

**Testimony of Jay Birnbaum
Senior Vice President and General Counsel
CURRENT Group, LLC
Before the House Committee on Energy and Commerce
Subcommittee on Energy and Air Quality**

May 24, 2007

Thank you, Chairman Boucher, Ranking Member Hastert, and Members of the Subcommittee, for the opportunity to testify in support of the Smart Electricity Grid provisions in the Discussion Draft. Such legislation is necessary to the vital modernization of the Nation's critical electric transmission and distribution infrastructure

CURRENT Group, LLC ("CURRENT") specializes in the development and provision of Smart Grids. In particular, CURRENT designs, develops and deploys communications and information technology equipment and services that increase the efficiency, reliability, safety, and security of the electric distribution network.

CURRENT is headquartered in Maryland with offices in Texas, New York, Ohio and California.¹

As Dr. Michael W. Howard of the Electric Power Research Institute (EPRI) recently testified before this Subcommittee,² a Smart Grid enables electric utilities to monitor and maintain stable and healthy distribution networks that alert operators immediately when problems arise and trigger prompt or even automated corrective action. Specifically, a Smart Grid includes sensors capable of collecting and monitoring data from the substation, transformers, meters and other electric distribution devices along the power lines, all connected through a high speed and low latency

¹ Further information about CURRENT is available at <http://www.currentgroup.com>.

² See Testimony of Michael W. Howard, Ph.D., P.E., Senior Vice President, R&D Group, Electric Power Research Institute, "*Facilitating the Transition to a Smart Electric Grid*," Before the House Subcommittee on Energy and Air Quality, May 3, 2007.

communications system and a distributed computing system capable of real time analysis and event prediction. Smart Grids are capable, in real time, of collecting and analyzing power supply and usage data from these devices and from end user devices as well as providing real-time load management.

What is the Smart Grid and what can it do?

Smart Grid systems employ advanced communications equipment and sensors throughout the electric distribution network. A *CURRENT*[®] Smart Grid modernizes the distribution grid by creating a broadband, two-way, communications system on an electric utility's existing wires, permitting a utility to monitor and manage potentially every piece of equipment on its distribution grid. It enables the utility to perform real-time power outage prevention, detection and restoration, both for localized outages and wide scale events. A *CURRENT* Smart Grid also can read electric meters as often as one minute, as well as "on demand," and can enable demand response programs by allowing the utility to manage individual appliances within millions of customer premises. *CURRENT*'s technology also empowers consumers and businesses to monitor and manage their own electricity usage in real-time.

To create the Smart Grid, *CURRENT* overlays its state-of-the-art technology, known as broadband over powerline, at points throughout the existing electric distribution network. No retrofitting or conditioning of the distribution electric grid is required. Once its network is deployed, it can communicate with points anywhere along the distribution grid as well as each electric outlet inside homes and businesses. A utility therefore can monitor and control capacitor banks, transformers, switches, substations and other critical infrastructure.

Smart Grid is a reality today. For instance, in and around Dallas/Fort Worth, Texas, CURRENT is presently deploying the Nation's first true Smart Grid with Oncor Electric Delivery. This system, which ultimately will reach almost two million homes and businesses, is already reading advanced meters at 15-minute intervals; conducting network monitoring that can detect problems before they cause power outages, safety hazards or system quality problems; and providing power outage and restoration detection if outages do occur.

Encouraging a Smart Grid also will help American companies gain and preserve market leadership in what is fast becoming a worldwide market. Countries all over the world need a modernized electric grid, and companies from the United States can be leaders in this global market. Indeed, CURRENT and other American companies already are pursuing such international opportunities, which will create high tech jobs here at home.

Why does America need the Smart Grid?

