



**NATIONAL GUIDELINES TO
IMPLEMENT COMPETITIVE
ADVANCED ENERGY
METERING RELATED
INFORMATION TECHNOLOGIES**



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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 traditional international wholesale and retail energy suppliers (as well as wind and solar power), billing and metering firms, Internet energy providers, energy-related software developers, risk managers, energy brokerage firms, information technology providers, manufacturers and suppliers of advanced distributed generation as well as clean coal technologies. 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 in a competitively neutral fashion;
- Rates, tariffs, taxes and operating procedures that unbundle competitive services from monopoly services and encourage true competition on the basis of price, quality of service and provision of value-added services;
- Standards of conduct that protect consumers; and
- Policies that encourage investments in new technologies, including the integration of energy, telecommunications and Internet services to lower the cost of energy and related services.

II. Background

A. *Implementing 21st Century Technology to Upgrade the Nation's Aging Energy Infrastructure*

Virtually every 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 and complete unbundling of traditional utility rates and services is underway and will continue to occur within the foreseeable future.

Over the last decade, significant advances in technology have also occurred. Yet the nation's current metering system – the cash register, data source, and link to the customer – is outdated and unsuited to meet the dynamic needs of a majority of energy consumers now and in the future. Imagine the futility of trying to grow an investment portfolio using nothing more than month-old reports of the Dow Jones 30 Industrials Average. Or think of what a recipe for disaster it would be for a manufacturing company to maintain only intermittent monthly contact with its supply chain and distribution network. What if consumers had to manage their bank accounts today without the aid of automatic teller machines, the Internet or automated telephone-banking services.

In this age of e-commerce, automated transactions and real-time information exchange, scenarios such as those listed above represent the height of inefficiency and inconvenience, not to mention major impediments to economic growth. As absurd as these examples might sound, they represent how most of our nation's energy infrastructure operates at the beginning of the 21st century.

In fact, the vast majority of residential utility customers throughout the United States still receive a monthly visit from a meter reader. This meter reader visually reads the electric and/or gas meter, records the amount of energy used for the past month, and gathers the information necessary to generate a monthly consumption bill. If the meter reader is unable to access the meter because it's located in the basement and the consumer is not home, or because the backyard gate is locked and a dog is standing guard right behind it, consumption will be estimated based on previous usage and recent weather patterns.

It is not uncommon, particularly in certain high-density urban areas, for up to 30 percent or more of the monthly utility meter reads to be estimated for billing purposes. This practice leads to inaccurate billing and increased costs to consumers. Not only do consumers pay for the meter reader's time, vehicle, monthly expenses and support staff, but they also pay for pension and retirement benefits and an allocated portion of all of a utility's prior debt, just for this service to be performed, or in some cases, not performed. How would consumers feel if their local gas station estimated how much gas they put in their tank when filling up, or if long distance carriers and credit card companies began estimating their customers' usage and bills? This country is far past a time when consumers must be forced each month to pay for such inefficiencies, especially when lower utility bills are a national priority. This is particularly troublesome when millions of Americans can get up to the moment stock quotes, bank balances, portfolio balances, and buy and sell billions of dollars worth of goods and services over the Internet at light speed at little or no costs whatsoever.

B. Advanced Metering Will Upgrade the Aging Energy Infrastructure and Lower Energy Costs

The installation, maintenance and reading of energy meters have historically been monopolized as part of a utility's responsibility. However, metering is a service that can and must be unbundled from other utility services and opened to competition. In some states, metering has already become a competitive market for larger commercial and industrial users. For the true benefits of competition to be enjoyed by all consumers of energy, it is time for regulatory Commissions to fully implement advanced, state-of-the-art, competitive metering and encourage investments to upgrade the nation's existing metering infrastructure. Right now, affordable and advanced metering and automation technologies are available to bring consumers and small businesses the benefits of advanced real-time data collection and energy cost management. Members of NEM stand ready to offer a full range of low-cost, reliable, advanced metering services and related information technologies, including, but not limited to: ownership, installation, servicing of

equipment, maintenance, testing, reading, data management, validation, editing, estimations, pulse output transmission via Internet and billing.

The competitive unbundling of advanced metering and related technologies will enable the efficient management of both energy supply and demand through timely, accurate dissemination of critical real-time energy usage information. 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 avoid imbalance, standby, storage, injection and withdrawal costs. In this way, energy suppliers can significantly reduce costs and can pass along these savings on energy bills.

