COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC UTILITIES

Investigation by the Department of Utilities on its Own Motion into the Modernization of the Electric Grid	D.P.U. 12-76

COMMENTS OF MISSION:DATA REGARDING THE DEPARTMENT OF PUBLIC UTILITIES "STRAW PROPOSAL" FOR ACHIEVING GRID MODERNIZATION

1. Introduction

Mission:Data, a coalition of technology companies formed to empower consumers with modernized and unfettered electronic access to their own energy usage data[1], appreciates the opportunity to submit these comments in response to the Department's Order Requesting Comments on its Grid Modernization Straw Proposal, dated December 23, 2013 ("Straw Proposal").

Mission:Data applauds the Department of Public Utilities for its Straw Proposal, which has enormous potential to not only mitigate serious outages and service disruptions like those that plagued New England in 2011, but also to realize significant gains in energy efficiency for consumers. In directing adoption of advanced metering functionality within three years and explicitly recognizing the importance of demand optimization -- allowing customers to shift or eliminate electricity demand through demand response, load-shifting and energy efficiency as a critical priority[2] -- the Straw Proposal represents an important step in the right direction.

The Commonwealth has an opportunity to learn from and build upon the experiences of other states in a way that would strengthen the achievement of the Department's objectives, which we support. Mission:Data's team and members have engaged with grid modernization, privacy and

[1] Our members are developing innovative information technologies to achieve significant energy savings in both the residential and commercial sectors at scale and include Alarm.com, ARM Holdings, Bidgely, BuildingIQ, the Cleanweb Initiative, EnerNOC, EnergyHub, Genability, iControl Networks, Lucid, People Power, Rainforest Automation and Retoficiency.
[2] Straw Proposal, p. 14.

data access proceedings across the country, including California, Colorado, Ohio, Texas and Michigan. Mission:Data fully shares the Department's conclusion that "electricity usage and consumption data must be available to customers, as well as to competitive suppliers and other service providers if authorized by customers, in order to fully realize the benefits of a modern grid."[3]

Mission:Data encourages the Department to incorporate an appropriate policy framework addressing data access into the Straw Proposal, specifically into the requirements for the comprehensive advanced metering plans (CAMPs) and the grid modernization plans (GMPs) that are the subject of this and related proceedings. There are several benefits that will accrue to electricity consumers directly and the Commonwealth in whole that are worth highlighting:

Consumer Empowerment: Electricity consumers, like consumers in other sectors of the economy, have a fundamental right to take full advantage of the best available practices and technology to improve their quality of service. Consumers have unique interests, including energy savings, increased performance or environmental considerations, which means that policies should focus on providing consumers with access to their own usage information for them to use as fits their particular needs and interests. Such a policy framework is consistent with federal policy, best practices from other states and long-standing NARUC resolutions that seek to provide consumers with "the benefits the deployment of the smart grid promises."[4]

Energy Efficiency: Energy usage information can have a dramatic impact on energy usage and energy efficiency potential. Improving data access policies will increase the ability of Massachusetts to achieve energy efficiency goals, both through regulated energy programs and other initiatives.

Economic Development: Mission:Data includes within its membership companies that are actively developing products and services to help consumers save money, energy and participate more intelligently in energy markets. Ensuring that data access policies are given full consideration will help drive a robust market for energy management services within the

[3] Straw proposal, p. 37.
[4] NARUC Resolutions, July 2010

Commonwealth and position the Commonwealth, already a clean energy and innovation leader, for economic leadership in this sector.

To maximize value for consumers, we believe the Department should address data access as a matter of consumer empowerment, energy conservation and economic development. With that in mind, it is helpful to consider the experience of other states with regards to data access. Through these comments, Mission:Data:

1. Offers specific comments addressing the Straw Proposal

2. Requests the opportunity to participate in the hearings scheduled for February 24-28, 2014.

We believe that these comments and further details we can offer will result in a stronger final order.

