BEFORE THE
BOARD OF PUBLIC UTILITIES
OF NEW JERSEY

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IN THE MATTER OF NEW JERSEY * Docket No. _____
ENERGY MASTER PLAN *
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COMMENTS OF CURRENT GROUP, LLC

CURRENT Group, LLC ("CURRENT") hereby submits these comments to the draft Energy Master Plan ("the Plan" or "the EMP") released April 17, 2008 by the Governor of New Jersey and the Board of Public Utilities ("the Board").[1]

CURRENT is a privately held company that provides high-speed, two-way communications networks with embedded sensing that can be installed on existing electric distribution networks to transform them into efficient, automated Smart Grids. These Smart Grids are monitored by a 24x7 network management system and analytic software platforms specifically designed to enhance the reliability, security and efficiency of the electric distribution grids.[2] CURRENT is presently supporting Smart Grid deployments in Dallas, Texas with Oncor Electric Delivery and in Boulder, Colorado with Xcel Energy.[3]

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[1] Both the Notice and the draft EMP are available on the Board's website at: http://www.state.nj.us/emp/about/. The direct web link for the EMP is: http://www.state.nj.us/emp/home/docs/pdf/draftemp.pdf. The remarks made by CURRENT's General Counsel, Jay Birnbaum, at the EMP Energy Demand Roundtable on June 25, 2008 are reflected in these comments.

[2] Additional information about CURRENT is available at www.currentgroup.com.

[3] *See e.g., Xcel starts construction of Boulder 'smart grid'*, Denver Business Journal (May 15, 2008), available at: http://www.bizjournals.com/denver/stories/2008/05/12/daily41.html. An overview of Xcel's Smart Grid City is available online at: http://www.xcelenergy.com/docs/SmartGridCityDesignPlan.pdf and http://www.xcelenergy.com/XLWEB/CDA/0,3080,1-1-1_15531_43141_46932-39884-0_0_0-0,00.html.

SUMMARY

The main goal of the EMP is to "Reduce projected energy use by 20% by 2020 and meet 20% of the State's electricity needs with Class 1 renewable energy sources by 2020. The combination of energy efficiency, conservation, and renewable energy resources should allow New Jersey to meet any future increase in demand without increasing its reliance on non-renewable resources."[4] The draft EMP calls for the development of Smart Grid infrastructure and notes that a Smart Grid "could use devices at all levels within the grid (from utility to customer) to independently sense, anticipate and respond to real-time conditions by accessing, sharing and acting on real-time information."[5] The draft primarily focuses, however, on just one aspect of Smart Grid: new digital meters known as "smart" meters and the typically narrowband communications systems that support them, known as Advanced Metering Infrastructure ("AMI").

New Jersey's energy and climate protection goals, however, cannot be achieved without a true comprehensive Smart Grid. AMI systems alone are not sufficient because they have limited functionality, will soon be obsolete, and rely upon uncertain end user behavior modification in the form of reduced energy consumption in response to time-of-use pricing structures to meet projected goals. Even with these usage reductions, and the resultant ability of rate payers to control their energy costs during peak periods, available economic models indicate that AMI will not reduce electricity costs enough to pay for the AMI systems and ancillary end user equipment needed to produce them. In other words, rate payers will pay more, not less. Further, the United States Department of Energy has

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[4] *See* Board's EMP webpage: http://www.state.nj.us/emp/about/goals.html.
[5] Draft EMP, page 61.

warned that the load shifting that occurs through such demand response programs – the sole means by which AMI programs reduce energy consumption – may actually *increase*, not decrease, dangerous CO^2 and other carbon-related emissions.[6] In New Jersey, Smart Grids could reduce 4.6% to 14.5% of electricity-related CO2 emissions.[7]

In contrast, although Smart Grids include AMI they offer consumers more options for energy management and greater means of reducing actual consumption. Smart Grids will also reduce operational, maintenance and capital costs in operating the distribution grid as well as reduce electricity consumption by up to 5% through the utility's in-network efficiencies that do not rely on consumer education or changes in behavior.[8] These network efficiencies can be achieved 365x24x7, not just during the approximately 100 hours of summer peak-demand on which AMI focuses. While these changes produce absolute cost savings (through less generation costs), Smart Grids directly reduce the cost

