COMMENTS OF TENDRIL NETWORKS, INC.

Department of Energy
Implementing the National Broadband Plan by Empowering Consumers and the Smart Grid: Data Access, Third Party Use, and Privacy

July 12, 2010

Tendril is pleased to provide these comments to the Department of Energy in response to the Request for Information "Implementing the National Broadband Plan by Empowering Consumers and the Smart Grid: Data Access, Third Party Use, and Privacy."

We agree with the observation presented in this RFI that access and privacy are complementary goods. We believe that the success of the smart grid will be measured by the degree to which consumers are engaged. In order to become engaged, consumers must have access to the information about real-time conditions, historical usage and underlying prices of energy markets. It is also critical that consumers can be served by a marketplace that will develop services and products. However, these same consumers will only be engaged in meaningful ways if they have confidence that their reasonable expectations of privacy will be protected.

Tendril favors a privacy policy for the smart grid that values security, transparency, customer consent, and innovation. We believe that policymakers can find a productive balance among these goals that will benefit all stakeholders, including utilities, consumers, consumer advocates and third-party service providers.

Security:
Customer information collected by smart meters and other smart grid devices must be collected, transmitted, and stored securely. Additionally, respecting the private domain of the home is a fundamental expectation in modern our society. We believe that consumers have an expectation to preserve the privacy of their own homes, including the ways in which they use energy. Other industries, such as banking, online shopping, and wireless communications, can serve as models for ensuring the security of personal information collected by smart meters, which will also bolster consumer confidence in the smart grid.

Transparency:
The smart grid will be "smart" because of data that is converted into actionable information. Utilities and third parties should offer clear and consistent statements about how customer information will be collected and used from customers' smart meters or other sources. Similarly, utilities and other third parties with access to customer data should be transparent about the methods used and protocols in place to keep customer data secure.

Customer consent:
The uses of energy data should be limited by customer consent explicitly granted. We presume that basic electric service includes access to data necessary for billing and grid operations, which can be a required part of the contractual relationship to provide electric service. Additional uses of customer data should be permissible only with affirmative consent from the consumer.

Innovation:
Tendril believes that it is imperative to guarantee security, ensure transparency, and establish customer consent while fostering marketplace innovation. In order to promote innovation, we believe that policies should focus on the real additional privacy benefits of achieving consumer privacy and protection objectives. For example, requirements for mandatory data destruction may severely limit the ability of utilities and third parties to create new products and services without providing additional consumer privacy protection beyond data practices used in other industries that, in the case of smart meter data, would involve separating personally identifiable information from consumption data.

We are encouraged to see the Department of Energy take a leadership role in examining and implementing the recommendations included in the National Broadband Plan. As has been noted in other federal and state venues, the smart grid can (1) fight climate change through efficient and clean energy production, (2) create jobs by shifting investment capital into the new energy economy, and (3) foster innovation by creating an economic engine that will keep America leading the global economy.

In order to effectively develop a market that engages consumers, public policy should distinguish between different classes of energy information, establish strong consumer protection practices and encourage marketplace innovation. DOE's leadership in this area can lead to the active state-federal partnerships needed to move the marketplace forward.

With regard to the specific questions posed in the Request for Information, we offer the following comments:

(1) Who owns energy consumption data?

The customer is the primary locus of control for energy consumption data collected by the customer's smart meter and activity associated with the home area network (HAN). Rather than assigning ownership to either the customer or the utility, which implies mutual exclusivity, we believe it is better to apply notions of overlapping access rights and usage rights.

Customers need access to real-time or near real-time consumption data in order to realize one of the principle goals of the smart grid: customer empowerment. Only by accessing

detailed and actionable information about their energy use, including real-time consumption data, will customers have the opportunity to manage their energy consumption effectively, take advantage of dynamic rate structures, decrease their consumption, and help utilities manage grid reliability or peak demand through demand response programs. However, as been noted in multiple areas, because this granular information can also reveal patterns and a detailed private information, consent to access this information lies properly within the customer's control.

