Massachusetts Grid Modernization Working Group
Regulatory Model Option

Title: Grid Modernization Advisory Council Model
Author: ENE
Date: April 9, 2013

1. Summary of Regulatory Model

Regulatory Elements:	**Description:**
Customer-facing, grid-facing or both	Customer-facing (or both)
Rationale for, or summary of, model	Grid Modernization Advisory Council (GMAC) helps facilitate stakeholder input before proposals reach the DPU.
Regulatory Oversight:	
Utility pre-implementation filing requirement	Multi-year plans and budgets filed with DPU, process for mid-course corrections.
Regulatory review and approval of filing	Yes, in advance.
Utility request for pre-approved GM budgets	Yes, from DPU
Stakeholder input	Yes, through GMAC
Utility reporting requirements	Annual to DPU and GMAC
Cost-Effectiveness:	
Explicit, public cost-effectiveness requirement	Yes, analytical model to be approved by DPU, also reviewed in advance by GMAC
Internal analysis by utility	
Ratemaking and Cost Recovery:	
General ratemaking (historic, future test years)	
Frequency of rate cases	
Cost recovery (e.g., base rates, trackers)	Yes, DPU to determine depreciation schedules to limit ratepayer exposure, only net costs eligible for recovery.
Cost allocation (among customer classes)	Cost-recovery would reflect the benefits to an individual consumer and the electric system as a whole.
Cost assignment (e.g., to third party)	
Rate design	
Utility incentives (e.g. ROE, rewards/penalties)	Yes, based on ROE with performance-based rewards and penalties determined by DPU
Performance Targets or Metrics:	
Role of performance targets	
Performance targets that will be used	The GMAC will provide recommendations to the DPU on performance targets and metrics.

2. Description of Regulatory Model

Executive Summary

In the spirit of fostering a robust discussion of regulatory options for grid modernization, ENE offers this Straw Proposal.[1] At the outset, we believe that participants in this Grid Modernization Proceeding should advance strategies in a balanced manner that encourages innovation while maximizing consumer and environmental benefits.

In order to encourage utilities to adopt innovative strategies and take reasonable risks, and to ensure that utilities continue to adopt policies and strategies that advance the ability of third parties to provide services to customers, ENE's Straw Proposal would employ a Grid Modernization Advisory Council ("Advisory Council") to help the utilities shape their smart grid decision-making. The Advisory Council would be composed of stakeholders representing a variety of interests and would be charged with providing input to utilities and the Department in a number of areas, including, but not limited to: (a) customer and vendor protection and education; (b) technology functionality and value; (c) environmental benefits; (d) technology deployment and rollout issues; and selection of the analytical cost-benefit model. Annually, utilities must file a report with the Council and the DPU detailing expenditures to date and progress toward meeting performance goals.

The DPU will retain all of its regulatory roles, and the Advisory Council will serve as a facilitator for stakeholder input, working to resolve issues before utility proposals come before the Department.[2]

Regulatory Oversight

- The DPU requires utilities to develop and implement guidelines for meaningful and comparable consideration of non-wires alternatives as possible solutions to planning and reliability issues in distribution planning. [3,4] This process would include an analytical process for screening non-wires alternatives and the comparison of feasible wires and non-wires alternatives, and a framework within which such

[1] ENE does not contend that this Straw Proposal represents the only reasonable path forward, but does encourage the participants to consider the elements contained herein in the context of this proceeding.

[2] Similar to the existing energy efficiency council model, stakeholder input will be facilitated by the GMAC, and stakeholders will have additional opportunity to comment when filings are made at the DPU.

[3] Non-wires alternatives may be defined as demand side management and distributed energy resources that leverage customer/third party resources and complement and improve operation of existing distribution systems, and that individually or in combination defer the need for upgrades to the distribution system.

[4] Non-wires alternatives may include, but are not limited to, energy efficiency, direct load control, distributed energy resources (distributed generation generally, as well as combined heat & power, and energy storage), demand response, peak demand and geographically focused energy efficiency strategies, alternative tariff options.

comparisons can be made. [5]The DPU would require these guidelines to be updated periodically based on experience in analyzing and implementing non-wires projects.[6]

- The DPU defines the scope of grid modernization and objectives, requirements, and/or necessary functionalities of the modern grid for the Commonwealth.
- Utilities submit multi-year plans and budgets to the DPU to achieve the defined grid modernization objectives. Utilities are able to receive advance approval for grid modernization investments. The process also would allow for mid-term course corrections.
- Stakeholders provide input to the multi-year plan and budget filing as part of the Grid Modernization Advisory Council. Early stakeholder input will expedite and reduce the cost of the DPU approval process prior to implementation.
- The regulatory review process shall provide reasonable review and approval timeframes to approve plans prior to implementation.

