consumption information thereby permitting consumers and or new technologies to reduce demand during peak times. SIPs permit energy service providers to lower the costs and risks of managing supply and demand, enhancing reliability while lowering the costs of billing and metering, and eliminating unnecessary paperwork generated by written enrollment and billing. SIPs will also lower the cost of developing systems capable of handling transactions across the country, rather than spending resources unnecessarily to develop and implement back office and billing systems for each utility service area throughout the United States.

Both the state and federal governments have important roles to play in leading this industry into the New Energy Economy. In sum, nationwide implementation of consistent, low cost, flexible, widely accepted, and easily accessible and standardized sets of information protocols for use on the Internet will lower energy costs and permit regional and/or national economies of scale to be achieved.

B. States Should Implement Uniform Business Practices (UBP) and Standardized Information Protocols (SIPs)

There are a significant number of rules, procedures, processes and business practices, which, if established fairly, efficiently, and uniformly across the country could bring significant cost savings in a very short period of time. If market participants are forced to divert scarce resources to customize billing, back-office, and customer care facilities, and to develop and maintain non-standardized information protocols or develop specialized knowledge of different business rules in each jurisdiction, it drives energy prices higher nationwide.

To implement Uniform Business Practices, it is critical to also establish energy industry specific "Standardized Information Protocols" (SIPs). To minimize costs, standardized energy information protocols must integrate Internet-based technology at the earliest possible date. It is vital that the energy industry be permitted to rely on both a consistent set of business practices and a consistent set of information standards that will reduce the risk of implementing new technology as markets open from state to state. SIPs will reduce the costs of developing data systems, increase understandability and comparability of data and create and encourage a competitive environment to handle both information and data. In turn, state implementation of UBPs will lower the costs to deliver energy and related products, services and technologies.

The industry has come together in an unprecedented collaboration on a series of recommendations for Uniform Business Practices (UBP),⁹ the implementation of which can have an immediate and favorable impact on the delivery of energy services. NEM urges all states to implement the consensus positions set forth in the finalized sections of the UBP applicable to customer information, enroll-

ment and switching, billing and payment processing and load profiling at the earliest possible date. This body of standardized business processes should also be updated continuously to reflect the latest developments in technology and the competitive marketplace.

The challenge to maximizing the public benefit of implementing Uniform Business Practices is the fact that there are currently different information protocols and processes being used to transfer data. NEM strongly recommends that these protocols and processes be standardized immediately and efficiently migrated to the Internet as soon as possible.

1. EDI (Electronic Data Interchange). One such information exchange protocol called EDI (Electronic Data Interchange) has been in use for approximately 25 years. In 1983, before the widespread use of the Internet, the American National Standards Institute (ANSI) introduced national standards for the formats and data sets to be used for electronic transactions. The introduction of these standards helped achieve efficiencies in data entry, reduced errors, improved error detection and automated business processes for information exchanges between businesses. However, analysis of the usability, flexibility, cost and market adoption of this technology has been mixed.¹⁰

Costs associated with EDI that affect adoption rates include the difficulty of standardizing EDI between different entities and the costs to transmit data using proprietary “value added networks” (VANs). When EDI was first adopted, VANs provided security and some standardization, however VANs normally charge based on the volume of data transmitted. Other EDI costs that can be significant include specialized technical staff to perform ongoing analysis, and the creation and maintenance of programs to accommodate data disparities (transactional mapping). There are also costs associated with the maintenance of the translation software needed to translate data to and from EDI.

State PUCs can lower EDI costs by standardizing EDI record sets and forcing the adoption of specific “data libraries.” Additionally, given the explosion of Internet-based technologies, some of the cost of continuing to use EDI can be mitigated with the use of Internet-EDI and XML/EDI. These technologies basically transmit EDI-coded information over the Internet and still require the entity receiving the information to purchase and maintain EDI translation tools to be able to use the data.

