

Energy-Efficiency in Massachusetts: Going Beyond the Mantra of Market Transformation

*Paul A. Horowitz, PAH Associates, West Simsbury, CT
Jeffrey A. Schlegel, Schlegel & Associates, Tuscon, AZ*

ABSTRACT

Over the past two years there has been significant activity and focus on restructuring the electric industry in Massachusetts. Legislative bodies and regulatory agencies have moved forward to encourage increased reliance on market-based solutions to the provision of electric energy resources to consumers. At the same time, there is continued legislative and regulatory support for public purpose funding of energy-efficiency programs and activities administered by the state's five investor-owned electric utilities. In response to these apparent conflicting policy demands, some energy-efficiency advocates have turned from the historical focus of electric utility programs reaching specific customers through retrofit programs with deep rebates and market-driven programs with incremental incentive structures, to what is generally being termed market transformation. As discussions with each of the utilities have proceeded, critical and controversial issues regarding the balance between pure market transformation initiatives and more developed and known energy-efficiency strategies have emerged.

This paper will focus on three areas, as they have evolved in Massachusetts: 1) an examination of the issues related to balancing public purpose energy-efficiency strategies, and a discussion of the outcome in the state; 2) a description of the context within which the discussion of these issues are being undertaken; and 3) a discussion of lessons learned about the balance of programs necessary to support the public purpose mandate. The paper will conclude with a description of how these lessons learned are being applied in Massachusetts and other New England states, with implications for other regions.

Introduction

In the past several years market transformation has dominated the dialogue within the energy-efficiency community over the most effective strategies for growing efficiency in a regulatory and legislative environment which emphasizes use of the marketplace to provide energy services. In Massachusetts, and to a somewhat lesser extent throughout New England, the dialogue has taken place in the context of historically strong regulatory support for utility sponsored energy-efficiency programs. Market transformation has thus been a recent addition to a deep well-established set of programs and delivery mechanisms. As parties have engaged in settlement discussions with utilities to define multi-year energy-efficiency plans in the restructured future, and as they have participated in the early stages of regional coordinated market transformation initiatives, it has become apparent that there are divergent views on what market transformation consists of and how the various historical approaches to delivering energy-efficiency in the region may or may not fit into this rubric.

The underlying causes of these differences are several: 1) there has been limited experience with market transformation initiatives, strategies, and results; 2) parties have different objectives and underlying reasons for embracing market transformation; 3) some have maintained parochial perspectives designed to justify existing program efforts; 4) there is a degree of self-interest by some players in the market, seeking to ensure that their future opportunities are not jeopardized; 5) there is a conflict between the view

shared by some that market transformation is the panacea to non-market based efficiency activity and the reality of the presence of intractable market barriers which may need to be addressed by a range of efficiency strategies.

The perspectives and issues to be addressed in this paper, focussing on the balance between traditional energy-efficiency strategies and market transformation, thus emanate from particular historical circumstances in Massachusetts and the region, and the particularities of the regulatory and legislative pronouncements regarding energy-efficiency and restructuring. It is necessary, therefore, to review the history of energy-efficiency in the state, to provide the context within which these issues have arisen. At the same time it is clear that the issues which have confronted efficiency advocates in Massachusetts may well arise elsewhere, and that the experience which has developed in Massachusetts will likely be applicable in other parts of the country as energy-efficiency strategies and policies are considered from a range of perspectives.

Context

Early Strategies

Massachusetts has had a long history of support for utility-sponsored energy-efficiency activity. A review of the several phases of this activity will help set the stage for the current debates on efficiency. Beginning in 1988, when the New England region projected near-term brownouts and longer term capacity shortages, the state Department of Public Utilities (DPU) mandated that the five investor-owned electric utilities develop, in collaboration with several non-utility parties, aggressively-funded comprehensive demand-side management (DSM) programs for all customer sectors. During the late 1980's and into the early 1990's these utilities designed and implemented large scale retrofit and lost-opportunity (i.e., new construction and major renovation) programs, spending on the order of four percent of gross revenues on DSM.