Cost Effectiveness

- There will be a threshold requirement for cost-effectiveness as well as an effort to maximize cost-effectiveness and customer value.
- Financial analyses of proposed investments will be conducted to the extent feasible. The selection of analytical model(s) will be subject to DPU review and approval.
- The Grid Modernization Advisory Council shall provide input to the DPU and utilities on the selection of the analytical cost-benefit model.
- Selection or approval of grid modernization investments shall be informed by the considerations approved by the DPU (see footnote4), and an evaluation of costs and benefits according to the approved analytical model.

Ratemaking & Cost Recovery

- Grid modernization investments eligible for cost-recovery are defined by the DPU and are consistent with the objectives, requirements, and functionalities of grid modernization as defined by the DPU.
- The DPU sets reasonable limits for cost-recovery, depreciation schedules to limit rate-payer exposure to stranded costs due to obsolescence.
- Cost-recovery would reflect the benefits to an individual consumer and the electric system as a whole.
- Only net costs will be eligible for recovery, and any cost overruns or benefits shortfalls will be the responsibility of the utility shareholders, not ratepayers.
- The DPU would determine the appropriate rate design.

[5] Proposed non-wires alternatives and other grid modernization strategies should be evaluated on their ability to meet the identified system needs; anticipated reliability of the alternatives; risks associated with each alternative; potential for synergies that meet multiple grid modernization objectives; operational complexity and flexibility; implementation issues; customer impacts; and other relevant factors.

[6] It may be instructive for the Steering Committee and DPU to review the proceedings of RI PUC Docket No. 4202, specifically with regard to the Standards for System Reliability Procurement Standards. See: http://www.ripuc.org/eventsactions/docket/4202-EERMC-RevSRP(3-1-11).pdf

Performance Targets or Metrics

Incentives would be based on ROE with performance-based rewards and or penalties, as determined by the DPU. The GMAC will provide recommendations to the DPU on performance targets and metrics.

3. Strengths and Weaknesses of the Regulatory Model (compared to status quo)

Strengths

- The Grid Modernization Advisory Council ensures that diverse stakeholder interests- including business, technology, consumer, and environmental- are and continue to be represented throughout the grid modernization planning process.
- Use of a Grid Modernization Advisory Council will facilitate the DPU review and approval process to encourage timely grid modernization investments and limit lengthy, contested regulatory processes.
- The Grid Modernization Advisory Council can institutionalize the stakeholder engagement started in current DPU Grid Modernization process, including assuming responsibility for updating and revising the taxonomy and functionality matrices.
- This model requires utilities to develop and implement guidelines and an analytical framework for comparing the costs, benefits, and risks of various grid modernization strategies, including non-wires alternatives and traditional investments.

Weaknesses

- Introduction of Grid Modernization Advisory Council could be time consuming.
- If the Grid Modernization Advisory Council is not properly implemented, it could create delay and uncertainty.
- The costs of the Grid Modernization Advisory Council will need to be recovered.

Massachusetts Grid Modernization Working Group
Regulatory Model Option

Title: PBR
Author: David O'Brien

Bridge Energy Group
Date: March 28, 2013

1. Summary of Regulatory Model

Regulatory Elements:	**Description:**
Customer-facing, grid-facing or both	Both
Rationale for, or summary of, model	Performance focus, Clarity of recovery to attract capital
Regulatory Oversight:	
Utility pre-implementation filing requirement	MA Framework compliance, NPV analysis
Regulatory review and approval of filing	Yes at plan initiation,
Utility request for pre-approved GM budgets	Yes, must adhere to MA Framework, NPV Analysis
Stakeholder input	Yes, extensive. During plan initiation and annual reports
Utility reporting requirements	Annual performance reports, capital plans, rate updates
Cost-Effectiveness:	
Explicit, public cost-effectiveness requirement	Yes, MA Framework
Internal analysis by utility	
Ratemaking and Cost Recovery:	
General ratemaking (historic, future test years)	Cap Ex based on annual projection & reconciliation
Frequency of rate cases	Rate cases occur at initiation of plan, rates based on formula during plan.
Cost recovery (e.g., base rates, trackers)	Base rates based on formula, cap ex rider based on annual projection
Cost allocation (among customer classes)	Traditional cost causation rate design
Cost assignment (e.g., to third party)	Traditional cost causation
Rate design	Diverse offering of dynamic rates (PTR, CPP, VPP)
Utility incentives (e.g. ROE, rewards/penalties)	Symmetrical ROE adjustment based on performance
Performance Targets or Metrics:	
Role of performance targets	Dictate level of ROE
Performance targets that will be used	Extensive covering operating efficiency, asset management, customer demand response, reliability & outage restoration, environmental, DG, customer satisfaction etc. See *Performance Measure Illustration*

