BEFORE THE
DEPARTMENT OF ENERGY

In the Matter of	**)**
	)
Addressing Policy and Logistical	**)**
Challenges to Smart Grid	**)**
Implementation	**)**
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COMMENTS OF AT&T INC.

I. Introduction

AT&T Inc., on behalf of itself and its affiliates, welcomes the opportunity to respond to the Department of Energy's third Request for Information (RFI) on Smart Grid issues. Released on September 17, 2010, this third RFI inquires specifically into the policy and logistical challenges to Smart Grid implementation. As discussed at greater length below, AT&T would suggest a focus on four policy points in the Department's development of Smart Grid policy.

- AT&T urges the DOE and other federal policy makers to ensure that the nation's Smart Grid receives the full benefit of the most robust, secure, scalable, adaptable and economical communications technologies available. In many instances, those will be the communications services offered by the country's other commercial telecommunications providers.

- AT&T recommends that the Department adopt policies that will support and encourage the broad array of consumer applications that will accompany deployment of the Smart Grid. These consumer-facing applications have the potential to drive public acceptance of the Smart Grid and to stimulate substantial economic activity and job creation.

- In light of the nation-wide reach of the electrical grid, AT&T urges the Department to encourage states to support and participate in the ongoing NIST interoperability and cyber security proceedings, rather than attempting to chart a separate course on either of these important issues.

- AT&T encourages the Department to work with FERC to adopt interpretations of accounting rules that will remove the incentive that utilities currently have to prefer construction of their own private communications networks to using the robust, efficient and scalable capabilities of commercial telecommunications providers.

AT&T is an emerging leader in network and managed services for Smart Grid devices, and its extensive assets and capabilities make it an ideal partner for other innovators that are working to advance Smart Grid technologies. As such, AT&T has a direct interest in assisting the DOE and other stakeholders to achieve efficient and effective Smart Grid deployment. AT&T is already providing an extensive array of communications services to permit more robust operation of various Smart Grid technologies throughout the power grid and to bring the Smart Grid's promise to utilities and their customers. This technology, along with the extensive array of AT&T's network services (including wireless and wired connectivity, Virtual Private Networking, private line service, managed security, hosting and computing services) will enable utilities, businesses and homeowners to obtain more detailed and real-time information about energy generation and consumption, enabling improved energy efficiency and reduced costs. AT&T continues to look for new ways to leverage its experience and assets in advancing Smart Grid deployment.

II. Commercial Telecommunications Providers Offer Robust and Economical Services for Utilities Deploying Smart Grid Communications Capabilities in Their Networks.

In many instances, commercial communications providers represent the best, most robust, economical and secure option for utilities deploying Smart Grid capabilities in their network. Indeed, many utilities recognize the value that commercial providers can offer in Smart Grid deployments. Thus, the Department's recent report noted that "[c]ommercial service providers are increasingly partnering with utilities to provide communications for Smart Grid

applications."[1] Similarly, in a recent survey by the Utilities Telecom Council, significant numbers of the respondents indicated that they use commercially provided services for field voice communications (33%) and smart meter communications (29%).[2] And at least 38% of respondents use commercial services for their utility control networks, the domain that the report describes as including the most "mission-critical communications of utilities."[3]

AT&T has previously submitted extensive comments to the Department outlining the significant benefits that commercial providers hold for the Smart Grid.[4] Rather than fully restating the various ways in which commercial communications services are suited to the requirements of Smart Grid deployments, AT&T sets out a condensed version of its previous filings on this topic below.

Security: Commercial communications service providers offer highly sophisticated cyber security protections that will enable utilities to protect their business operations as well as the privacy of consumer and operational data. Commercial providers have extensive experience in developing comprehensive security solutions for complex network environments. Such capabilities provide a crucial added layer of defense for the security steps a utility must take to protect the assets and systems under its direct control. AT&T works constantly to assure that it is capable of detecting and dealing with evolving cyber threats. Its wireline and wireless networks are supported by a comprehensive 24x7 global security organization comprised of over

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1 *Communications Requirements of Smart Grid Technologies* at 4 (DOE October 5, 2010) (DOE Communications Requirements Report).

2 *A Study of Utility Communications Needs: Key Factors that Impact Utility Communications Networks*, Utility Telecom Council, at 28, Table 4, and 32, Table 15 (2010) (available for sale at utc.org) ("UTC Report").