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[6] Specifically, with respect to AMI-enabled demand response the Department of Energy has said that "policymakers should exercise caution in attributing environmental gains to demand response, because they are dependent on the emissions profiles and marginal operating costs of the generation plants in specific regions." (Benefits of Demand Response and Recommendations, U.S. DOE Report to Congress, Feb 2006 at 29). Similarly, the Federal Energy Regulatory Commission report on the Assessment of Demand Response and Advanced Metering described the environmental impact of demand response as an "additional benefit" with the caveat that "the importance and perceived value of each of these (additional) benefits is subject to debate." *Assessment of Demand Response and Advanced Metering* at 11, FERC, Docket No. AD06-2-000 (Aug. 2006) ("*FERC Assessment*").

[7] These calculations are based on information obtained from the following sources: Energy Information Administration (EIA), Electric Power Annual 2006, " Retail Sales of Electricity by State by Sector by Provider, 1990-2006 (EIA - 861); EIA, Electric Power Annual 2006, "Net Generation by State by Type of Producer by Energy Source (EIA - 906)"; EIA, Electric Power Annual 2006, "US Electric Power Industry Emissions by State (EIA - 767 and EIA - 906)". The CO2 emission reduction estimates are driven by a reduction in retail electric sales and increase in network efficiencies due to the implementation of a Smart Grid. The estimated range of potential CO2 benefits is based on the difference between: (1) an assumption that the reduction in MWhs of net generation due to the implementation of a Smart Grid is distributed across the State's generation sources in proportion to each source's share of the state's generation mix (low end of range), and (2) an assumption that the reduction in MWhs of net generation due to the implementation of a Smart Grid is exclusively from coal generation sources (high end of range).

[8] A Smart Grid can optimize the overall distribution system by enabling utilities to maximize the efficiency of their distribution systems in real time. Such optimization can reduce overall energy consumption by 3% to 4%, and when combined with the estimated benefits of other Draft EMP-proposed measures would allow New Jersey to meet the Draft EMP goals. The efficiencies that Smart Grid will capture also include reduced el\ectricity losses within the electric distribution system.

of electric delivery through other operational savings that are unavailable from limited smart meter systems. Through these savings Smart Grids actually produce net savings to end users. In short, the EMP draft goals are not fully achievable without the deployment of Smart Grid technologies. Smart Grid technologies will reduce generation needs, improve network reliability, reduce CO^2 emissions, and produce significant *net savings* for rate payers. By one estimate a true Smart Grid can deliver ten times the benefits of an AMI solution.[9] For instance, a typical one million-home Smart Grid deployment can reduce consumption and peak demand and produce nearly $3 billion dollars of *net benefits* for rate payers and utilities that can be used to lower rates for consumers and reward utilities for investing in a Smart Grid.

Further, Smart Grid technologies increase the reliability, security and efficiency of the distribution grid in ways that meter-centric solutions cannot because the meter-based solutions do not monitor the entire grid and lack the necessary system capacity, *i.e.*, communications bandwidth. These Smart Grid applications include, among others:

- Distribution Equipment Automation;
- Underground Cable Fault Detection and Overhead Vegetation Management;
- Theft Detection based upon differences between meter-read consumption and measurements taken at the respective transformers;
- Real-time System Optimization through Load Balancing and volt/VAR controls based upon constant monitoring and measurements along the grid;
- Asset Management through predictive incipient equipment failure detection;
- Coordination and management of Distributed Generation sources, including rooftop solar panels and eventually plug-in hybrid electric vehicles; and
- Demand Response functionality based upon real-time price changes and other conditions requiring real-time end user device communications and control.

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[9] *See Getting Smart*, Robert Robinson, Jr. and James C. Henderson, Electric Perspectives (Sept. /Oct. 2007), at 69 ("Simple sensing and monitoring extensions are not, in and of themselves, compellingly economic – such improvements produce only about 10 percent of potential asset management benefits and do not engage customers beyond what AMI based pricing schemes may deliver.")..