The Northeast Blackout of August 2003 and more recent large power outages resulting from hurricanes and other storms over the last several years underscore the need for Smart Grid systems.³ The Nation's electric distribution networks are aging and facing increasing strain. The existing grids are one-way systems for the delivery of electricity without the self-healing, monitoring and diagnostic capabilities essential to meet demand growth and new security challenges facing us today. In the Queens blackout last August, nearly 100,000 people were left without power for 10 days as the utility worked to detect, diagnose and respond to the extensive outage with the standard utility method of outage

³ The August 2003 blackout impacted 40 million Americans in 8 States and caused \$6 billion of estimated financial losses.

detection. Until recently, utilities had little choice but to rely on what one New York City councilman called the “Paul Revere” method of outage detection – utility crews driving through neighborhoods making visual inspections to attempt to determine where repairs are needed. The Smart Grid will take the guess work out of outage and restoration detection. The capability is particularly necessary in States that are more and more subject to intense weather conditions, such as tornadoes and hurricanes. Power crews would know exactly where to go to repair downed and damaged wires and technicians could expedite power to customers through remote management of switches and other utility infrastructure. Power crews would also know when restoration has occurred, which is important because customers do not usually call to notify utilities of effective power restoration. As a result, line crews spend significant amounts of time searching to confirm power restoration visually, i.e., by viewing which homes and business have lights on, in many cases after restoration has in fact occurred. This type of 21st century outage management will reduce the occurrence and duration of outages and in particular facilitate restoration to high priority uses such as hospitals, police stations, National Guard facilities, and to those whose lives depend on medical equipment.

The strain on the Nation’s electric distribution grids is expected to worsen in coming years as demand for electricity outpaces the construction of new facilities. Peak summer demand for electricity is projected to rise by 19 percent nationally over the next decade, but capital committed to electric generation, transmission and distribution is expected to grow by only 6 percent during the same period.⁴ Yet at the same time the Nation looks to meet rising demand, 10 to 20 percent of electric energy is lost before it

⁴ The Brattle Group, *The Power of Five Percent: How Dynamic Pricing Can Save \$35 Billion in Electricity Costs*, Discussion Paper filed with the Maryland Public Service Commission (May 16, 2007) (citing North American Electric Reliability Council, 2006 Long Term Reliability Assessment).

reaches the end user due to network faults or inefficiencies – inefficiencies that can be substantially remedied by a Smart Grid.

It is also important to note that electric power generation produces roughly 40 percent of the Nation’s carbon dioxide emissions. Finding ways to increase the efficiency of existing distribution and consumption equates to making additional power available at lower costs. Such efficiencies reduce the need for constructing new generation plants and associated transmission facilities. Smart Grid can provide the communications and monitoring necessary to manage and optimize a portfolio of distributed and renewable energy resources. Although 70 percent of all cars, trucks, vans and SUVs could be powered from the electric grid, the time-sensitive demand response enabled by Smart Grid and its ability to measure distributed generation sold back into the distribution grid is necessary to maximize the environmental and economic benefits of widespread plug-in electric vehicle adoption.⁵

A Smart Grid will give the United States the 21st century electric grid it needs to thrive in the global economy and to meet growing environmental challenges. Although we will continue to need construction of new and improved generation plants, including those that provide renewable energy resources like biomass, wind and solar, the United States also must maximize the efficiency, reliability, security, and safety of the electric distribution network.

The Smart Grid is also crucial for homeland security. CURRENT’s Smart Grid system provides a direct data link to security cameras that provide real-time video monitoring of critical utility assets, such as substations, as well as non-utility critical

⁵ Pacific Northwest National Laboratory Study, available at: <http://www.pnl.gov/news/release.asp?id=204> (Dec. 11, 2006).

infrastructure, such as traffic lights or State and local government complexes. The only requirement is that these facilities are served by the electric distribution network.

Why must Congress act to encourage Smart Grid?