Critical to the long-run success of a competitive energy industry will be the ease of entry into the marketplace of competitive suppliers of all sizes. The greater the number of competitive suppliers, the more price competition and variety of value-added services will be offered to consumers. Historically, the front-end cost to set up an EDI/VAN connection has been considerable. If EDI continues to be a stan-

dard information protocol, these costs must be recovered from energy consumers before meaningful price competition can occur. However, with the stunning growth of Internet technology, secure Internet FTP and e-mail have become efficient means of transmitting data that are widely available at little or no cost to most individuals and businesses. NEM urges regulators and policymakers to integrate Internet-based technology into virtually every aspect of restructuring policy and regulation at the earliest possible date.

2. XML (Extensible Markup Language). To this end, NEM recommends immediate consideration of XML (Extensible Markup Language). XML is an electronic information exchange protocol that was designed specifically to send information over the Internet. In 1998, the XML Working Group of the World Wide Web Consortium (W3C) sponsored, and the W3C adopted, XML as the established standard for use over the Internet.¹¹ While Internet standards for XML have been established, the nationwide adoption of Standardized Information Protocols for XML that are specific to the energy industry is critical to the success of restructuring and energy price competition.¹²

XML is a simple data modeling language similar in appearance to HTML (Hypertext Markup Language).¹³ Like in an HTML document, XML documents consist of plain text information and “tags” that instruct a computer how to process the information. HTML tags instruct a browser how to display or format an HTML document. XML tags define the data in an XML document so that multiple computer programs or multiple parties can understand the data in the same way.¹⁴ A virtue of EDI is to facilitate the transfer of large volumes of information. A virtue of XML is to permit Internet technology that is native to most computer desktops to receive and display data easily, inexpensively, without expensive translators, using the Internet.

The development and adoption of an energy specific protocol for XML would provide an excellent foundation for a National Energy Information Technology Standard. XML is well supported by technology tools, many XML tools are license-free, and the technology is platform-independent.¹⁵ Various industries and industry groups have undertaken XML study and development efforts.¹⁶ There has also been considerable cross-industry sharing of XML technology. It is anticipated that by year-end 2002, industry led groups in healthcare, insurance, e-commerce, banking, high-tech and consumer goods will develop standard procedures to define application specific XML-defined vocabularies, and transaction and application schema.¹⁷ Most importantly, the Global Commerce Initiative (GCI) has recently announced plans to use XML as the backbone of the new data exchange standard for business-to-business trade in the consumers goods industry. GCI members include 40 major manufacturers and retailers as well as eight trade associations, which represent 850,000 companies worldwide.

XML has been embraced by leading technology developers as a preferred language for data exchange in e-commerce.¹⁸ Encouraging the energy industry to use this technology at the earliest possible date will yield significant benefits to consumers.

3. Migration to Internet-Based Technology is Essential to the Public Interest. The lowest cost means of transmitting energy-related information is the Internet. Given the current pace of restructuring and the energy supply limitations in certain regions of the country, one important step that can be taken immediately to lower energy costs is the adoption and integration of Internet technology as the standard means for transmitting all energy-related data and information. Standards that integrate Internet technology will lower the risks of new technology investments and help utilities and alternate suppliers render energy services to consumers at lower costs.

Given the significant social benefits of prompt implementation of Internet-based standards, NEM recommends that effective immediately:

- 1. The federal government and each state government should encourage and facilitate market participants to use the Internet to transmit all energy-related information and data to the maximum extent currently practicable.**
- 2. The federal government and each state government should encourage an industry-led working group to develop an energy-specific, Internet-based Standardized Information Protocol, to be adopted and implemented uniformly across the country at the earliest possible date.**
- 3. The federal government and each state government should implement tax and regulatory policies that lower the cost of migration to new Internet-based technologies that comply with and integrate these Standard Information Protocols.**

C. Investments to Upgrade the U.S. Energy Billing, Metering and Delivery Systems Must be Encouraged

The U.S. energy supply and delivery systems are among the most efficient, productive and admired in the world. However, as traditional utilities restructure to accommodate the significant new competitive demands on their systems, it is vital for both the federal and state governments to adopt tax and regulatory policies that encourage the most efficient investments to upgrade the U.S. energy infrastructure.