2. <u>The Department should promptly empower Massachusetts consumers with secure access to their own energy usage data (in a manner technologically consistent with widely-supported industry led standards) and allow them to conveniently share that data with energy service providers of their choice.</u>

The Straw Proposal requires distribution companies to submit 10-year grid modernization plans (GMPs) that optimize demand and achieve advanced metering functionality within three years through the submission of the comprehensive advanced metering plans (CAMPs). It requests comments on whether it provides the correct directives to electric distribution companies and whether the requirement to achieve advanced metering functionality is appropriate.

Mission:Data applauds the core elements of the Straw Proposal. We do, however, believe that these requirements would benefit from additional specificity and refinement to fully benefit consumers. Specifically, we note that while metering hardware would have to be in place within three years, there is only a requirement of "measureable progress" toward the demand optimization priority identified by the Commission, over the ten year period set forth in the GMPs. This disparity in timelines could lead to a situation in which customers might have to wait years between paying for, and then receiving the benefits from, advanced metering. To

achieve the Department's objectives, it will be important to establish clear requirements regarding customer data access – particularly to require that data access be enabled promptly upon installation. We believe that there is no reason why the benefits of data access should not be available simultaneously with deployment of meters or other equipment.

Innovative companies such as our members have demonstrated that electronic access to energy data can significantly reduce the "soft" costs of delivering energy efficiency. Through deployment of software to instantly calculate cost savings from efficiency, conduct "no-touch" energy audits, quantify demand (kW) curtailment potential, etc., innovative technology can cost-effectively meet the Department's efficiency objectives in a way that is difficult or impossible when access to energy data is inconsistent across each utility or, worse, available only on paper bills. For example, consumer access to electricity usage data, particularly *real-time* data, combined with tools to use that data to better manage energy, has the potential to achieve reductions in household energy use by as much as 12 percent[5], according to a survey of studies reviewed by the American Council for an Energy Efficient Economy. That is an order of magnitude larger than what many customer engagement strategies are attaining today. As tools evolve and improve, potential savings will increase. With homes and businesses consuming over 40 percent of our nation's energy, the potential savings made possible by advanced metering represent a tremendous opportunity.

It is important to keep in mind that much of the energy saving potential of some smart meter deployments in other states -- perhaps half of the total potential benefits of the advanced metering investments[6] -- has yet to be realized because policies have not given consumers access to their energy usage data. Where deployments have been based primarily on operational savings and where Commission orders did not adequately define steps to ensure customer empowerment, consumers have lost important opportunities to save energy and money.

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[5] Karen Ehrhardt-Martinez, Kat Donnelly, et.al. *Advanced Metering Initiatives and Residential Feedback Programs: A Meta-Review for Household Electricity-Saving Opportunities*, American Council for an Energy Efficient Economy (aceee.org), Report Number E105, June 2010, p. iii. The assumption is that actual savings across the entire population would be on the order of half this amount, but these studies do not account for ongoing improvements in new energy management technologies.

[6] According to one set of estimates, meter costs per million households are between $198-278 million, while utility operational savings are likely $77-208 million. The consumer-driven savings of $100-150 million are critical to the overall case for deployment – and strengthen the case even where operational savings alone justify deployment. Ahmad Faruqui et. al. al. *The Costs and Benefits of Smart Meters for Residential Customers*, Institute for Electric Efficiency, July 2011. See also K. Carrie Armel, Abhay Gupta, et. al., *Is Disaggregation the Holy Grail of Energy Efficiency? The Case of Electricity*, Precourt Energy Efficiency Center, Stanford University, Technical Paper 2012-05-1, 2012, p. 3.

We strongly recommend that the Department require the prompt fulfillment of two basic requirements that will provide consumers with secure access to their own energy usage: access, and standardization.