Although CURRENT is deploying the first Smart Grid today, utilities in general are slow to embrace new technologies largely because of regulatory uncertainty and economic disincentives. Federal action to address both of these issues is essential to accelerate Smart Grid deployments. Utilities often anticipate that their discretionary adoption of new technology may be politically challenged or that cost recovery will be denied after the fact. An even greater disincentive faces a utility that might seek to create efficiency or encourage lower consumption. Under traditional regulatory models, a utility profits by selling energy. There is no real incentive for a for-profit entity to spend money in order to earn less. As a result, utilities have strong regulatory and financial incentives to spend money on more traditional items, such as new power generation plants, rather than acquiring new technology to make more efficient use of existing power. An added aspect of such disincentives is that a utility can earn a much higher rate of return on new generation plants than on conservation, so utilities accordingly can be expected to spend more on such traditional assets.

As a result of the aging distribution networks, skyrocketing demand, the increasing costs of building generation plants, and the existing disincentives for change, CURRENT believes Federal legislation in this area is essential. We suggest Congress consider various incentives for utilities, including grant programs (particularly to small utilities that want to adopt Smart Grid), tax incentives, accelerated depreciation, and

financial incentives for energy efficiency spending. Suggested investment incentives would include the following:

Cost Recovery – utilities should have the certainty of knowing that they can include in their rates the actual costs of investing in Smart Grid systems.

Enhanced Return – utilities should be permitted to earn an enhanced return on their investment in Smart Grid systems, including a return on a portion of their operating and maintenance expenses, to induce utilities to spend on Smart Grid investments.

Retained Savings – As an alternative to an actual return on operating and maintenance expenses, utilities could be permitted to retain a meaningful portion of the savings resulting from such expenses to the extent they result in efficiencies that otherwise would be passed on to end users (thereby producing a return on the utility's expenditure).⁶

Obsolete Equipment – A utility should be able to recover the costs of equipment rendered obsolete by its deployment of a Smart Grid system, based on the remaining depreciable life of the obsolete equipment.

Regulatory Reform – States are vital players in the regulation of the Nation's electric infrastructure, but should not be allowed to prohibit or impede a utility's deployment of a Smart Grid system on its distribution facilities.

Some of these incentives are already addressed in the draft bill; the remaining we hope the Committee will consider.

CURRENT supports the Discussion Draft, but would like to underscore the delays that will result if legislation were to focus too much on additional studies, demonstration projects, and creation of additional agencies. The technology needed for a Smart Grid already exists. More study is not necessary. What is needed is to remove existing regulatory constraints and to create affirmative incentives for rapid action. As was the case decades ago when the Rural Electrification Act helped to wire the Nation, Congress should act to ensure that the benefits of a Smart Grid become available to all Americans as swiftly as possible.

⁶ This is especially applicable since O&M expenditures to implement a Smart Grid will cost the utility, and therefore its rate payers, less than if the utility were to capitalize the entire cost of building the Smart Grid.

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CURRENT Group, LLC (“CURRENT”) specializes in the development and provision of Smart Grids. Smart Grids are capable, in real time, of collecting and analyzing power supply and usage data from devices deployed all along the distribution network and from end user devices. Smart Grid is a reality today. CURRENT is presently deploying the Nation’s first true Smart Grid with Oncor Electric Delivery in Texas. This system, which ultimately will reach almost two million homes and businesses, is already reading advanced meters at 15-minute intervals; conducting network monitoring that detects problems before they cause power outages, safety hazards or system quality issues; and providing power outage and restoration detection if outages do occur.

The Northeast Blackout of August 2003 and more recent large power outages resulting from hurricanes and other storms over the last several years underscore the need for Smart Grid systems. The Nation’s electric distribution networks are aging and facing increasing strain. The existing grids are one-way systems for the delivery of electricity without the self-healing, monitoring and diagnostic capabilities essential to meet demand growth and new security challenges facing us today.

Increasing the efficiency of existing distribution and consumption equates to making additional power available at lower cost. Such efficiencies reduce the need for constructing new generation plants and associated transmission facilities. Smart Grid can provide the communications and monitoring necessary to manage and optimize distributed and renewable energy resources and to maximize the environmental and economic benefits of widespread plug-in electric vehicle adoption.

For these reasons, CURRENT believes Federal legislation in this area is essential. Suggested investment incentives include the following:

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