In addition to new generation and transmission investments, there is an entirely new and different type of restructuring investment that must be made and that can

have a major impact on the speed and cost savings available from energy price competition. These new and vital investments include the replacement, outsourcing, upgrading and retooling of computer and information systems, metering systems, billing systems and customer care facilities by both regulated and unregulated entities. These new restructuring investments will open the energy market to meaningful price competition and have extremely favorable macroeconomic impacts on both state and national economies.

NEM recommends expansion of existing tax credits and expedited prudence reviews for “Qualified Energy Restructuring Investments.” Both the federal and state governments should encourage investments to upgrade and modernize the U.S. energy information and delivery systems at the earliest possible date. A number of logical options already exist in the tax code. Either or both the existing energy tax credit contained in Section 48 of the Internal Revenue Code (IRC), or the existing credit for research contained in Section 41 of the IRC, could be expanded to include “qualified energy restructuring investments.”

NEM recommends that the definition of “qualified restructuring investments” include, at a minimum, expenses incurred to modernize and upgrade computer and information systems, metering systems, billing systems and customer care facilities to facilitate competitive restructuring. The credit should be available to both regulated and unregulated entities. These system upgrades are so vital to the restructuring of U.S. energy markets, NEM also recommends that prudence reviews for these “qualified investments” be expedited by state PUCs to minimize investment risk and maximize the speed with which these information infrastructure investments will be made by regulated entities. Investments that are not “qualified” should also not qualify for stranded cost recovery.

1. Investments to Upgrade Information Systems Should be Qualified Energy Restructuring Investments. In a restructured energy market, switching energy suppliers must be simple and inexpensive. Customer information must be available to appropriate parties in a timely, accurate, low-cost and easily usable format. Utilities, suppliers, vendors and consumers must be able to exchange vital information in the lowest-cost, most efficient manner possible.

As noted, the Internet is expected to play a major role in the restructuring of the U.S. retail energy industry. Traditional utility services and rate structures have not been unbundled sufficiently to permit meaningful energy cost reductions. Yet, the value associated with all the energy-related information and services that can be rendered by Internet is significant. In order for these benefits to be realized by small consumers, however, new information protocols and data vocabularies must be standardized and implemented nationally. The quickest way to implement these new standards is to permit accelerated cost

recoveries to all firms that invest in upgrading existing information systems to integrate these new standards.

Upgrading computer systems to implement Internet-based information protocols that integrate both uniform business practices and data dictionaries is a low-cost, high-yield policy that can be implemented immediately. The macroeconomic benefits of these upgrades to both state and national economies can be in the billions of dollars per year.

2. Investments to Upgrade the Nation's Metering System Should be Qualified Energy Restructuring Investments. The timely, accurate dissemination of critical energy usage information is vital to the efficient management of both energy supply and energy demand. Historically, the installation, maintenance and reading of energy meters have been part of a utility's responsibility. Increasingly, however, metering has become a competitive market, particularly for larger commercial and industrial users. However, for the true benefits of competition to be enjoyed by all consumers of energy, investments to upgrade existing meters are long overdue and must be made.

Investments made to upgrade existing meters and to install advanced meters will permit more accurate forecasting to meet customer demand. Statistical load profiles, which can vary significantly from actual customer usage, are currently used to forecast power needs. Advanced meters will permit suppliers to more accurately match supplies to meet demand and to avoid imbalance, standby, storage, injection and withdrawal costs. In this way, consumers can save billions of dollars in unnecessary costs.

To qualify for the new restructuring tax credit or expedited prudency review, new metering investments must permit open, non-discriminatory access to accurate, reliable, real-time energy consumption information in a standardized protocol. Such investments will permit consumers to reduce demand during peak times and permit energy providers to lower the costs and risks of managing supply and demand. Qualified investments must contain open architecture and must be capable of being read and used by different entities to facilitate customers unfettered decision to switch. New metering investments should produce data in a standard format that all market participants can use and understand. It is recommended that "behind-the-meter" smart devices that see and respond to price signals should also be qualified investments.