As a severe recession hit the region in the early 1990's, increased utility and regulatory concern over the rate impacts of DSM led to reductions in annual program budgets. The DPU did not alter its overall policy support for DSM, however, other than to alert utilities, their collaborating partners, and other settling parties to consider the rate impacts in the development of proposed annual program budgets. Paralleling these events, DSM strategy evolved to seek comparable savings for the lesser monies, by taking greater advantage of existing events in the market — market-driven (i.e., failed equipment replacement) and lost-opportunity programs, paying customer incentives based on incremental measure costs, received greater attention and over time became significant elements in the array of programs offered to utility ratepayers. During this period DSM budgets fell by a third, but still remained at a significant level. In addition to the on-going purposes for DSM, utility programs were marketed as support for business and jobs retention, business attraction, and maintenance of the efficiency infrastructure.

With Restructuring in Mind

As the region began to come out of the recession in the mid-1990's, several actions began to affect further refinement and enhancement of utility DSM program strategy. Industrial customers, both in Massachusetts and nationally, generally ambivalent in their support for utility-sponsored energy-efficiency programs and seeking greater market options to reduce their electricity costs, began raising issues related to opting out of utility DSM programs and to having direct access to the supply market. A change in

chairmanship at the DPU led to policy pronouncements increasingly supportive of market solutions for energy-efficiency, including greater consideration of total bidding out of DSM by utilities. While little actually was mandated into practice, there were two significant consequences related to DSM. First, the DPU supported less-tested program implementation techniques and smaller budgets by utilities who were disinterested in continuing to collaborate with non-utility parties, while permitting collaborating utilities to maintain level-funding for DSM through this period. Second, the overall tone regarding increased use of the private sector led supporters of utility efficiency programs to focus further attention on a more recent and nascent strategy for achieving large scale electrical energy savings: market transformation.

While several of the utilities in the state had participated in the national Super Efficient Refrigerator Program effort, it was the only market transformation process the utilities and many advocates were directly familiar with. At the same time, a number of efficiency strategists nationally were converging on a general series of understandings and principles which could provide the basis for focussed market transformation planning of energy efficient technologies or practices. The view at the time, and one which remains a core element of market transformation strategy, is that with a significant focussed effort involving a wide range of planned actions directed at a selected market, one could anticipate a non-reversible presence of higher efficiency technologies, services, or standard practices. A further underlying premise of a market transformation strategy is that while this initial, typically multi-year effort requires the expenditure of monies at levels generally comparable to other efficiency strategies, once the market for the technology, service, or practice is transformed, the need to spend monies to maintain the level of efficiency is likely to be limited to general market support. Unlike utility retrofit or market-driven programs, in which only participating customers derive direct short-term energy savings, once a particular market has been transformed all future users of the technology, service, or practice gain the savings.

During this same period restructuring of the electric industry gained further interest and political attention. Fundamentally focusing on enabling competition at the electric generation level and on retail access to those markets, restructuring implied an overall stronger reliance on the private sector and markets to allocate resources efficiently. Energy-efficiency advocates recognized that while a public policy rationale existed for continued energy-efficiency programs, approaches which worked with markets, which limited long-term DSM intervention and expenditures, while also anticipating large savings, would fit well into the new vision of the electric industry. Advocates, both in the Northeast and elsewhere in the country, continued to refine their thinking about market transformation, and several non-profit organizations were established to facilitate market transformation and other multiple-entity efficiency efforts.

With further changes in the staffing of the DPU, movement toward restructuring advanced more substantively. The DPU opened a generic investigation on the subject, which led to preliminary and final proposed model rules and legislative proposals for a restructured electric industry. The Department proposed a five-year wires charge for energy-efficiency, required the electric utilities to file plans for spending those monies, and presented in particular detail its preferences for the types of energy-efficiency which should be included in the plans:

"...The Department's primary goal is to eliminate market imperfections where possible, and to mandate utility-sponsored energy efficiency programs only where market failures continue to exist...it is in the public interest for the Department to continue to support and encourage the development of the energy efficiency industry in Massachusetts...during the transition to a competitive marketplace, the nature of utility-sponsored energy efficiency

initiatives will evolve...Proposals filed by electric companies should include budget levels...that are designed to recover the costs of only those energy efficiency services which cannot be provided by the market." (MDPU May 1996, 66-68)

"...a movement toward market-driven and market transformation activities is appropriate...retrofits may continue to...be effective tools for transforming the market in certain applications...each distribution company should propose energy efficiency activities appropriate to each technology or market sector it is targeting, and explain how that activity furthers the movement toward market transformation..." (MDPU December 1996, 182)

These pronouncements gave stakeholders direction on what would be expected in the utility 5-year energy-efficiency plans, which would go into effect in 1998. At this point in time, however, there was no indication of the overall budgetary levels which would be acceptable by the regulatory or legislative bodies. As several utilities began to prepare draft plans during the first half of 1997, some in conjunction with efficiency advocates, the concept of "level funding" to previous year activity by the more active utilities, became the prevailing model.