To be consistent with the Energy Independence and Security Act of 2007 (P.L. 110-140, H.R.6), the EMP should require that rate payers are not short-changed by a failure to consider and deploy of alternatives that will save money for rate payers and utilities, particularly where such alternatives are already being commercially deployed elsewhere. In this regard, CURRENT agrees with the general conclusion of the draft EMP that New Jersey's utilities should deploy Smart Grid technologies, but the EMP should clarify that Smart Grid consists of a two-way, high speed communications network with embedded sensors and real-time diagnostic capability that extends from the substation all the way to Smart Grid-enabled "smart appliances" and/or "smart sockets" in consumer premises.

Accordingly, the Board should integrate Smart Grid / Smart Meter evaluation into its Energy Master Plan by:

(1) directing utilities to pilot and evaluate the capabilities of a comprehensive Smart Grid;

(2) directing utilities to integrate Smart Grid into any electricity savings and demand reduction plans that are filed or contemplated by the EMP; and

(3) taking any further action the Board deems necessary and proper to satisfy its evaluation of Smart Grid technologies.

<u>I. Defining Smart Grid and Its Benefits</u>

The Draft Plan briefly describes Smart Grid:

> "Smart grid" technology offers the hope of transforming the electric power grid, by using advanced communications, automated controls and other forms of information technology, to provide two-way communication between the utilities and the customers. Using currently available communications technology, a smart

> grid could integrate a utility's electric distribution network into a customer's home and be used to support energy efficiency and demand response actions to reduce energy consumption. A smart grid could use devices <u>at all levels within the grid (from utility to customer) to independently sense, anticipate and respond to real-time conditions</u> by accessing, sharing and acting on real-time information.[10]

This provision in the Draft Plan wisely envisions Smart Grid as the real-time, digital automation of the components of the <u>entire</u> power supply system. This is consistent with other authoritative definitions. Indeed, in several central characteristics of s Smart Grid have emerged: (1) self-healing and adaptive; (2) integrated across the entire distribution grid; (3) optimizing grid operations; (4) automating distribution; (5) secure; (6) interacting with and empowering consumers; and (7) predictive diagnostics.[11]

For instance, the Electric Power Research Institute ("EPRI") defined Smart Grid and its attributes in testimony before Congress last year:

> [A] power system that can incorporate millions of sensors all connected through an advanced communication and data acquisition system. This system will provide real-time analysis by a distributed computing system that will enable predictive rather than reactive responses to blink-of-the-eye disruptions.
>
> The grid of the future will require an order of magnitude greater number of touch points compared to today's system. For example, where today an electric utility company might monitor and control hundreds of grid devices, in the future it will monitor and control thousands to millions of devices, all designed to provide information on the power systems' performance.
>
> This increased number and scale of touch points will force utility companies to fundamentally change how they think of and approach the grid of the future. The result will be a flexible and secure intelligent power delivery infrastructure

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[10] Draft EMP, at page 61 (emphasis added). The Draft Plan's complete description of the need for Smart Grid is provided at the end of these comments. *See* Attachment 1.

[11] *See*, *e.g.*, presentations given at California Energy Commission workshop on Smart Grid (Apr. 29, 2008 Workshop), available at: http://www.energy.ca.gov/load_management/documents/2008-04-29_workshop/presentations/.

> that can meet both today's needs as well as tomorrow's consumers' needs for information to better manage their day-to-day energy demands.[12]

Similar definitions have been put forth by the Modern Grid Initiative sponsored by the U.S. Department of Energy (DOE)[13] and the California Energy Commission (CEC).[14]

The United States Congress described Smart Grid as a modernized electricity infrastructure that is reliable and secure, able to meet future demand growth and able to achieve each of the following:

> (1) Increased use of digital information and controls technology to improve reliability, security, and efficiency of the electric grid.
>
> (2) Dynamic optimization of grid operations and resources, with full cyber-security.
>
> (3) Deployment and integration of distributed resources and generation, including renewable resources.
>
> (4) Development and incorporation of demand response, demand-side resources, and energy-efficiency resources.
>
> (5) Deployment of ''smart'' technologies (real-time, automated, interactive technologies that optimize the physical operation of appliances and

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[12] *See* 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*, Testimony Before the House Energy and Commerce Subcommittee on Energy and Air Quality (May 3, 2007), available at: http://energycommerce.house.gov/cmte_mtgs/110-eaq-hrg.050307.Howard-testimony.pdf.