3. Investments in New Billing, Back Office and Customer Care Facilities Should be Qualified Energy Restructuring Investments. Today, differences in the information protocols between each utility service territory are significant, slowing the progress of restructuring and increasing substantially the cost of doing business. Standard Information Protocols that integrate Uniform Business Practices will significantly help the existing billing, back office and customer care systems to accommodate a com-

petitively-restructured energy market. Very few utilities or competitive suppliers have billing systems capable of handling all of the billing options that will be available in a competitive marketplace. However, to achieve regional or national economies of scale and to lower energy costs to the maximum extent possible, suppliers must be able to aggregate customers from across many utility service territories and ultimately from across the country. Upgrading of billing and customer care systems is expensive yet vital to a competitive energy market.

NEM recommends that new investments in billing, back-office and customer care facilities that are made to facilitate competitive energy markets should qualify for the energy restructuring credit and expedited prudency review. However, to qualify, the upgrades should permit "bill ready" consolidation of multiple vendors, customer access to information and should integrate both Uniform Business Practices and standard, energy-industry-specific Internet-based information protocols.

4. Consumer "Shopping Credits" and "Back-out Rates" Must Include Metering, Billing and Information System (MBIS) Costs. In addition to tax policies that encourage investments to implement competition, regulatory policies must also encourage the correct pricing signals for energy-related products, services, information and technologies. As utilities services and rates are unbundled and consumers are given shopping credits to purchase competitive energy services, it is critical that these shopping credits include the amounts that have historically been included in utility rates for energy-related items such as metering, billing and information systems (MBIS). Failure to give consumers credits that reflect the full costs historically associated with these services will send erroneous pricing signals to consumers and cause consumers to pay twice for the same services. Shopping credits which "back out" the proper amounts from utility rates will permit consumers to shop for competitive services, encourage price competition among suppliers, improve efficiency and stimulate innovation.

D. Energy Taxes Are Regressive and Should be Reduced

Most states currently tax the transportation, sale, use and/or consumption of energy. Likewise, the federal government taxes energy consumption in forms such as the gasoline tax, and the alternative minimum tax still penalizes energy investments. Additionally, there are proponents of federal Internet sales taxes that could add an entirely new layer of taxes on energy that will be contracted for over the Internet.

Current taxes on energy and energy consumption are far too high and are counterproductive. Energy taxes are regressive by their very nature. Energy is a necessity for consumers and businesses alike. Higher energy costs hurt lower income individuals and small businesses the most. New energy taxes impose a disproportionately higher burden on those least

able to afford them. Conversely, lower energy prices are the most efficient low-income assistance program possible. The imposition of new taxes as a result of restructuring is unnecessary, economically inefficient, regressive and will undermine the very benefits that price competition can offer.

As energy markets are restructured, utility rates and services will be unbundled to permit price competition by suppliers of energy and related products and services, information and technology. Price competition, in turn, will permit the state and federal governments to reduce expenditures on energy and related services. In many cases, significantly. Lower energy prices also increase the competitiveness of local business, attract new business to the state, increase economic activity and operate in a manner similar to a tax rollback for businesses and consumers alike. Consequently, the state and federal budgets and the national economy will benefit in a number of ways from restructuring natural gas and electricity markets.

NEM urges states to use energy restructuring as an opportunity to reduce and simplify the overall tax burden on consumers as well as new energy restructuring investments by businesses. As states unbundle traditional utility rates and services and permit new businesses to compete on prices, added value and quality service, this is the perfect time to reexamine both the level and wisdom of both federal and state energy tax policy.

IV Conclusion

The positive macroeconomic impacts of lower energy prices, greater economic efficiency and competitiveness that can be directly related to the restructuring of the retail U.S. energy industry is significant. In addition, the explosive growth in Internet-based technologies with accompanying increases in productivity offer an immediate step forward in reducing the costs of delivering energy-related products, services information and technology.

