**BEFORE THE**
**DEPARTMENT OF ENERGY**
**OFFICE OF ELECTRICITY DELIVERY**
**AND**
**ENERGY RELIABILITY**

In the Matter of

Addressing policy and logistical challenges
To Smart Grid implementation.

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**COMMENTS OF THE**
**MICHIGAN PUBLIC SERVICE COMMISSION STAFF**
**TO REQUEST FOR INFORMATION REGARDING**
**SMART GRID POLICY**

**DOE: Addressing Policy and Logistical Challenges to Smart Grid Implementation**

The Michigan Public Service Commission Staff (MPSC Staff) commends the Department of Energy for seeking comments on policy and challenges confronting smart grid deployments as stated in the Request for Information (RFI) addressing Policy and Logistical Challenges to Smart Grid Implementation.

The MPSC has convened a statewide Smart Grid Collaborative that includes both regulated and unregulated utilities, investor owned utilities, electric cooperatives, and municipal utilities. The State of Michigan is served by 66 public utilities and all utilities are invited to participate. The Michigan Smart Grid Collaborative will include additional stakeholders including manufacturers, environmental organizations, universities, telecommunication companies, and the Midwest Independent System Operator (MISO) when necessitated by the investigative and development process of recommendations.

The structure of the collaborative is comprised of an executive level steering committee and the following technical workgroups: Customer Programs and Communications; Energy

Optimization/Smart Grid Liaison; Distribution and Grid Applications; Electric Vehicles; Codes and Standards; and Regulatory Policy.

The Collaborative's goals and objectives include the development of strategies, tactics and plans to communicate with customers on the benefits of the development of a smart grid in Michigan; to share learning and best practices on customer pricing pilots; to share key learning with the goal of optimizing implementation of smart grid applications; and to address regulatory policy issues related to the costs, benefits and risks related to the utility investment in smart grid infrastructure. The Collaborative will also address customer data security, technology utilization, effective development of pilot programs and customer education, as well as seek collaboration of state electric providers to drive grid efficiency and lower cost to end use customers.

The Michigan Smart Grid Collaborative recognizes the efforts of the National Institute of Standards and Technology (NIST) to guide Smart Grid Interoperability Standards development. The major utilities represented on the Michigan Smart Grid Collaborative are actively involved in leading this effort. Together, we recognize that the NIST effort is an important step in the process of developing Smart Grid infrastructure. Any federally-sponsored activities to develop interoperability standards and cyber security guidelines should recognize the need to securely operate existing legacy equipment and minimize stranded investments.

The MPSC Staff agrees that the questions contained in the RFI are fundamental to the development of effective and appropriate smart grid implementation policies. Additionally, the answers are needed to resolve strategic implementation challenges facing Michigan utilities. The Michigan Smart Grid Collaborative will be addressing many of the questions elicited in the RFI, and a report will be issued with the Collaborative's findings and recommendations. At this time,

the MPSC Staff offers the following answers to select questions pertaining to regulatory policy and in particular, the RFI section pertaining to assessing and allocating costs and benefits.

**1. When will the benefits and costs of smart grid investments be typically realized for consumers?**

**How should uncertainty about whether smart grid implementations will deliver on their potential to avoid other generation, transmission and distribution investments affect the calculation of benefits and decisions about risk sharing?**

**MPSC Staff Answer**: The ability of the utility industry to deliver benefits simultaneously with the inclusion of smart grid revenue requirements into retail rates is an issue of major importance to regulatory bodies. Unfortunately, it appears likely that initial deployments by utilities will be characterized by large revenue requirements in the early years of the deployment with a significant amount of offsetting benefits (especially program related) in the out years of the deployment. With respect to offsetting benefits, regulators may need to consider that the substantial technical potential of smart grid may not be fully realized with first generation systems. Thus, technological obsolescence associated with early generation deployments is a concern for regulators. Future advancements may require redeployment of new technologies prior to the physical lifespan of smart grid systems. In view of the risk of early retirement, project spending should be balanced, i.e., limited to essential requirements. Utilities should pay particular attention to the cost of testing, assessment and software development incurred prior to meter deployment because excessive pilot expenditures could render a project uneconomic. Regulators should have a strong expectation for substantial collaboration and cost sharing between utilities so as to further reduce costs.

