Metric #4: Regulatory Recovery for Smart Grid Investments

M.4.1.0 Introduction and Background

Section 1252 of the Federal Energy Policy Act of 2005 (EPAct) outlines policies and objectives for encouraging a smart grid initiative, including the provision of time-based rates to customers and the ability to send and receive real-time price signals. While EPAct outlined objectives for advancing smart-grid concepts, it did not require utility investment in smart grid technologies, nor did it establish or outline a regulatory framework to encourage such investment.

The Energy Independence and Security Act of 2007 (EISA) did provide incentives for utilities to undertake smart-grid investments. Section 1306 authorized the Secretary of the U.S. DOE to establish the Smart Grid Investment Matching Grant Program, which was designed to provide reimbursement for up to 20 percent of a utility's investment in smart-grid technologies. Section 1306 also outlined what constituted qualified investments and defined a process for applying for reimbursement. Section 1307 encouraged states to require utilities to demonstrate consideration for smart grid investments prior to investing in non-advanced grid technologies. Section 1307 also encouraged states to consider regulatory requirements that included the reimbursement of the book-value costs for any equipment rendered obsolete through smart grid investment.

While the primary objectives for implementing a smart grid may encompass environmental, energy-efficiency, and national-security goals, they will be more difficult to reach if utilities are unable to make an effective business case to regulatory agencies. Smart-grid investments often are capital intensive, expensive, and include multiple jurisdictions within a utility's service area. While smart-grid investments can achieve numerous operational efficiencies (e.g., reduce meter-reading costs, require fewer field visits, enhance billing accuracy, improve cash flow, improve information regarding outages, enhance response to outages), such benefits may be difficult to quantify and build into business cases.[1] There is considerable debate among consumer representatives whether smart-grid benefits outweigh the costs.

A survey targeting large-scale AMI utility projects conducted by KEMA found that the average project required a $775 million investment.[2] With such an enormous expense, utilities must be sure that regulatory recovery is feasible, and while the up-front costs of the investment are easy to calculate, the back-end benefits can be difficult to monetize within current regulatory valuation models.

At present, utilities are rewarded under ratemaking frameworks for capital projects and energy throughput. That is, expanded peak demand drives the need for additional capital projects, which increases the rate base. As energy sales grow, revenues increase. Both factors run counter to encouraging smart-grid investments. Thus energy efficiency, demand reduction, demand response, distributed generation, and asset optimization can be discouraged by current regulatory frameworks.[3]

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[1]Mukherjee, J. "Building Models for the Smart Grid Business Case." *EnergyPulse*, April 2008. [Available at: http://www.energypulse.net/centers/article/article_display.cfm?a_id=1721]

[2]McNamara W and M Smith. 2007. *Duke Energy's Utility of the Future: Developing a Smart Grid Regulatory Strategy Across Multi-State Jurisdictions.* Grid-Interop Forum 2007, Paper ID-1. 2007. Accessed November 24, 2008 at http://www.gridwiseac.org/pdfs/forum_papers/155_paper_final.pdf

[3]Anders, S. *Implementing the Smart Grid: A Tactical Approach for Electric Utilities.* Energy Policy Initiatives Center presentation, University of San Diego School of Law, October 15, 2007. Del Mar, CA.

M.4.2.0 Description of Metric and Measurable Elements

(Metric 4) the weighted average (respondents' input weighted based on total customer share) percentage of smart grid investment recovered through rates.

M.4.3.0 Deployment Trends and Projections

The smart-grid interviews conducted for this report included 21 companies. Respondents were asked the following question: What type of regulatory policies (beneficial regulatory treatment for investments made and risk taken) are in place to support smart-grid investment by your utility? Of those interviewed,

- six companies (30.0%) indicated that there were no regulatory policies in place to support smart grid-investment
- four companies (20.0%) indicated there were mandates in place to support investment in smart-grid features, such as smart meters
- three companies (15.0%) indicated there were incentives in place to encourage smart-grid investment
- ten companies (50.0%) indicated that there was some form of regulatory recovery for their smart-grid investments.

Companies were also asked to estimate the percentage of smart-grid investments to date that has been recovered through rate recovery, and compare that total against their expectations for future investments in the smart grid. The service providers interviewed for this report indicated that, on average, they are recovering only 8.1 percent of their investment through rate structures, but predict regulatory recovery rates will expand significantly in the future, ultimately reaching 90.0 percent.