At this point, we see a compelling need for grid operators to understand both the capacity needs and consumption demands of the individual customers they serve. We do not, however, see a compelling need for grid operators to have a granular understanding of the devices within the home that comprise those capacity and consumption needs. Because of the sensitive nature of this information, control of this information also lies within the customer's control.

In our opinion, nothing about consumer control over the data within the home should prevent or impede the needs of utilities, third-party service providers or contractors to access information on the utility-side of the meter that is needed for billing, grid management load forecasting and demand response purposes, including interval and cumulative consumption and time-of-use information for customers with dynamic rate schedules.

(2) Who should be entitled to privacy protections relating to energy information?

All energy consumers are entitled to privacy protections related to energy consumption information. Tendril supports policies and laws that entitle everyone to privacy protections, including residential, commercial, industrial, and institutional customers. However, we recognize that legislatures and courts might find distinctions between the various customer classes, especially in the context of access by law enforcement officials and civil litigants. We further recognize that there are established procedures for accessing information, including obtaining appropriate warrants or court orders.

(3) What, if any, privacy practices should be implemented in protecting energy information?

In addition to security, transparency, customer consent, and innovation, Tendril believes that the Fair Information Practice Principles ("FIPPs") provide useful guidelines. As defined by the US Federal Trade Commission, the five FIPPs are notice/awareness, choice/consent, access/participation, integrity/security, and enforcement/redress. The FIPPs are a useful starting point for developing more concrete privacy policies. They also provide a strong foundation for establishing specific rules, although we recognize that a spectrum of privacy policies will comply with these guiding principles. Therefore, we advise caution against the temptation to believe that the principles will by themselves generate concrete or specific rules and policies. Rather, industry and policymakers should keep the FIPPs in mind when balancing the many other issues and concerns that are implicit in smart grid policies.

It is important in this context to distinguish technical decisions from policy decisions. Technical decisions address *how* security concerns should be addressed, whereas policy decisions address *what* types of information should be protected and *who* should be protected under the privacy policy. Keeping these questions distinct will help policymakers and stakeholders agree on the best policies before deciding which technical practices best conform to the policy. As noted elsewhere in these comments, we believe that the privacy practices established in other electronic industries, including banking, online shopping, and wireless communications, can provide useful models for successfully balancing the complementary goals of protecting privacy while fostering innovation.

(4) Should consumers be able to opt in/opt out of smart meter deployment or have control over what information is shared with utilities or third parties?

Consumers should have control over what information is shared with their utilities or third parties. As noted, basic terms of service may include the presumptive right to access information needed for billing and grid reliability. This could imply, for example, that consumers may legitimately request to opt-out of the collection of detailed interval data if there is no compelling reason to collect this data for billing or grid reliability purposes.

As long as there are adequate controls, strong security standards, and a robust privacy policy in place for the information collected by a smart meter, we do not see a compelling reason why consumers should need the ability to opt out of the underlying technology. While a few customers might still prefer not to share their interval data, for example, their concerns must be balanced with the importance of allowing utilities to access it in order to realize the many grid management benefits that a smarter grid will enable.

(5) What mechanisms should be made available to consumers to report concerns or problems with the smart meters?

We believe these mechanisms will vary in different jurisdictions, but we strongly support the idea that public enforcement mechanisms should be established to ensure consumer protection. We anticipate that there may be multiple mechanisms employed based on the nature of the concerns or problems. For example, consumers experiencing problems related to the actual meter or the operations and practices of the utility might be referred to the relevant regulatory authority (public utility commission or public service commission) in their jurisdiction. Problems with the products or practices of third parties might be directed to state Attorneys General, the Federal Trade Commission or the Federal Communications Commission, similar to other business practice complaints. State and federal regulators might also consider establishing ombudsman positions that can deal with complaints initially and direct consumers to the appropriate remedies.

Tendril also believes that proactive consumer education programs can help prepare consumers for Smart Grid deployments and help to manage consumer expectations. These types of efforts can enhance customer engagement with Smart Grid technologies

and help utilities and third parties to avoid customer complaints, which can delay deployment efforts.