**2. How should the costs and benefits of enabling devices (e.g. programmable communicating thermostats, in home displays, home area networks (HAN), or smart appliances) factor into regulatory assessments of smart grid projects?**

**If these applications are described as benefits to sell the projects, should the costs also be factored into the cost-benefit analysis?**
**How does the notion that only some customers might opt in to consumer-facing smart grid programs affect the costs and benefits of Advanced Metering Infrastructure (AMI) deployments?**

**MPSC Staff Answer**: Consumer-enabling devices have substantial future potential for converting pricing and consumption information into capacity and energy resources. We envision the availability and technical advancement of such devices as necessary to engage large numbers of customers into voluntary time-of-use and ultimately, real-time rate schedules. As such, both the benefits and the costs of enabling devices should be factored into the cost/benefit analysis. Unfortunately, neither the costs nor the benefits associated with future commercially viable intelligent devices, many of which have yet to be developed, are readily estimated. The state of development of consumer-enabling devices is an area that regulatory bodies should be not only monitoring, but facilitating, by involving manufacturers/developers in the development of smart grid regulatory policies and standards.

**3. How likely are significant cost overruns?**
**What can regulators do to reduce the probability of significant cost overruns?**
**How should cost overruns be addressed?**
**Which stakeholder(s) should bear the risks if expected benefits do not materialize?**

**MPSC Staff Answer**: The risk of significant cost overruns associated with utility smart grid deployments is real and should not be discounted. Because utilities are in direct control of their smart grid capital budgets, regulators can best help utilities control their costs by establishing a clear regulatory policy for smart grid capital recovery that differentiates between pilot-related expenditures and full deployment expenditures, and clearly defines when and how utilities will be at risk. In particular, we suggest the following approach for cost recovery as an

example that creates appropriate incentives for utilities to control smart grid capitalized expenditures.

With respect to pilots, it appears reasonable that most utilities deploying smart grid infrastructure should undertake pilots with respect to AMI, grid automation, and customer programs. Information obtained from the piloting phase will provide critical information needed to determine if, when, and how smart-grid full deployment should proceed. Thus, direct pilot expenditures should be recoverable by utilities irrespective of whether or not the pilots in aggregate support a go-forward decision. Although costs directly related to the pilot phase need not be subject to a stand-alone cost/benefit analysis, utilities must be able to demonstrate that the piloting expenditures were reasonably required to fulfill the objectives of the pilot. Because the preponderance of the financial risk associated with a smart grid pilot will be borne by ratepayers, it is incumbent upon utilities to keep pilot expenses as low as reasonably possible. To this end, final review of pilot capital expenditures should occur in the utility's general rate case immediately following completion of such pilots. At such time, reasonably and prudently incurred capital expenditures would be reflected in rates as plant-in-service. Prior to completion of the pilot, we suggest that capital expenditures associated with smart grid pilots be included in utility rate base as Construction Work in Progress (CWIP) with an Allowance for Funds used during construction (AFUDC) offset.

With respect to capitalized expenditures directly related to the full deployment phase of the pilot, but incurred during the pilot phase of the project, such costs are subject to the "used and useful" ratemaking principle. Thus, if full deployment is not approved by the regulatory body, then full deployment costs incurred during the pilot phase of the project are not recoverable from ratepayers. If full deployment is approved, such approval should not guarantee cost recovery of incurred or future expenditures. Utilities should remain responsible to support

individual expenditures for reasonableness and prudence thus incentivizing cost minimization. The MPSC Staff believes that such policy will protect utility ratepayers from having to bear unreasonable cost overruns. That being said, the primary risk of "cost overruns" will be unrealized future benefits that were included in the original cost/benefit analysis. Since a full deployment will have been implemented on the basis of satisfying a cost/benefit analysis, the determinative factor in overspending is the risk that future benefits were overstated. The determination that cost overruns resulted from unrealized future benefits will require benefit tracking over the life of the project. Under traditional ratemaking principles, if projected benefits are unrealized, to such extent that smart grid capitalized expenditures constitute rate base that is not "used and useful" and thus not recoverable from ratepayers. As with traditional capital projects, project risk is borne by utility stockholders who are compensated for this risk by an opportunity to earn the authorized rate of return. This may be a policy area for regulators to seek some degree of risk sharing between stockholders and ratepayers if the regulatory body approves the project despite the difficulty in quantifying smart grid's future benefits.

Lastly, With respect to both pilots and demonstration projects, regulatory bodies should encourage collaboration between utilities so as to reduce costs and the risk of cost overruns.

**4. With numerous energy efficiency and renewable energy programs across the country competing for ratepayer funding, how should State Commissions assess proposals to invest in smart grid projects where the benefits are more difficult to quantify and the costs are more uncertain?**

**MPSC Staff Answer**: From a strategic perspective, we envision that energy efficiency programs will ultimately merge with smart grid-related programming. In particular, as states implement more aggressive building codes and as the DOE sets ever more aggressive appliance efficiency standards, future energy efficiency resources associated with utility energy efficiency programs will be come more difficult to acquire. The smart grid and associated programs will

become foundational to obtaining energy efficiency resources. This will not take place immediately in that smart grid benefits are currently primarily associated with demand reductions and not with significant energy savings. This is an area of strategic research that the MPSC intends to pursue in part through its Smart Grid Collaborative. Although nominal levels of distributed renewable energy can be obtained without the smart grid, high market saturation will require the greater grid automation, modeling and control obtained through the smart grid. Thus, smart grid can and will serve to advance state energy efficiency and renewable energy goals.