While state regulations have generally not specified outright denial of cost recovery for AMI and smart grid investments, such cost recovery has been limited and the trend appears focused on a small number of concepts:

- trackers—a method that involves the tracking of unpredictable costs incurred by utilities, and allows recovery over a 12-month period. Trackers may be tied to specific projects or broader measures.
- balancing accounts / rate base—balancing accounts enable utilities to identify and recover reasonable and prudent costs through future rate structures when costs are unrecovered due to rate freezes or ceilings. Utilities have also been allowed to build cost recovery into the rate base.
- customer surcharge—a charge allowed by the governing utility commission to recover specific cost elements, such as AMI programs.
- state funding—funding from existing or newly created state accounts.[4]

As noted in Section 2.2, the most common recovery methods are trackers and recovery through rate-base adjustments. As noted in Section 2.0, service providers interviewed for this report indicated that, at present, only 8.1 percent of their investments in smart grid technologies are being recovered through rate adjustments. These utilities, however, also indicated that their expectation is for recovery to expand in the coming years to 90.0 percent.

[4]McNamara and Smith 2007.

Another recent trend enabled by some public utility commissions involves expanding valuation models used to support business cases. Elements considered within these models have, in certain cases, expanded to include societal benefits, such as the reduction of greenhouse gases, wider service offerings, reduction of carbon footprint, customer satisfaction, and increased energy efficiency. Many public utility commissions are also embracing the concept of building system-wide benefits into business cases.[5]

M.4.3.1 Associated Stakeholders

There are a number of stakeholders with an interest in regulatory recovery for smart-grid investments:

- Regulatory agencies considering smart-grid business cases
- Residential, commercial, and industrial customers who could benefit from the deployment of smart-grid technologies, but are wary of the significant costs
- Transmission and distribution service providers and balancing authorities interested in reducing peak demand, enhancing efficiency, and reducing the costs to supply energy
- Policy advocates, such as environmental organizations interested in reducing the need for new power-generation plants
- Policymakers interested in fostering competitive markets and managing load while reducing the need to expand existing generation, transmission, and distribution infrastructure.

M.4.3.2 Regional Influences

There are opportunities for expanded smart-grid investment when sales are decoupled from revenues. When states decouple sales from revenues, energy-efficiency measures, including smart grid, are encouraged. If decoupling encourages energy efficiency, then a concern for consumers is that using less energy should reduce, not increase, electric bills. Figure M.4.1 presents a status report on state initiatives to decouple sales from revenues. As shown, there are 10 states with energy-efficiency programs where decoupling is not used, 11 states with energy-efficiency programs where decoupling was proposed but not adopted, three states plus the District of Columbia with energy efficiency programs where decoupling is being investigated, nine states with energy efficiency programs where decoupling has been approved for at least one utility, and one state with no energy efficiency program where at least one utility has been approved for decoupling.

[5]Mukherjee 2008.

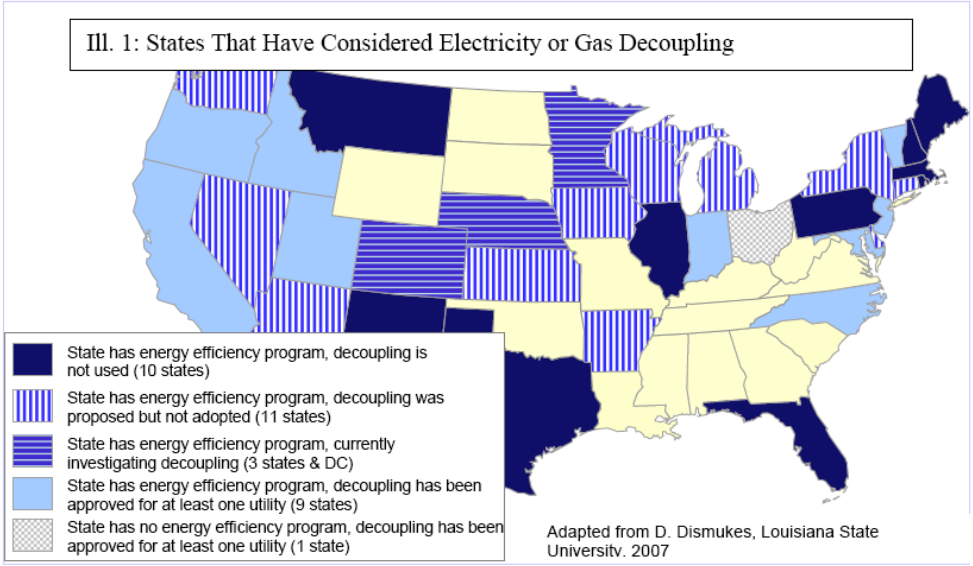

Figure M.4.1. Status of State Efforts to Decouple Electricity or Gas Sales from Revenue

Figure M.4.2 identifies states with current cost-recovery mechanisms and those with AMI cost recovery pending.[6] Based on the survey of state practices conducted by Duke Energy and KEMA, cost recovery for smart grid/AMI investments is permitted in California, Idaho, Colorado, Texas, Michigan, Georgia, and Maryland. Cost recovery is pending in Oregon, New Mexico, Iowa, Missouri, Kentucky, New York, Delaware, Connecticut, and Washington, D.C. Further, the figure identifies the cost-recovery method currently used or proposed. The three methods of cost recovery highlighted in Figure M.4.2 are purchased-power cost-adjustment tracking factors (trackers), rate recovery, and customer surcharges. See Section 3.0 for a discussion of these cost recovery methods.