(6) How do policies and practices address the needs of different communities, especially low-income rate payers or consumers with low literacy or limited access to broadband technologies?

Tendril believes that all consumers are entitled to privacy protections, including low-income, low-literacy, and other disadvantaged consumers. We recognize that the varying needs of these populations may require support or solutions tailored to their needs and capabilities. We believe, for example, that some communities may need additional support understanding or exercising their privacy and data access rights. When necessary, DOE or the appropriate state agency should consider providing support to help inform, educate, and empower these types of consumers.

State agencies and regulatory bodies have long experience addressing the needs of these communities that can serve as models moving forward. Additionally, some states are establishing targeted programs specifically intended to accompany smart meter deployment. Texas, for example, has created a program to distribute in-home energy monitors to low-income consumers served by smart meters. We believe this kind of support is a useful model for other states and federal programs.

(7) Which, if any, international, Federal, or State data-privacy standards are most relevant to Smart-Grid development, deployment, and implementation?

As stated elsewhere, we believe that the FIPPs provide a useful foundation for data-privacy standards for smart grid deployment. We recognize that these principles are one set among many others that have been promoted domestically and internationally, though we reserve comment on specific recommendations beyond the FIPPs.

(8) Which of the potentially relevant data privacy standards are best suited to provide a framework that will provide opportunities to experiment, rewards for successful innovators, and flexible protections that can accommodate widely varying reasonable consumer expectations?

As mentioned, Tendril believes that the FIPPs provide the outline for a strong framework that will protect privacy and conform to reasonable consumer expectations without sacrificing opportunities for innovation. Robust, comprehensive privacy policies that require utilities, utility contractors, and authorized third parties to comply with customers' reasonable expectations to use data only for specified, authorized purposes is the best way to further the goals of protecting privacy, ensuring access, and supporting innovation. Well-established data anonymization practices, rather than data destruction practices, will also ensure that innovators are able to continue creating valuable products and services that empower consumers and enhance their ability to manage their energy usage effectively, make better consumption choices, and save money on their energy bills.

(9) Because access and privacy are complementary goods, consumers are likely to have widely varying preferences about how closely they want to control and monitor third-party access to their energy information: what mechanisms exist that would empower consumers to make a range of reasonable choices when balancing the potential benefits and detriments of both privacy and access?

Tendril believes that providing customer with clear, simple language is key to providing customers with the levels of privacy protection and data access they want while ensuring that customers actually understand the choices they are making.

Providing consumers with interactive privacy controls, perhaps similar to the privacy setting options available to users of social networking websites such as Facebook, that can be accessed and adjusted at any time by consumers, is one way of providing customers with reasonable assurances that all utilities and third parties are complying with their privacy expectations. Interactive privacy controls would also assure consumers that they are never locked into a particular privacy setting and can change their settings on a going-forward basis.

(10) What security architecture provisions should be built into Smart Grid technologies to protect consumer privacy?

We believe that smart grid technologies can borrow the best security architectures that apply to other areas of commerce that rely on electronic information, including online banking, internet shopping, and wireless communications. Best practices for data encryption, data storage, and data anonymization can be readily applied to the types of data involved in the Smart Grid, including interval data, to protect consumer privacy. We believe that these standards and architectural provisions are being addressed through the NIST and SGIP process.

(11) How can DOE best implement its mission and duties in the Smart Grid while respecting the jurisdiction and expertise of other Federal entities, states and localities?

We believe that coordination of activities is critical among the various entities with jurisdictional authority over smart grid technologies and deployment. Joint task forces (such as the existing Smart Grid Task Force or the FERC-NARUC Collaboratives) provide useful models for information sharing and coordination of activities. We are also supportive of recent Administration-level activities that can provide coordinated leadership and avoid overlapping efforts. We also support state authority with regard to smart grid implementation efforts. However, it is worth noting that state commissions may have limited experience or authority to address many of the privacy issues that surround smart grid information. Therefore, we believe it will likely be appropriate for federal agencies and state offices to have responsibility for privacy matters.