Consumers can also reap substantial benefits and cost savings through the integration of telecommunications, Internet and advanced metering technology. This state-of-the-art combination of technologies will enable small and medium size consumers and businesses to closely monitor their energy consumption to reduce costs, create energy efficiencies and create the conservation incentives necessary to meet the energy needs of the 21st century. Indeed, metering advances for large customers have added considerably to increases in productivity, efficiency and significant energy savings.

The technology is currently available to afford energy providers and consumers access to detailed and timely energy use data that would allow them to reduce energy consumption and reduce load when available power is in short supply, prices are high or distribution system conditions make it necessary to reduce load. The price signals made possible by advanced metering can reduce extreme peaks and lead to a shift of usage to off-peak periods. This will produce true efficiencies, alleviate the need for extreme measures such as blackouts, and provide cost savings for all consumers.

Advanced metering technology will also decrease the rising costs and risks to public safety associated with energy theft. The consensus estimate among most industry groups and analysts is that energy theft in the U.S. stands between .5 percent and 3.5 percent of annual gross revenues. With U.S. electricity revenues at \$280 billion in the late 1990s, theft of electricity alone would equate to between \$1 billion and \$10 billion annually. Technology capable of automatically detecting tampering with the meter is currently available, and should be utilized immediately to deter energy theft and enhance the public safety.

III.

NEM's Recommendations for Implementation of Advanced Metering

Encouraging private investments to upgrade metering systems and technology will upgrade the nation's aging energy infrastructure and have a major impact on the speed, efficiencies, conservation, and cost savings available from energy price competition. To implement the lowest cost solutions to upgrade the nation's energy metering and information technology infrastructure, members of the National Energy Marketers Association urge state and federal lawmakers and regulators to implement the following policies at the earliest possible time.

A. Regulators Should Grant Consumers Access to Usage Data and Implement Measures to Immediately Open Metering to Competition

Price competition for energy and related services serve the public interest, save consumers, governments and taxpayers billions of dollars and will encourage significant efficiency, conservation, innovation and productivity gains, nationwide. First, it is imperative for regulators to properly identify and quantify the fully embedded costs that consumers are currently paying for each service that utilities currently perform. These services are currently "bundled" in a consumer's monthly utility bill including metering and all of its related costs. Once this information is clearly and accurately identified, competitive suppliers of these same services must be permitted to have complete, open, unfettered access to offer consumers the same services at competitive rather than monopoly prices. Simultaneously, consumers must have immediate access to the current output of existing meters so they can monitor energy usage and conserve energy as soon as possible.

1. Total Unbundling and Adequate Shopping Credits.

To most quickly bring the benefits of true price competition to consumers, each product and service historically bundled in a utility's bill should be offered separately ("unbundled") from products and services that can be offered by competitive suppliers and subjected to the rigors of the marketplace. NEM urges all jurisdictions to identify and immediately unbundle the fully embedded monopoly costs associated with metering and related information technology functions and make these costs known to consumers and the competitive marketplace in order for consumers to understand what they are paying for metering services, and to permit accurate price signals to encourage investments to upgrade outdated metering systems.

If consumers are given shopping credits on their utility bills equal to the fully embedded utility costs of metering related services and technologies and are permitted to use the credits to shop for a full panoply of energy services, products and technologies, it will encourage significant new private investments in advanced metering and information technologies

and drive prices down through bona-fide price competition for these services. Failure to give consumers credits that reflect the full costs historically associated with these monopoly provided services will continue to send erroneous pricing signals to consumers and cause consumers to pay far more than necessary for these same services.

There is a huge potential market for value-added, "behind the meter" products and services if regulators fully unbundle competitive services and implement rules that encourage price competition for advanced metering and information technologies. For example, smart devices have been developed that see and respond to hourly price signals. Customers can and should be encouraged to install these devices to reduce demand and lower energy prices. However, with the current regulatory system, a customer is automatically billed full monopoly prices for metering services and there is no way for the customers to shop for these new devices without paying for them twice. To realize the full potential of this market, consumers must be given credits on their utility bills equal to the fully embedded monopoly prices they are currently paying for metering and metering-related information and technology services to shop for alternative providers.

2. Encourage Competitive Metering Through Investments to Upgrade Metering Systems.

In the interest of upgrading our nation's energy infrastructure, and as traditional utilities restructure to accommodate the significant new competitive demands on their systems, regulators must provide meaningful incentives for investments by consumers, marketers, metering firms and utilities to upgrade existing metering systems and foster price competition. During the transition from a highly regulated, monopolized energy market to a competitive marketplace, it is vital for federal and state governments to adopt tax and regulatory policies that encourage investments to upgrade the U.S. energy infrastructure. Investments to upgrade metering and metering-related information and technology systems by both regulated and unregulated entities, will have a major impact on the speed at which cost savings are derived from competition in the supply of energy.