[13] The DOE-sponsored Modern Grid Initiative identifies a Modern or Smart Grid as having five components: Integrated Communications, Sensing and Measurement, Advanced Components, Advanced Control Methods, and Improved Interfaces and Decision Support. It states "[o]f these five key technology areas, the implementation of integrated communications is a foundational need, required by the other key technologies and essential to the modern power grid" and that "[h]igh-speed, fully integrated, two-way communications technologies will allow much-needed real-time information and power exchange." A Systems View of the Modern Grid at B1-2 and B1-11, INTEGRATED COMMUNICATIONS, Conducted by the National Energy Technology Laboratory for the U.S. Department of Energy Office of Electricity Delivery and Energy Reliability (Feb. 2007).

[14] The *CEC Report* states that sensors are the next basic requirement for virtually all Distribution Automation applications: "communications is a foundation for virtually all the applications and consists of high speed two-way communications throughout the distribution system and to individual customers." *California Energy Commission on the Value of Distribution Automation, California Energy Commission Public Interest Energy Research Final Project Report* at 51 (Apr. 2007) (*CEC Report*), available at: http://www.energy.ca.gov/2007publications/CEC-100-2007-008/CEC-100-2007-008-CTF.PDF.

> consumer devices) for metering, communications concerning grid operations and status, and distribution automation.
>
> (6) Integration of ‘‘smart’’ appliances and consumer devices.
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> (7) Deployment and integration of advanced electricity storage and peak-shaving technologies, including plug-in electric and hybrid electric vehicles, and thermal-storage air conditioning.
>
> (8) Provision to consumers of timely information and control options.
>
> (9) Development of standards for communication and interoperability of appliances and equipment connected to the electric grid, including the infrastructure serving the grid.
>
> (10) Identification and lowering of unreasonable or unnecessary barriers to adoption of smart grid technologies, practices, and services.[15]

CURRENT concurs with these authorities that a true Smart Grid incorporates high-speed communications capable of timely moving large amounts of data both upstream and downstream as well as sensors embedded throughout the distribution network.[16] From an implementation perspective this translates into dozens of specific applications that can be generally categorized.[17] In addition, as these other authorities indicate, the communications infrastructure requirements have increased and will continue to increase over time. Smart meter systems are typically designed to read meters once a day with limited, “narrowband” communications capabilities and have virtually no grid sensing or monitoring capabilities beyond the meters themselves. These smart meter systems are not upgradeable to higher bandwidths without replacing the meters and overlaying significant additional communications bandwidth system and utilities need not build two communications systems – one to support AMI and one to

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[15] Energy Independence and Security Act of 2007 (P.L. 110-140, H.R.6), Sec. 1301.

[16] Smart Grid also includes all the applications and functionality of smart meter technology.

[17] *See supra* page 4.

support all other Smart Grid applications – when only one such systems is necessary.[18]

KEMA, a leading industry consultant, has also noted the short-comings of AMI technologies as long-term solutions:

> The immediate requirements of AMI may not in themselves require high performance embedded communications. This can lead to a choice of wireless infrastructure as having lowest initial costs and comparable or lower ongoing costs. However, these technologies are not 'future proofed' and may not be able to support some of the capabilities described above as tied to high performance, ease of getting beyond the meter, and detection of power line anomalies…[19]

A true Smart Grid will manage or monitor equipment on the electric distribution network to optimize efficiency and perform power outage *avoidance* as well as real-time pin-point outage and restoration detection. This is significant because electric distribution networks are aging, facing increasing strain, and are one-way systems that predominately lack self-healing, monitoring and diagnostic capabilities.[20] EPRI estimates that power outages and "blink of the eye" power quality disruptions cost U.S. businesses at least $100 billion per year.[21] A Smart Grid will provide a utility with real-time actionable intelligence about its network that can be used to prevent such costly disruptions, reducing their costs to rate payers by up to 87%.[22] By measuring conditions throughout the grid in real time a Smart Grid is predictive, able to detect potential

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[18] FERC defines AMI as a metering system that records customer consumption (and possibly other parameters) hourly or more frequently and that provides for daily or more frequent transmittal of measurements over a communication network to a central collection point. *FERC Assessment* at 17.