(12) When, and through what mechanisms, should authorized agents of Federal, State, or local governments gain access to energy consumption data?

We believe that many government entities may have interest in analyzing usage data in order to support implementation of federal, state and local policy initiatives. For example, state renewable portfolio standards, energy efficiency programs and electric vehicle

initiatives may all benefit from accurate, detailed information about energy consumption patterns. Energy usage data may also serve to evaluate the effectiveness of those programs. In cases where there are legitimate policy objectives that may be advanced by energy usage information, we believe it is appropriate to establish procedures for those government agencies to access aggregated usage information that does not contain personally identifiable information.

In other cases, Tendril supports the efforts of privacy organizations and civil rights advocates to protect energy consumption data against illegal government searches and seizures. Interval data collected by a customer's smart meter can be used to learn private details about life within the customer's home and, while we do not offer a formal legal opinion, we believe that law enforcement should only be permitted to access such data with a court-issued search warrant, subject to the laws of the state or jurisdiction.

We believe that it is currently unclear whether the U.S. Supreme Court would find energy consumption data collected by a smart grid to be analogous to other electronic means of "piercing the blinds" that were found impermissible in *Kyllo v. United States*. Or, alternatively, whether the Court may find that such information is accessible without a warrant under the rule in *Smith v. Maryland*, in which the Court held that law enforcement agents do not require a warrant to access information about individuals kept in the records of a private business. Along with privacy and civil rights advocates, Tendril hopes that the Administration, regulators, legislators, and courts will recognize that interval consumption data can reveal patterns that many individuals would prefer to keep private from government officials, unless the officials can demonstrate probable cause in the form of a valid search warrant. Tendril supports efforts to clarify the state of the law with regard to Fourth Amendment search and seizure issues and the smart grid, and believes that customers' interval consumption data is protected by these important constitutional protections.

We further believe that this topic may warrant more detailed stakeholder discussions. We are eager to support efforts to reach a consensus view with other stakeholders.

(13) What third parties, if any, should have access to energy information? How should interested third-parties be able to gain access to energy consumption data, and what standards, guidelines, or practices might best assist third parties in handling and protecting this data?

Tendril strongly supports giving *customer-authorized* third parties access to consumption data. Consumers should be free to choose services available from an open and transparent marketplace. With informed and explicit consent, we believe that nothing should prevent the third party from accessing the customer's data. We believe this is consistent with the principle that consumers remain the primary locus for control of their own consumption data.

Allowing customer-authorized third parties to access consumption data is crucial for realizing one of the principal benefits of the Smart Grid—customer empowerment. Customers must be able to authorize third parties to access their consumption data on their behalf in order to better understand and manage their energy usage, participate in demand response program, enroll in dynamic pricing programs, save energy, and save money on their energy bills. Likewise, providing for data access capabilities is vital to the growth of the technology innovation companies that will provide these services to customers.

We further note that there exist for many parties economic disincentives (based on existing rate designs) to provide consumers with robust, actionable information. For example, in regulatory filings many utilities have cited decreased revenue as a concern for the implementation of energy efficiency programs. Similar observations have been cited in regulatory filings directly related to advanced meter deployment and smart grid programs. Recognizing that the consumer may have an equal concern to reduce their energy costs, we believe it is critical that consumers be allowed to designate authorized third parties to directly assist them with energy management services.

(14) What forms of energy information should consumers or third parties have access to?

In order for consumers to fully realize the benefits of the Smart Grid, consumers and their authorized third parties need access to information on a variety of dimensions of energy information, including (but not limited to):

- Cumulative consumption and relevant interval data
- Real-time or instantaneous energy demand
- Current retail price
- Real-time generation source information (including emissions profile)
- Relevant wholesale price information
- Demand response event notification
- Peak-time rebate opportunities

This information is required to implement meaningful dynamic pricing structures, demand response programs, tiered rate structures, pay-as-you go accounts, and general enhanced energy management capabilities. Further, all of this information needs to be provided in real-time or in near real-time in order for it to be actionable information that consumers can use to change their behavior or implement home energy management systems.