2. Description of Regulatory Model

Executive Summary

The PBR model is oriented towards multi-year plans that are much more dynamic than traditional litigated rate cases to establish utility cost of service. There is a heightened degree of clarity of cost recovery and a flexibility in what is spent or how dollars are spent year to year to empower utilities and to help attract the considerable capital required to implement Grid Modernization.

The assumption is that capital spending, while more flexible (based on projections rather than historic test year) is based on furthering what we refer to as the *Mass Framework.* The Framework sets forth the functional expectations such as peak load reduction, carbon emission reduction, levels of reliability, etc. The burden is on the utilities to tailor their spending on their core network and for grid modernization that meets state goals. Further there is considerable accountability in the form of performance metrics that are reviewed annually.

The heightened degree of accountability for outcomes is the counterweight to the greater flexibility the utilities are provided. The focus shifts from whittling away the revenue requirement to an assessment that the revenue requirement delivers requisite value to consumers and the state as a whole. The model taps into and leverages the functional capabilities inherent in Grid Modernization that can increase productivity, reliability, customer efficiency and integrate renewables, amongst many outcomes from an advanced grid.

Core values of this model include:

- a focus on outcomes for customers and society
- providing clarity of recovery to attract capital
- Flexibility for utility managers closest to the customer to adapt investment to achieve the desired performance
- Regulatory clarity in terms of desired form, scale and function of Grid Modernization

What is gained in return for the flexibility is a much heightened level of accountability for performance. The development of performance metrics and regular reporting of them greatly increases the focus on quality and outcomes. The Performance Measurement Schedule becomes the living documentation of the effects of Grid Modernization on customers and the system as a whole. For utilities the introduction of a clear and adaptable means to recover capital investment and the prospect of increased earnings will have a profound effect on access to capital.

Regulatory Oversight

- ✓ Utilities would develop their multi-year investment plans that would be divided into two distinct areas, Core Network and Grid Modernization. Core Network is ongoing investment in traditional infrastructure (poles, wires, etc.) while the Grid Modernization would be incremental to that and be based on *Mass Framework.*
- ✓ Utilities would submit to DPU their proposed *Initial Revenue Requirement,* which would reflect their non-capital costs to serve customers at the outset of the plan plus a *Projected Capital Investment* for that year.
- ✓ At the end of each year utilities would submit to the DPU a reconciliation of actual cap ex to projected, with any over or under collection plus interest at WACC recovered in rates going forward.
- ✓ The assumed duration of the plan is five years with options for renewal. Rate investigations would take place at the outset of each plan period. Base rates would be

adjusted annually during the plan based on pre-determined factors (inflation, exogenous events, productivity). Base rate reviews would be limited to 60 days.

Cost Effectiveness

Cost effectiveness is addressed in two ways. First capital investment plans must connect to the Mass Framework that includes expectations around state policy goals, functional capability and particular outcomes. One form of cost effectiveness of utility spending is that it furthers defined expectations of the public and customers. Second, grid modernization plans that would entail items such as advanced metering and distribution automation should be presented as a cohesive platform that has a supporting NPV analysis or "business case" that details the value streams and cost savings that stem from the investment and to what degree they exceed the up front investment.

Ratemaking & Cost Recovery

- ✓ Base Rates would recover operating costs, while a *Capital Rider* would recover the funds to support the projected cap ex.
- ✓ Base ROE would be set according to a statutory formula (working assumption would be Treasury + x basis points).
- ✓ The utilities would be eligible for financial incentives based on demonstrated performance under the established metrics. The performance would be benchmarked to industry data with a range of possible incentive from zero to X basis points added to the Base ROE. Underperformance would similarly result in reductions in ROE.
- ✓ Detailed rate reviews would occur at the outset of a plan period, much the same as a traditional rate case. Once the plan is in effect rates would be updated annually based on prescribed formula (CPI +) and subject to a expedited review.

Performance Targets or Metrics

A central component of the plan would be a *Performance Measurement Schedule* that would detail all of the performance measurements to be tracked and reported upon by the utility annually. The metrics could be established as part of the *Mass Framework.* They would be well beyond what is measured today in service quality plans and would be across the entire utility operation from customer engagement to reliability. Many of the metrics would track values that populated the initial Grid Mod Business Case but would also track the value of investment in *Core Network*.