In the spring of 1997 the state's energy office and attorney general's office sponsored a series of technical forums, designed to bring utilities and other advocates together to seek to establish common ground on key elements of the 5-year plans. It was recognized that each utility would ultimately prepare its own plan, but with the issuance of the DPU's proposed model rules and proposed legislative issues it was also apparent that there needed to be some level of commonality among the filings. This particularly applied to avoided cost issues, cost-effectiveness, cost recovery, and the types of efficiency programs which would be appropriate and acceptable in a restructured electric industry environment. Because these plans would provide the first opportunity to formally include market transformation initiatives in utility filings, the meetings also served as one of the early settings for general discussion of market transformation strategies. Simultaneous to these sessions, the Northeast Energy Efficiency Partnership (NEEP), established in the fall of 1996 to facilitate multi-party program initiatives, especially related to market transformation, began holding meetings among stakeholders on specific regional initiatives (focusing first on high efficiency motors and clothes washers).

Restructuring legislation was passed in late fall 1997, and mandated a wires charge for energy-efficiency, beginning in 1998 at levels comparable to the budgets of the electric utilities most actively engaged in administering and delivering energy-efficiency. These were the two utilities with whom long-running energy collaboratives had been actively functioning. Except for requiring that specific levels of funding be targeted to the low-income community, the legislation did not address either efficiency strategies or the general policy context for energy-efficiency. This created somewhat of a void regarding what the legislative intent had been: should efficiency strategy rely on the earlier pronouncements of the DPU, which themselves were open to alternate interpretations, or leave those decisions to the settling parties? As each of the utilities worked with their settling parties to finalize their 5-year energy-efficiency plans, they had to address and resolve a mix of energy-efficiency strategy issues and program realities:

- It was not entirely clear what the DPU and legislative objectives and preferences were;
- It was not clear what the balance between market transformation and other strategies should be, or what would be acceptable to the reviewing bodies;

- The Department had mandated that only programs which furthered the goals of market transformation should be included in the plans, yet it was clear that some programs which fell under earlier rationales (eg., rental space) could not readily be subsumed under market transformation formulations.
- Restructuring legislation dictated sizable budgets for efficiency activity.
- Market transformation was an untested and new strategy for utilities in the region, and although individual initiatives were being developed by the utilities and parties in the region, primarily through the auspices of NEEP, a large proportion of efficiency funds dedicated to program activity could not be allocated to these efforts.

Observations And Emerging Lessons

A number of observations can be extracted from the recent Massachusetts experience. They also provide, we believe, a number of lessons and cautions which may be applicable to others as they move forward in addressing energy-efficiency strategies in a changing regulatory environment.

Barriers to Consistent Policy Decisions

Several key factors, discussed below, contributed to the ultimate outcome of regulatory and legislative processes in Massachusetts related to on-going energy-efficiency activity. The combination of these factors, and the divergent views which had to be addressed, contributed to the conclusions drawn by the DPU, and later by the legislature in the restructuring legislation. These included 1) that future efficiency activity should focus on market transformation; 2) that funds for energy-efficiency needed only continue for a limited time, initially established as five years; 3) that the fund levels could decline over the period; and 4) that by the end of this period private sector businesses would be expected to be able to address energy-efficiency in all markets.

Market transformation was embraced for differing reasons. As parties developed and presented their positions on energy-efficiency during formal regulatory proceedings, various reasons, some clearly at odds with each other, were either espoused by parties or perceived by the Department in support of market transformation:

- Market transformation was the goal of all energy-efficiency activity, and as such necessarily needed to be fully embraced by regulators;
- Energy-efficiency, providing its various benefits, was the overall goal. The transformation of particular markets was but one of several strategies in support of this overall goal;
- Market transformation was a smarter, more effective method of implementing efficiency than other DSM strategies;
- Market transformation could take advantage of existing events in the market, thus capturing lost opportunities more efficiently and leading to lasting change in the market;
- Market transformation was a more cost-effective, and less expensive, strategy for increasing energy-efficiency;
- A market transformation strategy supported a policy desire to move toward increased reliance on markets, as it was viewed as a strategy which would permit the discontinuance of public support for energy-efficiency in the near term.