3 UTC Report at 7, 34.

4 *See* AT&T Comments in Response to RFI Concerning Communications Requirements (July 12, 2010) (available at http://www.gc.energy.gov/documents/ATT_Comments_CommsReqs.pdf); AT&T Reply Comments in Response to RFI Concerning Communications Requirements (August 9, 2010) (available at http://www.gc.energy.gov/documents/ATT_Reply_CommsReqs.pdf).

700 security professionals dedicated to the physical and logical security of the AT&T global network and its service offerings. The company's security organization constantly analyzes the network, looking for any unexpected pattern changes that may indicate an emerging cyber security threat. Indeed, AT&T's network security is trusted by virtually all state and local law enforcement agencies, numerous federal agencies with the highest level security requirements, the nation's major stock exchanges and the largest banks and financial institutions.

Coverage: Commercial service providers already cover well in excess of 90% of the nation's population with the wireless services crucial to efficient Smart Grid deployment. They also have the consulting and network engineering capabilities to effectively extend that reach to 100% of a utility's footprint for Smart Grid services. Thus, utilities rolling out Smart Grid in their networks need an economically viable mix of integrated technologies that can securely and reliably connect utility assets and support interactions with customers. The most cost-effective strategy to achieve this – and the strategy that will most benefit rate payers – is to start with the 90+% coverage of commercial wireless providers and integrate other technologies to achieve the full coverage that the Smart Grid requires. Thus, AT&T can extend its range with mesh collectors near the edge of its networks. AT&T also uses satellite technology to address "holes" in commercial cellular coverage. While these satellite links are not inexpensive, using them to complement the already vast footprint of a commercial provider like AT&T can result in a much lower per-subscriber cost for Smart Grid communications than utilities can typically achieve by constructing an entire single-use network on their own.

Survivability and Restoration: Like other commercial providers, AT&T works diligently and invests heavily to ensure that its network can withstand both manmade and natural disasters and, on those rare occasions when network components fail, that communications can continue

to flow and damage to the network can be repaired fully and promptly. Thus, AT&T has invested billions of dollars in reserve power infrastructure and portable power generating equipment. Over 99% of AT&T wireless sites nationally are engineered with reserve batteries and/or permanent generators. AT&T switching centers are typically equipped with multiple, redundant permanent generators with local fuel supply to allow greater than 4 days of run time. With regular refueling, these generators can maintain power at a location virtually indefinitely until commercial power is restored, and the redundancy ensures a back-up generator in the event that the first one fails. In the unlikely event that both permanent generators sustain damage, each switching site is equipped with 8 hour battery reserve. Supplementing the preceding steps, AT&T maintains a rapid response fleet of portable generator assets to augment permanent systems as needed.

AT&T has an extensive Network Disaster Recovery ("NDR") program in which it has invested well over $500 million in the last 20 years. This program's goals are: (1) to route traffic around affected areas; (2) to give the affected area communications access to the rest of the world; and (3) to recover communications service to a normal condition as quickly as possible through restoration and repair. AT&T maintains an inventory of more than 300 technology and support trailers that can be deployed quickly to respond to any disaster. Specially-designed tractor-trailers are strategically placed around the U.S. for immediate dispatch to act as a virtual network office. Once these trailers are deployed, the individual components are interconnected to recreate the configuration of the damaged or destroyed network office. AT&T also supplies self-contained mobile cell sites and emergency communications vehicles that use a satellite link to provide voice and data service within 30 minutes of arriving on site.

Scalability and Adaptability: Commercial service providers can ensure that the Smart Grid will be flexible enough to accommodate evolving devices and applications, and that it will be rapidly scalable to accommodate massive increases in the number of connected devices and the volume of data. Many of the devices that the Smart Grid communications platform will need to support are still in development, such as the technologies supporting battery storage, electric vehicles and renewable energy. However, the Smart Grid will need to accommodate such new developments without significantly disrupting existing applications or rendering prior choices incompatible or obsolete. For years, commercial providers have continually upgraded the technology used in their networks to enhance service performance, coverage and reliability, and to drive down costs. For example, the wireline network seamlessly evolved from analog to digital technology and transitioned from circuit-switched to packet platforms. Similarly, wireless networks have transitioned from 2G to 3G -- and will soon move to 4G -- platforms, all while improving service, increasing coverage and driving down cost for customers.