NEM recommends expansion of existing tax credits 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 credits contained in 26 CFR Section 48 or the existing credit for research contained in 26 CFR Section 41 could be expanded to include "qualified energy restructuring investments."

NEM recommends that investments to upgrade the nation's metering-related information and technology infrastructure, as well as investments in "behind-the-meter" smart devices that see and respond to price signals, should be qualified investments. Investments made to upgrade existing meters, install advanced meters, and develop "behind-the-meter" smart

devices, will permit more accurate forecasting to manage supply and demand and save consumers billions of dollars. To qualify for the new restructuring tax credit, new metering and related information technology investments must permit open, low cost, nondiscriminatory access to accurate, reliable, real-time energy consumption information in a standardized electronic protocol. Immediate access to usage data plus investment upgrades to existing systems will permit homeowners and small businesses 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 in a timely and understandable fashion.

NEM recommends that utility Commissions condition utility rates and regulatory approvals on the tariff structure and speed with which utilities completely unbundle and exit metering-related functions. Until these functions are completely unbundled, it is critical that consumers have free access to information in a timely, standardized format. Once customers are afforded access to metering data - historical, current, and future - regulators can implement measures which provide utilities with targeted, time-sensitive, performance-based incentives to unbundle metering, thus encouraging the implementation of advanced metering and related technology which are required to upgrade the nation's infrastructure. Targeted, time-sensitive, performance-based rate structures should incentivize utilities to speed the complete unbundling of competitive products and services and their exit from the metering and related information technology functions. Such unbundling should include all metering services, including ownership, installation, servicing of equipment, maintenance, testing, reading, data management, validation, editing, estimations, providing pulse output and billing.

NEM submits that if regulators are not prepared to fully unbundle metering services they should at the very least mandate complete and open consumer access to all energy usage information and require the competitive bidding of meter-related services, and such measures should require swift implementation. On the supply-side of the equation, accurate energy use forecasting supports the precise planning of supply or generation requirements, which reduces frantic and costly searches for available power supply when energy reserves are near emergency levels.

The Federal government should insist that the energy usage data collected be available as soon as possible in a usable low cost electronic format that will be consistent throughout regions of the country. The Northwest and Southwest must know how much of its energy is being used in real-time by California, 24 hours a day, 365 days per year. Similarly, New England and the Mid-Atlantic states must know how much power New York is using in real time. Likewise, consumers should be able to elect to switch off home energy usage from their offices, if prices spike or shortages are threatened.

B. Combining Advanced Metering Technology with the Internet is Essential to the Consuming Public

The timely, accurate, real-time dissemination of critical energy usage information is vital to the efficient management of both energy supply and energy demand. The lowest cost means of transmitting vital energy-related information is the Internet. Given the current pace of restructuring and the energy supply limitations in certain regions of the country, NEM urges that steps be taken immediately to encourage the integration of telecommunications, Internet and advanced metering technology with nationwide implementation of consistent, low cost, flexible, widely accepted, easily accessible and standardized sets of information protocols for use on the Internet. In this regard, state regulatory commissions should immediately implement the consensus UBP standards adopted by the Edison Electric Institute (EEI), the National Energy Marketers Association (NEM), the Coalition for Uniform Business Rules (CUBR)^{*} and the Electric Power Suppliers Association (EPSA).

IV. Conclusion

Currently, captive utility customers pay monopoly prices for a bundle of services that include many products and services such as metering that can and should be provided by competitive suppliers at competitive prices. Targeted, time sensitive, tax and performance based rate incentives are needed to encourage new investments in advanced metering and related value added information technologies. Until utility rate bases are completely unbundled, consumers should be given "shopping credits" on their utility bills equal to the utility's fully embedded costs of providing all competitive services that have been historically bundled with traditional monopoly 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.

By combining advanced metering technology with advanced telecommunications and Internet technologies, and new load management and demand side management technologies, businesses and consumers can closely monitor their energy consumption to reduce costs. Businesses can alter production schedules to take advantage of off-peak hours and consumers could adjust their thermostats while they're away from home, or use the data in concert with new technologies from the home automation and control sector to monitor energy consumption by appliance to create the model for home energy efficiency and conservation in the 21st century.

V. Endnotes

¹ Crandall and Ellig (1997).

^{*} Uniform Business Practices for the Retail Energy Market, Sponsored by EEI, NEM, CUBR and EPSA. [hereinafter UBP] accessible at www.eei.org.



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