Immediate nationwide implementation of Uniform Business Practices and consistent, widely accepted, easily accessible and Standardized Information Protocols for use on the Internet will lower energy costs and permit regional and national economies of scale to be achieved. To capture these economic benefits at the earliest possible date, state and federal governments must adopt tax and regulatory policies that encourage market participants to implement an industry-developed standard for Uniform Business Practices and Internet-based, energy-specific Standardized Information Protocols. At a minimum, existing tax credits should be expanded so that expenses incurred to modernize and upgrade computer and information systems, metering systems, billing systems and customer care facilities to facilitate competition will be considered “qualified energy restructuring investments,” and state PUCs should expedite the prudence reviews for these “qualified investments” as well.

V Endnotes

- 1 Crandall and Ellig (1997).
- 2 The term Standardized Information Protocols (SIPs) consists of two components, a message protocol and a message delivery protocol. The message protocol includes a dictionary of data elements to be exchanged. The message delivery protocol includes a message transport protocol like HTTP or FTP, an envelope protocol that is understood by the systems that will transport the transactions across the Internet (for example MIME), and a message security protocol including privacy, authentication, integrity, and non-repudiation (for example PGP).
- 3 NEM’s *National Guidelines for Designing and Pricing Default Energy and Related Services* (January 2000); NEM’s *National Guidelines for Restructuring the Electric Generation, Transmission and Distribution Industries* (January 1999); NEM’s *Uniform Code of Conduct for Regulated and Unregulated Suppliers of Energy and Related Services and Technologies* (April 1998); NEM’s *National Guidelines for Unbundling and Restructuring the Natural Gas Distribution Function* (January 1998).
- 4 Uniform Business Practices for the Retail Energy Market, Sponsored by EEI, NEM, CUBR and EPSA. [hereinafter UBP] accessible at www.eei.org.
- 5 Address by Shawn Intorcio, Manager, DRI Energy Services, Transforming Energy Markets—the Internet solution (Sept. 19, 2000).
- 6 Real-time energy usage information allows consumers to reduce demand and allows suppliers to more accurately match supply and demand thereby both lowering costs and enhancing reliability.
- 7 Electronic Signatures in Global and National Commerce Act, 15 U.S.C. § 7001.
- 8 Over 40 states have adopted electronic transaction legislation in response to the National Conference of Commissioners on Uniform State Laws initiative for development of a model code entitled, “Uniform Electronic Transactions Act.” The full text of the Uniform Electronic Transactions Act is available on the NEM Website, www.energymarketers.com.
- 9 Uniform Business Practices for the Retail Energy Market, Sponsored by EEI, NEM, CUBR and EPSA.
- 10 Waters, Meta Group, Energy XML: Not Yet Plugging In (Dec. 23, 1999); Webber, Introducing XML/EDI Frameworks, EM-Electronic Markets (1998); XML/EDI Group, The E-Business Framework (Jan. 1998).
- 11 W3C Recommendation, Extensible Markup Language (XML) 1.0 (Feb. 10, 1998).
- 12 The UIG working group on XML is developing XML standards for use in the U.S. energy industry. See UIG XML Task Group White Paper Sub-Team, Utility Industry Group XML White Paper Version 1.0 pages 9-10 (June 7, 2000). See also UIG-XML Data Dictionary at www.uig.org.
- 13 Technically, XML is a subset of Standard Generalized Markup Language (SGML). XML uses Document Type Definition (DTD) to define the structure of documents to be interchanged between parties. Using the DTD, an XML parser is used to validate a document for conformity with a particular document-type. See Shih, Gartner Group, XML/EDI: A Quick Tutorial, page 2 (Oct. 8, 1998).
- 14 Bos, W3C, XML-in-10-points (March 27, 1999).
- 15 *Id.*
- 16 GISB, Ontario Energy Board, Architecture, Engineering and Construction, Automotive, Education, Financial Services, Accounting, Banking, Healthcare, and Human Resource Management. See UIG XML Task Group White Paper Sub-Team, Utility Industry Group XML White Paper Version 1.0 pages 9-10 (June 7, 2000).
- 17 *Id.*
- 18 Intel, Microsoft, and Oracle are developing XML utilities including parsers, querying tools, and XML servers. Lheureux, Gartner Group, Client Query Line: XML Will Ultimately Pay for Itself in Application Integration, page 4 (June 9, 1999).