- An expectation that market transformation strategies could be applied and implemented across a wide range of markets within a limited time frame. While proponents of market transformation (in any number of forms) had not taken such a position, enough enthusiasm for this efficiency strategy had been expressed that it was probably not a great leap for policy-makers to assume that this strategy could succeed broadly within a five year period.

Little Experience Existed to Support Policy Positions on Market Transformation. It was not very surprising that parties had widely differing objectives and perspectives associated with market transformation. Even recognizing that the organizational self-interests of parties could affect ultimate positions, the underlying policy foundation for market transformation as an energy-efficiency strategy was still in its formative stages when the Massachusetts DPU held its restructuring proceedings, and everyone was very early on the learning curve. While several reports had been prepared on the subject, they presented the theoretical basis for market transformation and posited supporting program approaches (Eto, Prahl & Schlegel 1996; Hastie et al. 1996). Because there had been little experience with actual market transformation initiatives to inform the policy development, the information which advocates presented to the Department, and which DPU staff heard in other arenas, was based on the best opinions of the time about how market transformation initiatives might function, and the extent to which this strategy could be applied to the range of markets which energy-efficiency programs had been addressing. For example, there is little experience, and certainly none in New England to date, which gives us any clear sense of what will be required once a particular market (eg., motors, lighting design) has reached a point where lesser efficiency applications are no longer available to customers. While some believe that one should plan for and assume an "exit strategy," some level of continued market intervention, though perhaps heavily diminished, may be necessary to maintain the levels of efficiency reached through the market transformation efforts. In addition, energy-efficiency is a continuum, and "transforming" a particular market for a technology, service, or practice merely sets the stage to consider the potential for cost-effectively moving the market to a higher level of efficiency.

Overselling the Product

Energy-efficiency advocates, although they generally fully appreciated the evolutionary nature of energy-efficiency strategies in Massachusetts, in their enthusiasm for this emerging strategy probably oversold the range of benefits which market transformation could offer the region. As a result they did not provide the Department with sufficient balance about the value which retrofit, market-driven, and lost opportunity programs should continue to offer. These more proven strategies had over the years improved the efficiency lot of participating customers, kept electric rates lower than they otherwise might have been, and contributed to changes in markets for technologies, services, and practices¹. Though not atypical of how new ideas are introduced in the market, the unintended consequence of this incomplete presentation was that existing and proven strategies were essentially relegated to supporting roles when the DPU issued its Model Rules and Proposed Legislation.

¹ Some parties maintain that these activities are examples of how market transformation has already taken place in New England. We disagree. In our view, market transformation is a forward-looking strategy designed, and planned, to target a particular technology, practice, or service, and to move that market to a higher level of efficiency in a cost-effective manner.

New Efficiency Strategies and Threatened Interests

Some energy services providers who have worked with utility or government energy-efficiency programs in the past have expressed the belief, and to some extent the fear, that market transformation strategy will directly impinge on their ability to conduct business. Under this view, because market transformation focuses on raising the efficiency levels of whole markets rather than on providing savings to individual participants, retrofit programs, the primary type of utility and government DSM program delivered by these companies, could be limited in the short run and eliminated with market transformation successes. This has led to direct challenges to the recently organized efforts among utilities to target and transform specific markets. This perspective likely derives from several factors, including misapprehensions about new perceived competitive entries into the efficiency marketplace; misunderstandings of the practical functioning of market transformation as it was being applied in Massachusetts; and lack of control.

A very real distinction needs to be drawn between claims of anti-competitive practices and efforts to alter overall markets. The former can arise when a utility, seeking to be cost-efficient, procures high efficiency products through bulk purchasing or directly from manufacturers rather than through the normal vendor supply network, or acquires contractor services through sole-sourcing rather than through a more open and competitive selection process. The latter seeks to improve the efficiency of all available products or practices within the targeted market (eg., three phase motors of various horsepower, energy use levels for new construction), without advantage to any entity. Transforming markets through planned strategies may well appear threatening to service providers who rely on current practices and standards to run their businesses, providing savings to individual customers by moving to the next levels of efficiency. Yet, it is not clear that equal or even greater numbers of opportunities would not also exist within transformed markets.