3. Strengths and Weaknesses of the Regulatory Model

Strengths

1) Performance focus places dramatic emphasis on customer and societal outcomes
2) Financial incentives reward excellence and support innovation
3) Capital investment is grounded in a state Framework that ensures rate funded investment is furthering desired outcomes
4) Degree of accountability for quality of system and customer performance is greatly enhanced.

5) Detailed metrics and annual reporting on performance provide transparency.

Weaknesses

1) Dramatic change in regulatory approach. For some stakeholders moving away from litigation will be seen as a lessening of scrutiny or accountability.

Massachusetts Grid Modernization Working Group
Regulatory Model Option

Title: Combined Pre-approval and PBR Model
Author: Henry Yoshimura, ISO New England
Date: April 3, 2013

1. Summary of Regulatory Model

Regulatory Elements:	**Description:**
Customer-facing, grid-facing or both	Both
Rationale for, or summary of, model	To encourage cost-effective grid modernization (GM) efforts, this regulatory model utilizes elements of pre-approval and performance-based ratemaking (PBR). Under the pre-approval element, the utility files its GM plan. The DPU approves the plan if found to be cost-effective. If the plan is approved, capital cost recovery (return of and on invested capital) is pre-approved. Capital costs enter rates when authorized investments are used and useful. Cost under- or over-runs are borne by the utility. Under the PBR element, operational costs are recovered with service quality adjustments to give utilities the incentive to improve service quality. Cost under- or over-runs are borne by the utility during the tenure of its DPU-approved PBR plan.
Regulatory Oversight:	
Utility pre-implementation filing requirement	Elements of the GM plan filed by the utility with the DPU should include: description of the purpose and scope of the plan, itemized benefits and costs with supporting documentation, cost-effectiveness analysis, cost recovery proposal, class ratepayer impact analysis, and implementation/deployment plan. If the grid modernization plan includes deployment of more advanced metering that accommodates time-based rates, a separate default service rate design plan, including a plan for low-income customer protection, should be filed as well.
Regulatory review and approval of filing	The DPU reviews and holds a proceeding on the utility's GM plan. Alternative proposals may be filed by interveners. Standard administrative procedures are followed.
Utility request for pre-approved GM budgets	As previously described, the GM plan will include a pre-approval request.
Stakeholder input	Utilities should be required to present its GM plan to stakeholders before filing the plan with the DPU. Utilities should be encouraged to modify plans based on stakeholder comments or proposals. The GM plan filing by the utility should identify areas of substantive disagreement, and the utility's reasoning for pursuing its proposed course of action instead of accommodating the stakeholder's comment or proposal.

Utility reporting requirements	Utility reports on progress on implementing the GM plan. Rates adjusted to reflect used and useful investments. Performance metrics filed in accordance with the PBR plan.
Cost-Effectiveness:	
Explicit, public cost-effectiveness requirement	The utility must quantify benefits and costs of the GM plan and apply an appropriate discount rate to determine net present value of benefits and costs over the expected service life of the investments. A societal approach to cost-effectiveness should be used. The data and analysis used to develop each benefit and cost element should be provided, including risk elements.
Internal analysis by utility	Any relevant analyses by the utility are discoverable.
Ratemaking and Cost Recovery:	
General ratemaking (historic, future test years)	Pre-approval approach with PBR element.
Frequency of rate cases	Investment costs (depreciation and return components) enter base rates on a pre-approved basis once the investments are used and useful. Operational costs are recovered as part of a Performance-Based Ratemaking (PBR) scheme – the frequency of rate review is determined by the DPU upfront in the PBR proceeding (e.g., the PBR plan should be revisited at intervals of about five years).
Cost recovery (e.g., base rates, trackers)	Base rates
Cost allocation (among customer classes)	GM investment and operational costs should be allocated to the customer classes that benefit from the investments/services.
Cost assignment (e.g., to third party)	Not sure what this means.
Rate design	Default rates for all customer classes should be based on time-specific marginal costs for each function of service (e.g., customer, distribution, transmission, commodity) if the GM plan includes the installation of time-based metering. Low-income customer rates should provide affordability and stability, but also should enable low-income customers to benefit from shifting consumption to lower-cost periods.
Utility incentives (e.g. ROE, rewards/penalties)	Standard ROE for regulated utility distribution service would be applied to the utility's non-depreciated invested capital. Utility must bear risk of cost overruns.
Performance Targets or Metrics:	
Role of performance targets	Give utilities incentives to improve service quality given the cap on the regulated portion prices/revenues.
Performance targets that will be used	Performance metrics should be modified to reflect the expected improved service quality resulting from GM investments.