[19] *Enabling the Power Plexus*, KEMA, Aug. 2007, available at: http://www.kema.com/consulting_services/it_automation_infrastructureservices/enterprise_level_integration_services/power_plexus/.

[20] *See, e.g., 2007 Integrated Energy Policy Report* at 151, CEC-100-2007-008-CTF, California Energy Commission (Nov. 2007), available at: http://www.energy.ca.gov/2007_energypolicy/index.html.

21 http://www.energyfuturecoalition.org/preview.cfm?catID=57 (citing EPRI estimate).

[22] *See Electricity Sector Framework for the Future: Achieving the 21st Century Transformation* at 42, EPRI, (Aug. 2003) ("*EPRI Report*"), available at: http://www.globalregulatorynetwork.org/PDFs/ESFF_volume1.pdf.

equipment failures and potential problems with the wires themselves, including stray voltage situations and underground cable faults, thus improving system reliability and safety.[23]

As a result, power system maintenance crews – which themselves are aging, with as many as 40% or more of such workers retiring over the next 10 years – will often know exactly where and when to go to repair the distribution grid *before* an outage occurs. When outages do occur technicians can expedite power restoration to customers through remote management of switches and other infrastructure. Power crews also will know in real time that extent to which restoration has occurred with each network repair performed, which will further reduce labor costs.

With Smart Grid technology a utility can greatly reduce the electricity that is lost before it reaches the consumer due to network faults or inefficiencies. This is done through real-time monitoring and measuring of the distribution grid and modifying load distribution to maintain the lowest amount of electricity actually needed at any time and at any point along the grid.[24] At least one utility estimates its Smart Grid can reduce its line losses by 30%[25] and the California Energy Commission recently estimated that such

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[23] For example, in Dallas, Texas Oncor Electric Delivery "is able to monitor its electric delivery system, obtaining a steady stream of data that can be analyzed for potential problems. Once a problem is pinpointed, Oncor dispatches operations personnel to investigate the irregularity before it can become an outage or other service issue. Issues are often resolved before consumers even realize that there was a problem." Oncor Press Release (Sept. 19, 2007), available at: http://www.oncor.com/news/newsrel/detail.aspx?prid=1094.

[24] Smart meter systems reporting usage and other data on a next-day basis lack the ability to perform this function. In contrast, the Smart Grid enables utilities to maximize the efficiency of their distribution systems in real time.

[25] *See Xcel Energy Smart Grid: A White Paper* at 5, Xcel Energy (Feb. 2008), available at: http://www.xcelenergy.com/docs/SmartGridWhitePaper.pdf

optimization could reduce distribution grid line losses by 15% or more and save 500,000 tons of CO^2 annually.[26]

To put this into perspective, Federal Energy Regulatory Commission (FERC) Commissioner John Wellinghoff testified to Congress in May 2007 that "if we could make the electric grid even 5 percent more efficient, we would save more than 42 gigawatts of energy: the equivalent of production from 42 large coal-fired power plants. Those are plants that we would not need to build and emissions that we would not produce."[27] This would save approximately 275 million tons of CO^2 annually across the U.S. and a Smart Grid can deliver nearly all of those savings through just one of its many applications.[28] EPRI has estimated that a Smart Grid can reduce electric usage by up to 10% and reduce CO^2 emissions from the electricity grid by up to 25%.[29]

II. The Economic Value of Smart Grid

CURRENT has worked with several leading industry consultants and electric utilities to develop a Smart Grid Value Model that demonstrates the value proposition in deploying a Smart Grid. For instance, the *net benefits* of a representative one million-home Smart Grid deployment can exceed $3 billion over a 17-year period, which translates into a net present value over the same period of more than $700 million. These

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[26] *CEC Report* at 75. Similarly, a study at Hydro Quebec quantified those savings at two billion kWh. *Id.* at 75.