Consumers should also have access to real time or near-real time information on the generation source and emissions profile of the electricity they are consuming. In order to realize the environmental benefits that the Smart Grid can bring, consumers should be able to vary their consumption according to the environmental footprint of electricity as that footprint varies throughout the day. This information can also be used to implement

programs that will accelerate the integration of renewable energy and establish environmentally responsive demand. In order for states and the nation to achieve greenhouse gas reduction goals, consumers must be empowered to use renewable energy sources—most of which produce power intermittently—when they are available.

(15) What types of personal energy information should consumers have access to in real-time, or near real-time?

The most important information to be delivered in real-time include:

- Real-time or instantaneous energy demand
- Real-time generation source information (including emissions profile)
- Demand response event notification

In our opinion, these are the categories of energy information that are likely to fluctuate in real-time and therefore must be presented to the consumer in order to be actionable. Pricing information, if it changes instantaneously, would also be relevant. However, at this point, we can anticipate that most pricing structures will be reasonably static, even if they do vary by time-of-day. Only real-time or near real-time information is action information that consumers can use to change their behavior, save energy, and reduce emissions.

(16) What steps have the states taken to implement Smart Grid privacy, data collection, and third party use of information policies?

We will not purport to present a comprehensive assessment of state activities in this area. However, we will reference several state proceedings or initiatives that we believe are relevant to this discussion.

- *California Public Utility Commission*: Docket R08-12-009 ("Order Instituting Rulemaking to Consider Smart Grid Technologies Pursuant to Federal Legislation and on the Commission's own Motion to Actively Guide Policy in California's Development of a Smart Grid System.")
- *Colorado*: Docket 09I-593EG ("In the matter of the investigation of security and privacy concerns regarding the deployment of smart-grid technology")
- *California, New York, Pennsylvania, Texas*: Each of these states has established statutes or policies to ensure that consumers have access to energy information directly from smart grid technology

(17) What steps have investor owned utilities, municipalities, public power entities, and electric cooperatives taken to implement Smart Grid privacy, data collection and third party use of information policies?

We are not informed of significant initiatives by these entities. However, these entities already employ standard cybersecurity and data encryption practices to keep customer information secure and private and we are not aware of any significant breaches in the power industry. We expect that these entities will continue to employ the same or similar practices in the context of the Smart Grid.

(18) Should DOE consider consumer data accessibility policies when evaluating future Smart Grid grant applications?

Yes. Given the importance of reasonable consumer accessibility policies for empowering consumers to save energy and money and for realizing the many benefits of the smart grid, such a consideration is warranted. We believe that it is appropriate to provide funding for smart grid projects based on established policies for consumer access to energy information.

However, it will be critical to establish specific criteria by which such consideration is measured. Several consumer advocate organizations, including NASUCA, have expressed concern that important programs may see funding restricted. Specifically, these include the Low Income Heating and Assistance Program (LIHEAP) and Home Weatherization Assistance Program (HWAP). We do not believe that there is any reason to restrict funding for these direct assistance programs based on smart grid or data access criteria.

We do, however, believe that many programs, including the Smart Grid Investment Grants and Smart Grid Demonstration Grants established by the Energy Information and Security Act, should consider data access as a condition for funding awards. Utilities or other entities that seek federal support through these programs can and should be required to conform to policy priorities of the DOE, Congress and the Administration with regard to energy information access.

Thank you for the opportunity to provide these comments to the Department of Energy. We continue to believe that federal leadership on the development and deployment of smart grid technologies is a vital component to creating a robust marketplace. We look forward to being involved in further discussions.

As Tendril CEO, Adrian Tuck, observed in Senate testimony, "The consumer market is a powerful force for change. But like all markets, it will only be truly effective when it has accurate and actionable information. Federal policy, supporting entrepreneurs and American competitiveness, can provide that information and support innovation."

Our comments are offered in the spirit of seizing this opportunity for the nation.