Given the rapid growth of data traffic from the Smart Grid components already in the market and the potential for even greater volume coming from yet-undeveloped applications, it will be vital that the Smart Grid be capable of rapidly growing in scale. Commercial service providers have for years been managing networks with an eye to rapid scalability, flexibility and backwards compatibility. Thus, wireless providers grew from serving less than 100 million subscribers in 2000 to over 285 million as of December 2009. Providers added more than 240,000 cell sites across the country so at least three commercial communications operators provide wireless service in census blocks that cover more than 95 percent of the U.S. population. Moreover, commercial operators are continually investing to grow their networks: In 2009, AT&T invested $18 billion in its network infrastructure. It plans to invest up to $19 billion in

2010. Commercial providers are without peer in their ability to rapidly scale communications networks.

Prioritization: Commercial providers have a variety of strategies to provide utilities' mission critical Smart Grid communications with the priority that they require. Thus, commercial providers offer dedicated connectivity that is unaffected by load on the commercial network in general. Utilities can also subscribe to a managed virtual private network (VPN), which will also insulate the utility traffic from the effects of other congestion on the network. Indeed, AT&T can work with its utility customers to prioritize various classes of traffic on the VPN, so the utility's highest priority service classes receive priority ahead of other classes of the utility's own communications.

As the Department recently noted in its report on the communications requirements of utilities, the National Communications System (NCS) also manages three programs to address communications priorities during emergencies.[5] This includes options for the utility to classify critical dedicated circuits for priority restoration treatment (Telecommunication Service Priority), and to obtain priority handling for voice traffic (Government Emergency Telecommunication Services) or wireless voice traffic (Wireless Priority Service). AT&T is also encouraging the FCC to work with the appropriate government agencies to establish a similar system for prioritizing IP-based communications. In its recent report, the DOE found that utilities may be unaware of the benefits available through these prioritization programs.[6] AT&T is committed to working with its utility customers to increase their awareness of the opportunities under these programs.

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5 DOE Communications Requirements Report at 48-49.

6 Id. At 49.

III. Federal Policy Makers Should Work with the States to Ensure that Utilities Deploying Smart Grid Capabilities Have Carefully Examined the Available Options for Powering the Grid's Communications.

As set out above, the benefits of running Smart Grid communications over commercial networks are substantial. AT&T's utility customers frequently find that the balance tips further in favor of commercial services when they take a hard look at economics. Especially with the aggressive pricing plans that the company has implemented, utilities often find that the value proposition – both for themselves and for the rate payer – is an additional compelling factor favoring use of commercial networks. Given the evident concerns about costs and benefits growing from Smart Grid deployment, AT&T encourages the Department to examine policy options for ensuring that utilities carefully weigh the possibility of using commercial services in their Smart Grid deployment plans and that they communicate that analysis to state regulatory commissions. The California Public Utilities Commission adopted such a requirement in its order this past June:

> It is . . . reasonable to require that a utility's Smart Grid strategy demonstrates how the utility will evaluate whether third party communications networks can provide cost-effective communications that meet the security and performance requirements of the Smart Grid. We expect that before the Commission approves a specific Smart Grid infrastructure investment, the Commission will wish to ascertain whether investments in Smart Grid communications are cost-effective and whether a utility has adequately considered a range of alternatives, especially those concerning the use of existing and future communications infrastructure operated by third parties.[7]

AT&T urges the Department to identify policy options to encourage other state PUCs to ask similar questions of their regulated utilities. Options for achieving this end could entail federal grant or loan programs. Additionally, the Department could develop a list of best practices for use by state commissions addressing questions of Smart Grid deployment.

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[7] California Pub. Utilities Comm'n, Rulemaking 08-12-009, *Decision Adopting Requirements For Smart Grid Deployment Plans Pursuant To Senate Bill 17 (Padilla), Chapter 327, Statutes Of 2009* at 48-49 (June 24, 2010).

AT&T acknowledges that commercial services may not be the right solution for each and every Smart Grid deployment. It is nevertheless true that commercial providers often have products and capabilities that can power Smart Grid communications more effectively, more quickly and more economically than a utility can do by building its own network. This is an important area of focus for state commissions if the promise of the Smart Grid is to be brought to consumers as quickly and as economically as possible.

IV. Policy Makers Should Work to Encourage the Technological Progress and Job Development that Will Accompany a Fully Deployed Smart Grid.

The Smart Grid goes well beyond the important goals of optimizing grid operations and integrating renewable energy technologies. Much of the value of this vast deployment of communications technology in our nation's electrical grid will come from the "automated, interactive interoperable consumer devices" that the RFI mentions as a component part of the Smart Grid.

AT&T is already working toward a day when a home's major appliances and systems will track and communicate their energy usage to a central collection point or residential gateway. The various uses to which that data can then be put, with appropriate consumer consent, are virtually limitless. For example, it will be possible for approved third parties to monitor appliances' consumption levels and notify the consumer if usage patterns appear abnormal. So, a homeowner could learn that his refrigerator appears to be dropping in efficiency and might be due for service or replacement; or a consumer could be prompted to remotely turn off her pool pump or air conditioner when it should not be in use.