[27] Prepared testimony of John Wellinghoff, Commissioner - Federal Energy Regulatory Commission, to the House Energy and Commerce Subcommittee on Energy and Air Quality (May 3, 2007) , available at: http://www.ferc.gov/EventCalendar/Files/20070503100145-wellinghoff-5-3-7-testimony.pdf.

[28] DOE studies show that electricity generation and distribution produces 40% of all CO^2 emissions in the United States. CO^2 emissions from power plants climbed 2.9 percent in 2007, the biggest single-year increase since 1998, according to a recent analysis of data from the Environmental Protection Agency (EPA) by the nonprofit and nonpartisan Environmental Integrity Project (EIP). Currently, the single largest factor in U.S. climate change pollution, the electric power industry's CO^2 emissions, have risen 5.9 percent since 2002 and 11.7 percent since 1997. Environmental Integrity Project Press Release (Mar. 18, 2008), available at: http://www.environmentalintegrity.org/pub493.cfm.

[29] Electric Power Research Institute (EPRI), "Electricity Sector Framework for the Future: Achieving the 21st Century Transformation." Volume I (August, 2003), pages 41 – 43.

values are derived by including the capital and operating costs of the utility to deploy and operate the Smart Grid and the cost savings produced from the applications discussed above. These results will vary by utility as their costs and realizable benefits vary. In contrast, the net present value of a smart meter system is estimated to range from a net *loss* of $199 million[30] to less than $100 million positive when demand response components are included.

III. Smart Grid Will Best Facilitate Demand Response and Distributed and Renewable Energy Goals

Smart Grid is essential to achieving the Energy Master Plan's goal of reducing energy consumption at least 20% by 2020 and meeting 22.5% of the State's electricity needs from renewable energy sources,[31] including 2.12% of electricity needs from solar power specifically.[32]

Smart Grids are essential to realize the full potential of demand response programs and distributed generation sources, particularly widely distributed renewable sources such as rooftop solar. Some experts believe these new technologies may seriously compromise the reliability of existing distribution systems without the necessary system controls provided through a Smart Grid implementation. Smart Grid implementation will provide necessary system-wide controls to integrate renewables into the grid, something that most smart meter systems cannot accomplish.[33]

A Smart Grid enables the utility to manage thousands and even millions of sensors in near real-time and truly to integrate and manage distributed generation

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[30] *See, e.g., supra* note 8, *Ohio Meter Workshop.*

[31] Draft EMP, page 12.

[32] Draft EMP, pp. 12, 63-67.

[33] *See, e.g.,* SCE AMI Use Case, *supra* note 22 (discussing limits of smart metering for distributed generation).

resources such as rooftop solar panels. This will further the ongoing effort of New Jersey to phase-out rebates as an incentive for installing solar and instead create more robust, market-based incentives based on real-time, two-way information about the value of solar power inputs across the electricity distribution network.[34]

In contrast, most smart meter systems are designed for once-a-day communication of the previous day's usage data and thus have very limited communications bandwidth. Even the "best-in-class" smart meter solutions (typically wireless mesh) operate at approximately 28.8 to 56 kbps (the equivalent of dial-up modem speeds that were outdated a decade ago). One recent smart meter vendor recently disclosed that its system could send a one-way message to 3 devices per second.[35] On the typical 2,000 meters per collector, this equates to being able to send a one-way message in slightly over 11 minutes to all the devices and another 11 minutes to get a message back (assuming communications are not further delayed by meter reading activity, congestions or interference).

Accordingly, CURRENT proposes that the Draft Plan be modified to include a Goal 3 action item: deploying a Smart Grid capable of managing distributed generation sources across the grid, including solar installations by residential and small commercial customers.

IV. Regulatory incentives will accelerate Smart Grid deployment

Smart Grid investments will create savings that exceed the cost, including just and reasonable returns on capital investment, for deploying and operating the system. Therefore, utilities will have a disincentive to make such investments – or in fact be

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[34] *See* Draft Plan, page 64.