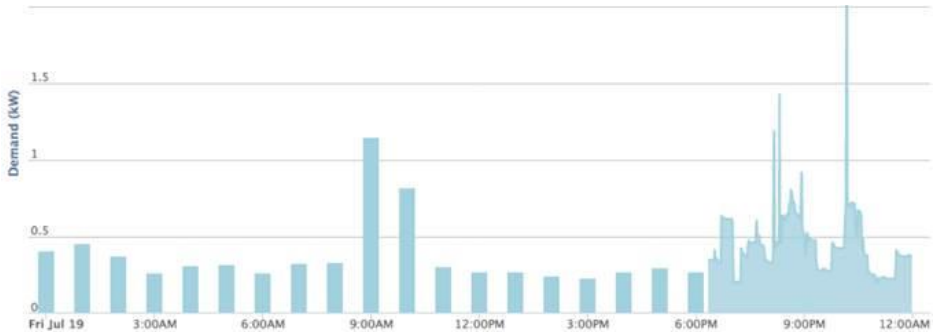
First, all customers should have easy and convenient access to the most granular information available about their energy use, with two key interfaces activated concurrently with deployment: (a) the online system level interface for sharing data backhauled through the utility to its website with third parties authorized by the customer and (b) the real-time home area network/business area network (HAN/BAN) interface that provides consumers, and third party providers with approval of the customers, real-time information directly from their smart meters. The Commission should require that CAMPs and GMPs spell out how distribution companies will promptly enable these functionalities.

Online information backhauled through the utility infrastructure – implemented through "Green Button Connect" (also known as the Energy Services Provider Interface, or ESPI) – allows customers to download their electricity usage information and share it with authorized third parties to help manage their electricity use. Though typically subject to a 24-hour lag and reported at intervals (due to low-bandwidth networks and meter data validation, editing and estimating processes), this information is essential to efficiency efforts. [7]

In order to maximize energy savings for consumers, real-time data typically made available from the smart meter directly in the HAN/BAN to the consumer, implemented in both California and Texas, is superior to 24-hour delayed data. Real-time data enables disaggregation – the use of algorithms to interpret smart meter data to identify energy used in a household by *device*. This in turn enables the development of automated personalized recommendations such as "Reduce your pool pump run time by 30 minutes per day to save $__ per month" or "Buying a new dryer could save you $___ per year." This is where the combination of real-time data and tools providing specific feedback about how to save energy drives household efficiency gains of up to 12%[8] compared with the much more modest household savings achieved with lagged time

[7] Mission:Data applauds NSTAR, National Grid and Western Massachusetts Electric Company for committing to implementation of Green Button (the manual version), a good first step. For consumers to realize more value from the backhauled data, it is important to implement Green Button Connect, the version that provides consumers automated data access per the ESPI standard/
[8] Armel, p. 6.

interval data.[9] New technologies and services not imagined yet will depend upon access to energy data in a standardized, computer-readable format, regardless of utility or state. The chart below depicts the difference between lagged interval data, on the left, and real-time data, on the right.



The second basic requirement is that energy consumption and pricing information should be provided in a manner consistent with widely supported industry-led standards. Deployments should support widely-adopted industry standards such as Smart Energy Profile (SEP) and ESPI to support full enablement of customer benefits. Again, adoption of widely-adopted standards should be required in both the GMPs and CAMPs.

One critical reason for the use of clear functionality requirements and widely-adopted standards is to avoid unnecessary balkanization of smart grid technologies that would hamper our ability to efficiently scale. Emerging growth technology companies will be able to scale more easily to the extent that utility metering technologies and procedures (i.e. for certification and validation of devices) are the same. For example, the lack of standardized methodologies or testing procedures has required emerging growth companies in this sector to incur duplicative costs for certification of their HAN/BAN devices to be compatible with each utility network. Early deployments have seen utility-by-utility validation for each device (and, sometimes, for each type of meter or firmware version). In California, the PUC has attempted to mitigate this by requiring utilities to collaborate on a uniform certification process. Ultimately, broadly-embraced industry standards should be the rule, and the process of sharing backhauled data with authorized third parties should be identical across all regulated utilities. In the meantime,

[9] Erhardt-Martinez, iii

reducing balkanization will help the innovation economy scale and consumers more quickly realize new offerings at lower costs.

3. **The Department should require enablement of data access as a central component of the comprehensive advanced metering and grid management plans rather than deferring consideration of customer data access to a separate proceeding.**

In response to the Department's invitation for comments on its decision to investigate data access topics separately, Mission:Data urges the Commission to establish meter and customer data requirements up front in the GMPs and CAMPs, rather than postponing consideration of data access requirements by treating the issue in a separate proceeding. It is critical to define what meter functionality is desired *before* deployments occur and to ensure that the infrastructure deployed will support the in-home energy management devices and services now existing and being developed in the future. With more than 45 million smart meters deployed nationwide, it is likely that industry will optimize new devices and services to Advanced Metering Infrastructure technologies.