But the promise of Smart Grid and communications-enabled consumer appliances goes beyond these examples. Refrigerators will keep track of their contents and generate a shopping

list for the coming week, or make recipe suggestions based on available provisions. Major appliances will automatically download firmware upgrades to improve their performance and allow remote diagnostics and repairs by the manufacturer, thereby avoiding a truck roll and the inconvenience of waiting at home for the repairman.

We are at the beginning of a lengthy evolutionary process for the multitude of consumer-facing services and applications that will grow out of, and along with, Smart Grid technology. The most promising applications and capabilities may not even have been envisioned yet, let alone put into commercial development. It already appears, however, that the consumer benefits from this ecosystem of technological innovation will do at least as much to drive acceptance of the Smart Grid as will considerations of energy independence and optimizing grid operations. Accordingly, policy makers should focus their efforts on ways to encourage the innovation, job creation and substantial economic activity that this sector is poised to offer.

Development of consumer-facing applications in this sector will be best served by policies that foster consumer choice and inter-operability in the Smart Grid ecosystem. Where possible, AT&T recommends that policy makers avoid models in which a single entity or industry segment has exclusive control over the consumer data that will flow from this wealth of new technologies. Rather, policy makers should opt for secure and open standards and allow consumers to direct their data flows (including a customer's energy usage information) to application and service providers of their choice. And the data elements should be readily understandable, complete and available on a timely basis, regardless of whom the consumer selects to provide home energy management services. This will help to assure that the consumer applications, services and devices growing out of Smart Grid will achieve their full potential.

The consensus proceeding that NIST has been conducting achieves the balance that AT&T suggests. Both the NIST working group on Smart Grid cyber security and the various NIST working groups developing Smart Grid interoperability standards have been productive endeavors with excellent output that will foster innovation in connection with the Smart Grid. The output of the cyber security working group appropriately adopts guidelines for utilities and their deployment partners to follow but recognizes that security considerations are often specific to particular projects and therefore avoids an overly prescriptive approach.[8] Similarly, the NIST working groups on interoperability standards have generally been driven by consensus and have endorsed open standards that will help to spur innovation in this space, thereby encouraging significant private sector investment and job creation.[9]

In this regard, AT&T encourages the Department to motivate state PUCs to defer to the cyber security guidelines and interoperability standards coming out of the NIST process. The California PUC has taken this approach in its recent Smart Grid deployment order. It is an approach calculated to ease wide-spread deployment of Smart Grid, since utilities and their deployment partners (many of whom operate on a nationwide basis) will be able to build to a single set of interoperability standards and cyber security guidelines, rather than needing to

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[8] NISTIR 7628: Guidelines for Smart Grid Cyber Security, The Smart Grid Interoperability Panel Cyber Security Working Group (September 2010) (three-part document available at http://csrc.nist.gov/publications/PubsNISTIRs.html#NIST-IR-7628).

[9] *See* Summaries of Use, Application, Cybersecurity, and Functionality of Smart Grid Interoperability Standards Identified by NIST, Release 1.0 (October 6, 2010) (available on NIST Smart Grid Collaboration Site, http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/NISTStandardsSummaries); *see also* October 26, 2010 letter of George Arnold, National Coordinator of Smart Grid Interoperability, to John Wellinghoff, FERC Chairman (transmitting first five foundational families of standards for consideration by FERC)(available at http://www.nist.gov/public_affairs/releases/upload/FERC-letter-10-6-2010.pdf).

incorporate different, state-specific requirements and technology into different projects, depending on their location.

Additionally, AT&T recommends that policy makers refrain from setting a particular consumer-facing device networking standard. Such a step runs the risk of enshrining a less than optimally efficient standard for the sake of uniformity. Firms developing consumer devices to integrate with the Smart Grid understand the importance of making equipment that is simple to operate. They already are motivated to achieve a uniform, consumer-friendly solution and are working to reach that goal. Having established an open standards-development process, the work of government policy makers in this space is complete.

V. Accounting Reform Represents the Final Policy Change that Holds Significant Promise to Encourage Prompt, Efficient Smart Grid Deployment.

Regulatory accounting represents the final area in which AT&T believes that policy impediments may exist to the speedy and efficient deployment of the Smart Grid on a nationwide basis. The Department, likely in conjunction with the Federal Energy Regulatory Commission (FERC), should consider adopting accounting policies that would remove financial incentives that exist today for investor owned utilities (IOUs) to prefer building their own communications networks, rather than looking to commercial providers for Smart Grid communications services.