The MPSC Staff urges the federal government to make funding available to state commission staffs that would permit those staffs to be more fully trained in assessing the highly complex and technical matters that are involved in smart grid projects.

**5. What are appropriate ways to track the progress of smart grid implementation efforts?**

**How are State Commissions studying smart grid and smart meter applications in pilots? In conducting pilots, what best practical approaches are emerging to better ascertain the benefits and costs of realistic options while protecting participants?**

**MPSC Staff Answer**: The MPSC has instituted a Smart Grid collaborative as a means to both educate regulators and to provide a structured forum for utilities to collaborate and share key learnings with the goal of optimizing smart grid applications. In addition, the forum will allow the MPSC to track the progress of smart grid implementation efforts in a setting outside of the traditional contested case process.

**6. How should smart grid investments be aligned so customers' expectations are met?**

**MPSC Staff Answer**: Customer education will be the key to creating realistic customer expectations based on accurate information. Customer education programs that start

early in the process are needed. Going forward, research into customer behavior will be needed. Regulators must set policies from the start that encourage utilities to set priorities in these areas.

**7. When should ratepayers have the right to opt out of receiving and paying for smart grid technologies or programs like meters, in home displays, or critical peak rebates?**

**MPSC Staff Answer**: We believe that the customer education process related to smart grid programs involving time-based rate schedules will take many years. Thus, for the foreseeable future, demand response and dynamic pricing programs must be voluntary, i.e., opt-in programs. We envision that enabling devices used by customers who opt-in should not be rolled into rates, but rather paid for by the participating customer. However, utilities could modify their energy efficiency programs to provide rebates that would incentivize customers to use enabling devices. Rebates would be paid for by all customers, recognizing the demand and energy resources created would reduce costs for all customers. With respect to meters, no opt-out rights are appropriate, in that the base AMI systems are required to obtain meter reading cost reductions, system reliability improvements, outage restoration improvements, and enhanced system modeling that benefit all customers.

**8. How should regulators address customer segments that might not use smart grid technologies?**

**How might consumer-side smart grid technologies, such as HANs, whether controlled by a central server or managed by consumers, programmable thermostats, or metering technology (whether AMR or AMI), or applications (such as dynamic pricing, peak time rebates, and remote disconnect) benefit, harm, or otherwise affect vulnerable populations?**

**What steps could ensure acceptable outcomes for vulnerable populations?**

**MPSC Staff Answer**: The MPSC will begin its investigations into smart grid solutions for low-income and elderly populations through its Smart Grid Collaborative.

**Managing Transitions and Overall Questions**

*Focus:* Managing incremental change during the gradual evolution of the grid that may transform the power sector over the next few decades.

**9. How will smart grid technologies change the business model for electric service providers, if at all?**

**MPSC Staff Answer**: The strategic business model for regulated electric utilities has been to grow utility rate base through continued capital expenditures including new investment and reinvestment in plant and facilities. In particular, generation facilities remain a dominant investment opportunity for vertically integrated utilities. The traditional business model will undergo change due to strong public policy commitment to renewable energy and aggressive energy efficiency programs that reduce, over the long term, the need for new fossil-fired electric generating plants. Regulators will need to develop regulatory policies that allow utilities to rate-base investments in alternative energy, including energy efficiency, renewable energy and smart grid. Decoupling, although removing short-term disincentives to promoting energy efficiency, does not address the strategic business model for electric utilities. On the other hand, investment in smart grid, will provide both reductions in peak demand and energy, and provides substantial opportunity for providers to expand/maintain utility rate-base.

**10. What are the costs and benefits of delaying investment in metering and other smart grid infrastructure while the technology and our understanding of it is rapidly evolving?**

**How does that affect the choice of an appropriate time to invest?**

**MPSC Staff Answer**: It is likely that smart grid infrastructure, including metering, will not achieve satisfactory progress without utility deployments taking place. That being said, our perspective is that not all utilities need to implement demonstration projects simultaneously. Deployment should be phased-in with some utilities waiting until initial demonstration projects

(particularly those funded in part by federal smart grid investment dollars) can be successfully replicated with commercially-viable technology and can demonstrate achieved benefits.

Respectfully submitted,

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