The risk of not fully defining functionality and data access requirements up front is that meters end up with less functionality than ultimately is needed – and that either customers are not able to timely, if at all, realize the benefits of data access or that additional and unnecessary infrastructure costs are incurred. We have become aware of some instances where utilities have had to swap out meters to achieve required functionality. Massachusetts has the opportunity to learn from this experience.

In California, the Public Utilities Commission issued a scoping memo stating that AMI deployments should support "customer access to personal energy usage data with sufficient flexibility to ensure that changes in customer preference of access frequency do not result in additional AMI system hardware costs.[10] Smart meter deployments were approved beginning in 2006. Customer data access was to occur by 2011, but that expectation was not met. The Commission in September 2012 resorted to ordering the scale up of a minimum number of HAN activations and device validations.[11] The Commission ordered enablement of Green Button Connect (at an additional cost to ratepayers of $28 million) only in late 2013, with

[10] *Joint Assigned Commissioner and ALJ's Ruling Providing Guidance for the Advanced Metering Infrastructure Business Case Analysis*, California Public Utilities Commission, Rulemaking 02-06-001, February 19, 2004. p.4.
[11] Resolution E-4527, California Public Utilities Commission, September 27, 2012.

implementation slated for 2015. Rather than separating the GMPs and CAMPs for achieving advanced meter functionality from its data access proceeding to provide consumers access to their data, the Department should ensure that all residential, commercial and industrial users have access to real-time data, and establish minimum requirements for activation of the HAN/BAN and backhaul interfaces (i.e. all customers should have access to Green Button Connect access to an activated HAN/BAN interface, and prompt access to tools they can use to easily achieve maximum energy savings) as a condition of approval of the GMPs and CAMPs. If the Commission chooses to move forward with a separate rulemaking, it should at least commence the proceeding concurrently, as it has proposed to do with electric vehicles, with a timeframe that requires the GMPs and CAMPs to incorporate the outcomes of those rulemakings.

Mission:Data agrees that the issues of privacy and security deserve careful scrutiny, and templates now existing in other states will prove helpful to the Department in developing an approach that balances customer protection, grid security and innovation. It has been demonstrated in California, for instance, that privacy and security can successfully co-exist with consumers' right to access their own data or to easily share that with third parties of their choice.[12]

4. <u>The Department should establish metrics for enablement of customer data access.</u>

Finally, The Straw Proposal seeks guidance on whether the Department should adopt certain metrics to measure success (e.g. the number and percentage of customers who have accessed energy usage information or enrolled in energy information programs or who have been reached through marketing or engagement programs). Mission:Data agrees that the establishment of metrics such as those suggested in the order – both for the GMPs and for the CAMPs -- is appropriate. Mission:Data supports the metrics suggested in the Straw Proposal but recommends that the Department require additional metrics. In particular, with major standards like Smart Energy Profile and ESPI now established, all customers should be promptly enabled with the ability to access their energy usage data online and easily share it with a third party of their

[12] As an example, the California PUC has generally imposed its privacy rules on utilities and their contractors rather than seeking to regulate a customer or his/her right to share data with a party not under the Commission's jurisdiction.

choice. All customers should be able to access their HAN/BAN and real-time data from their meter. Further, the Department should ensure prompt certification of devices across all regulated distribution companies so that new products can get to market without unnecessary delay.

5. Conclusion.

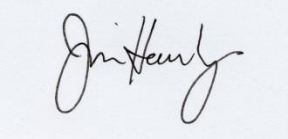
Mission:Data appreciates the work of the Department and its stakeholders to once again position Massachusetts as a leader in energy efficiency and empowered consumers. We appreciate the opportunity to comment and would be pleased to work with the Commission in the development of an order incorporating the points we have raised. For this reason, we request the opportunity to participate in the February 24-28 hearings.

Dated: January 17, 2014

Respectfully submitted,

For

Mission:Data



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