An IOU contemplating Smart Grid deployment will likely be operating under accounting rules that allow it to earn its prescribed rate of return on capital investments, but require that operating expenses be passed through to rate payers without mark-up. These rules create incentives for utilities to prefer Smart Grid projects that rely on capital expenditures, potentially even when the total cost to rate payers would be lower for a solution funded by operating expenses. Thus, the accounting rules may lead some IOUs to prefer building more of their

communications capabilities (thereby investing capital and receiving the allowed rate of return) than would otherwise be justified by the economics of the situation. It is thus important to ensure that accounting and revenue considerations do not outweigh considerations of network functionality, long-term economic and technological obsolescence for utilities that are choosing how to deploy Smart Grid communications functionality.

As discussed above, in many instances, using existing commercial networks, for all or part of the Smart Grid services, will be the more efficient, lower-cost alternative and provide for greater flexibility as new technologies and capabilities emerge. The utility can purchase only the communications service that it needs at a given point in time, rather than immediately saddling its investors (and its rate base) with a full network that carries relatively little traffic. And it need not concern itself with managing technology upgrades, ensuring backward compatibility, maintaining security and the myriad reliability issues that come with operating a communications network. It is important, therefore, that the regulatory accounting regime and an IOU's goal of maximizing revenues not drive the utility to make a more costly, less efficient choice for deploying Smart Grid capabilities.

Prepaid Expense Treatment: One way to counteract these revenue incentives would be for the Department to work with FERC to clarify that current accounting rules provide the option for utilities to treat Smart Grid equipment and connectivity costs as a prepaid expense when the contracts call for up-front payments for all or a portion of the equipment and services. Up-front payments might be expected when the Smart Grid services require significant initial planning and capital commitments by the third-party vendor, followed by the payment of ongoing operating expenses. The state PUCs could also contribute to Smart Grid deployment by affording consistent treatment within the state rate case process. There is precedent for treating

such connectivity costs as a prepaid expense. Under certain conditions, items typically viewed as operating expenses – rent, insurance, even labor – are treated like a capital investment if the utility prepays those expenses. Under this asset treatment, a prepaid expense is capitalized and appears on the balance sheet as an asset that is eligible for the prescribed rate of return.

With such a clarification, accounting rules would be less likely to drive Smart Grid deployment decisions. At the same time, the accounting treatment would ideally be at the discretion of the utility rather than being mandatory. This would permit utilities to make Smart Grid connectivity decisions that best meet the needs of their particular situation, considering their true technology merits, cost to the rate payer, and actual operational advantages.

Regulatory Asset Treatment: Another alternative for addressing Smart Grid connectivity is to allow treatment of qualifying recurring Smart Grid connectivity costs as "regulatory assets" under the Financial Accounting Standards Board's Statement No. 71, "Accounting for the Effects of Certain Types of Regulation." Statement No. 71 allows for the creation of a regulatory asset where a PUC has permitted an IOU to place certain "extraordinary" expenses on the balance sheet and amortize them over time. Under this treatment, regulatory asset expenses become eligible for the rate of return calculation during a rate case and their recovery is deferred over time. Expenses that have been classified as regulatory assets include one-time costs associated with grid repairs after a natural disaster or significant maintenance costs, such as tree pruning along distribution lines. These types of expenses receive special treatment because they present a substantial benefit to the ratepayer, such as restoring electricity or reducing the risk of outages, and to reflect differences in the timing of cost-incurrence and ratepayer benefits.

Regulatory asset treatment could be appropriate for a significant portion of Smart Grid costs, because there will be significant initial costs, followed by continuing operating and upgrade costs. Furthermore, the initial investments in Smart Grid assets will not immediately produce reductions in other operating costs, resulting in a timing mismatch that suggests that these costs should be recovered from ratepayers over time.

Some IOUs that plan large Smart Grid investments likely would find it beneficial to treat Smart Grid connectivity costs in this manner. As with prepaid-expense treatment, allowing utilities to classify Smart Grid connectivity costs as regulatory assets would allow them to consider the full range of technology options more clearly, and ultimately select the most attractive solution from the perspective of the utility and the ratepayer. However, it is essential that payments to third parties receive the same treatment as utility investments.

VI. Conclusion.

AT&T appreciates the opportunity to contribute its views on these important issues and looks forward to continued engagement with the DOE and policy makers throughout state and federal government as the conversations about the implementation of the Smart Grid continues.

Respectfully submitted,

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