2. Description of Regulatory Model

Executive Summary

To encourage cost-effective grid modernization (GM) efforts, this regulatory model utilizes elements of pre-approval and performance-based ratemaking (PBR).

Under the pre-approval element, the utility files its GM plan – the plan may be comprehensive (both customer- and grid-facing elements), separate, or filed in phases depending on the specific circumstances of the utility (e.g., current state of metering and/or grid monitoring technology, pilot program status, etc.). The utility files its business case for the plan (filing elements described below). The DPU approves the plan if found to be cost-effective. If the DPU approves the plan, capital cost recovery associated with the plan is pre-approved. That is, investments authorized by the plan are deemed to be prudent and in the public interest, and return of and on authorized investments are reflected in regulated distribution rates once the investments are used and useful. The amount of cost recovery reflected in rates is determined by the DPU at the time of GM plan approval – cost under- or over-runs are borne by the utility.

Under the PBR element, operational costs are recovered with service quality adjustments to give utilities the incentive to improve service quality. GM costs approved by the DPU at the time of GM plan approval are incorporated into initial PBR distribution rates. Cost under- or over-runs are borne by the utility during the tenure of its DPU-approved PBR plan. Operational costs are revisited and the PBR plan is modified at intervals determined by the DPU (e.g., about five years).

Regulatory Oversight

Elements of the GM plan filed by the utility with the DPU should include: description of the purpose and scope of the plan, itemized benefits and costs with supporting documentation, cost-effectiveness analysis, cost recovery proposal, class ratepayer impact analysis, and implementation/deployment plan. If the grid modernization plan includes deployment of more advanced metering that accommodates time-based rates, a separate default service rate design plan, including a plan for low-income customer protection, should be filed as well.

DPU reviews and holds a proceeding on the utility's GM plan. Alternative proposals may be filed by interveners. Standard administrative procedures are followed.

Utilities should be required to present its GM plan to stakeholders before filing the plan with the DPU. Utilities should be encouraged to modify plans based on stakeholder comments or proposals. The GM plan filing by the utility should identify areas of substantive disagreement, and the utility's reasoning for pursuing its proposed course of action instead of accommodating the stakeholder's comment or proposal.

Cost Effectiveness

The utility must quantify benefits and costs of the GM plan and apply an appropriate discount rate to determine net present value of benefits and costs over the expected service life of the investments. A societal approach to cost-effectiveness should be used. The data and analysis used to develop each benefit and cost element should be provided, including risk elements.

Ratemaking & Cost Recovery

As described in the summary above, investment costs (depreciation and return components) enter base rates on a pre-approved basis once the investments are used and useful. Operational costs are recovered as part of a Performance-Based Ratemaking (PBR) scheme – the frequency of rate review is determined by the DPU upfront in the PBR proceeding (e.g., the PBR plan should be revisited at intervals of about five years).

Base rates

GM investment and operational costs should be allocated to the customer classes that benefit from the investments/services.

Default rates for all customer classes should be based on time-specific marginal costs for each function of service (e.g., customer, distribution, transmission, commodity) if the GM plan includes the installation of time-based metering. Low-income customer rates should provide affordability and stability, but also should enable low-income customers to benefit from shifting consumption to lower-cost periods.

Standard ROE for regulated utility distribution service would be applied to the utility's non-depreciated invested capital. Utility must bear risk of cost overruns.

Performance Targets or Metrics

Give utilities incentives to improve service quality given the cap on the regulated portion prices/revenues.

Performance metrics should be modified to reflect the expected improved service quality resulting from GM investments.

3. Strengths and Weaknesses of the Regulatory Model (compared to status quo)

Strengths

Since the primary mission of a distribution utility can be accomplished without GM, and since the incremental benefits of GM investments tend to accrue to others (i.e., customers, energy service and technology providers, and society in general) and not the utility, the risk of disallowance under traditional ratemaking practices (e.g., historical test-year approaches) discourages utilities from pursuing GM investments. This model addresses this shortcoming by requiring the utility to analyze GM investments from a broader societal point of view and giving the utility a degree of certainty regarding GM cost-recovery before making GM investments.

Weaknesses

The focus of this model is the pre-approval process. Instead of reviewing the prudency of actual, booked costs, the focus is on reviewing forward-looking cost and risk assumptions in the cost-effectiveness analysis. This shifts the type of expertise needed to review GM plans. Determining the reasonableness of cost projections becomes important because the prudency of investments authorized by the plan is presumed once a GM plan has been approved.