[35] George Flammer, Chief Scientist, Silver Spring Networks, Presentation to EUCI conference, May 5, 2008.

deprived of appropriate revenues that are necessary to recovery their true electric delivery costs if compelled to make them – unless appropriative regulatory adjustments are made. Accordingly, utilities could be compensated through lost revenue adjustment mechanisms, generally known as "decoupling", or through direct application of the Societal Benefits Charge (SBC), to Smart Grid efforts specifically. Additionally, Smart Grid differs from other measures or investments in that Smart Grid provides the means to measure and verify the energy consumption reductions and other system benefits that are being rewarded with SBC funds. The Draft Plan appropriately addresses the need for decoupling and other incentives and measures to encourage a robust energy efficiency market:

> A full portfolio of strategies will be considered to ensure the best mix of strategies, while remaining cost-effective. The program will seek to strike the most effective blend of participants in the energy efficiency market and shall consider their concerns, including competition and decoupling. This program will be funded through the reallocation of existing Clean Energy Program funds, upfront capital costs provided by private investors and/or electric and gas utilities, and auction revenues from the Regional Greenhouse Gas Initiative.[36]

CURRENT proposes that Smart Grid-specific incentives be included in the portfolio of strategies for energy efficiency. For example, a portion of auction revenues from the Regional Greenhouse Gas Initiative ("RGGI") could be used to fund Smart Grid deployments. Moreover, additional credits could be awarded to a utility that deploys a Smart Grid since such technology will increase the impact of other carbon-reducing assets and measures (e.g., distributed generation and/or intermittent renewables that Smart Grid can help to integrate into real-time grid operations).

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[36] Draft Plan, page 53.

CONCLUSION

CURRENT submits that the deployment of a Smart Grid is an essential means to increase the efficiency of the distribution grid, lower the costs borne by rate payers for the distribution of electricity, and enable consumers to manage their energy consumption through demand response programs. Under federal law it is incumbent upon each State to consider requiring that electric utilities demonstrate that they considered an investment in a qualified smart grid system before deploying non-Smart Grid systems. For the reasons set forth herein, CURRENT recommends that the Energy Master Plan direct and authorize the utilities to deploy Smart Grid pilots so the Board can perform its statutory obligations to evaluate whether in fact Smart Grids will serve the public interest and further the interests in the Plan.

Respectfully submitted,

__/s/_Harry Wingo______
Jay L. Birnbaum
Harry Wingo
CURRENT Group, LLC
20420 Century Boulevard
Germantown, MD 20874

July 24, 2008

ACTION ITEM 4: Move the State's electricity grid toward the development of a 'smart grid' infrastructure.

"Smart grid" technology offers the hope of transforming the electric power grid, by using advanced communications, automated controls and other forms of information technology, to provide two-way communication between the utilities and the customers. Using currently available communications technology, a smart grid could integrate a utility's electric distribution network into a customer's home and be used to support energy efficiency and demand response actions to reduce energy consumption. A smart grid could use devices at all levels within the grid (from utility to customer) to independently sense, anticipate and respond to real-time conditions by accessing, sharing and acting on real-time information.

As part of a smart grid, smart meter technologies can give customers real-time usage and price information to underscore the value of controlling consumption at specific times. It can also be coupled with end-use technologies capable of responding to price signals automatically. For example, air conditioners could be equipped with technology that could receive a signal from the smart grid infrastructure to cycle on and off during peak demand periods.

While some states are experimenting with this technology, it has not yet been implemented on a broad scale in tandem with demand response programs. The BPU, working with utilities, Rate Counsel, and various consumer groups will determine the costs and benefits of smart grid infrastructure. If successful, the State will encourage the expansion of this infrastructure to all customers.

The BPU will also work with the utilities, Rate Counsel, consumer groups and the New Jersey Apartment Association to determine the economic feasibility of changing from master meters for multi-family homes to sub-metering or individual metering of each customer's consumption.

Currently, PSE&G and Atlantic City Electric, have both made proposals to the BPU to install smart meter technologies. PSE&G has proposed a smart meter pilot program to compare three smart meter technologies and determine which technology is most effective. Atlantic City Electric has already identified a smart meter technology that it would like to install for all of its customers. Both proposals are in the process of being reviewed by the BPU.

IMPACTS: There are different costs associated with different technologies; there are different benefits as well. The BPU will work closely with all stakeholders, and support pilot projects to evaluate different technologies and different programs, to ensure that the technologies and programs used in each utility's service territory provide cost-effective benefits to customers overall.

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