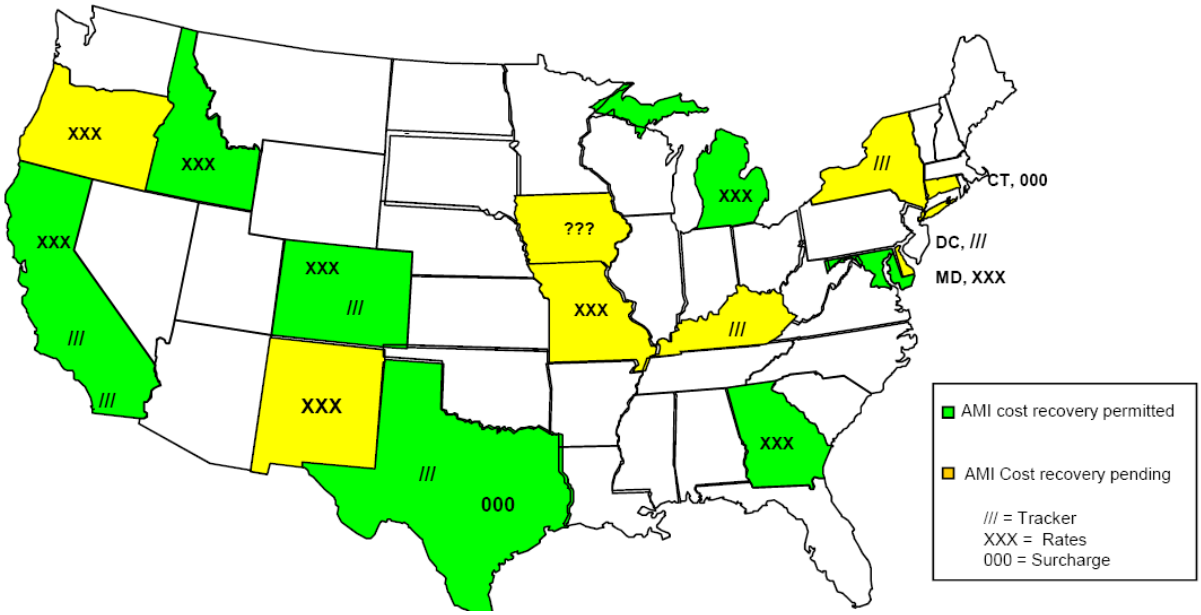

Figure M.4.2. State Cost-Recovery Methods for AMI Investments

[6]McNamara and Smith 2007.

M.4.4.0 Challenges to Deployment

There are a number of technical and business/financial barriers that are realized due to the absence of regulatory recovery of smart-grid investments as outlined below.

M.4.4.1 Technical Challenges

Technical barriers include:

- When making the case to utility commissions, technical barriers may exist due to the unproven nature of some smart-grid technologies; proof of concept may be required.
- Smart-grid related projects vary by electric-service provider in terms of functionality, requirements, and implementation approaches. General agreement is needed on the points in these systems where interfaces can be defined and stabilized. This is necessary if standards are to developed and adopted so that implementation costs and risks are reduced. (See Metric 19, Open Architecture / Standards.)

M.4.4.2 Business and Financial Challenges

Business and financial barriers include the following:

- There are significant costs to utilities when deploying new smart-grid technologies. Regulatory recovery of these costs can be an issue in some cases, and thus creates a disincentive to technology deployment.
- It may be difficult to demonstrate positive net benefits, causing consumer representatives to oppose deployment.
- Utility commissions may require more timely cost recovery than levels projected for some smart-grid investments.
- There are complications surrounding the replacement of existing undepreciated assets, such as meters.
- For utilities operating in multiple jurisdictions, the regulatory requirements in one area may not be consistent with those in another.
- Business cases should consider the societal benefits associated with smart-grid investments.[7]

M.4.5.0 Metric Recommendations

The metric analysis presented in this paper is too reliant on the sampling of service provider interviews conducted for this report (21 companies). Alternative sources of information regarding rate recovery should be identified and examined and compared with the findings of the interviews in order to validate results. Greater insight should be provided by those ultimately paying for smart-grid deployments – the end-use customer.

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[7]Miller, J. 2008. *The Smart Grid - Benefits and Challenges*. Presented at EEI Annual Convention – Toronto. Accessed November 12, 2008 at http://www.oe.energy.gov/DocumentsandMedia/SG__Benefits_Challenges_J_Miller.pdf