Program Policy and Efficiency Plans

The DPU used the term market transformation broadly in its regulatory pronouncements. This led to considerable dialogue among the parties on how to apply the market transformation concept to the proposed utility 5-year efficiency plans, given the DPU's dictate that all programmatic activity had to fall under this umbrella. Those utilities who already had a broad range of demand-side management programs wanted to include those programs in the five year plans, and did incorporate many of them, characterizing virtually all elements as supporting market transformation. This led to apparent contradictions between DPU policy and to particular utility programs, which were very targeted to markets which had little chance of ever being transformed (eg., electric space heat). Only by stretching the conceptual limits of market transformation to meet the DPU's mandate could these program plans support this energy-efficiency strategy. Other utilities, who had not in the recent past been implementing programs directly,² chose to interpret the DPU mandate very narrowly. They proposed that their 5-year plans only include involvement in the regional market transformation initiatives facilitated by NEEP, in other multi-utility efforts in the Northeast, and in other explicitly mandated activity (low-income, education).

² Several utilities had for the past several years run programs under performance contracting arrangements.

Neither of these situations was particularly satisfying, as such disparate mixes of program plans were supported by the same supposed overall strategy. While this diversity under the same framework may have a certain philosophical elegance to it, from a programmatic perspective the concept of market transformation began to lose its focus. This made it more difficult to inform the broader range of the efficiency community as well as customers about this market focused efficiency strategy.

Analytic Framework for Market and Program Planning

The regulatory framework posited that market transformation, broadly defined, should be the overall program strategy which utilities use to address those markets which could not be served directly by the private sector. While this gave great support to this emerging energy-efficiency strategy, it did not provide the analytic framework necessary to determine whether a market was able to be served by the private sector and thus whether public purpose monies should be spent in addressing the market. It also, unfortunately, established a predisposition toward how efficiency could address those markets where the private sector could not perform well — characterize it as market transformation.

To make a fair assessment of which markets to address and what the most appropriate efficiency strategy would be for those markets, it is necessary, we believe, to adopt "presence of market barriers which are cost-effective to address, reduce, or remove" as the proper analytic framework. This approach goes back to the distinction which many policy-analysts have made in proposing that monies continue to be spent on energy-efficiency: only to do so where the markets cannot be served directly by the private sector. The distinguishing characteristic about a market that cannot be served by the private market is that there are a variety of barriers which prevent the market from functioning on its own. Barriers can include a wide range of specifics, among them lack of information by the customer about efficiency opportunities; lack of time to pursue opportunities; lack of finances to undertake the effort; lack of an infrastructure to support the efficiency work; split incentives between tenant and landlord; and timing of access to efficiency opportunities. Some barriers have the potential to be eliminated permanently through a range of program elements targeted to that end, while other barriers can be viewed as more permanent, or intractable. Being able to make realistic assessments of markets, customer segments, and possible barriers to access to private sector efficiency services allows efficiency program planners more able to develop the proper program for the markets. The Massachusetts DPU presumed that market transformation, broadly defined, would be readily applicable to all markets where barriers are found to exist. The difficulty with this construct is that some markets can be expected always to require program intervention to serve customers (eg., low income, renters), while market transformation includes as a core tenet that the market can be transformed, through the complete removal, or at a minimum significant reduction, of barriers, and intervention and funding can be substantially reduced or eliminated.

Conclusions

The development of state policy for energy-efficiency in an emerging restructured electric utility environment, coupled with the rise of developing market transformation strategies, created a variety of challenges for settlement parties.

- In our view, energy-efficiency is the overall goal of the strategic efforts. Market transformation is one important objective in support of this goal, but it is not the only objective. Market transformation is also an important program strategy, but it is one among several, including market-

driven, lost-opportunity, and retrofit programs. The framework within which these program strategies should be used in the markets incorporates an assessment of the extent to which barriers exist, and the extent to which they can be cost-effectively addressed, reduced, or removed.

- The recent history of program planning in Massachusetts, occurring in the midst of regulatory and legislative shifts to a restructured electric utility environment, reveals the need both for careful and clear definition of energy-efficiency strategies and for an analytic framework within which decisions about these strategies can occur. While some of the difficulties encountered can be attributed to the lack of direct experience with market transformation efforts, the concept was too oversold by efficiency advocates, and too aggressively embraced at the policy level. This led to significant differences among utilities and among parties when it came to developing 5-year energy-efficiency plans.
- With hindsight it is possible to observe that some of these challenges were to some degree self-induced. Emerging program policies and strategies need to be presented more realistically, and not oversold, especially if policy makers have opportunities to selectively adopt preferred elements of an overall strategy and put them into unalterable mandates.
- The regulatory dictum in Massachusetts that all utility efficiency activity be designed to support market transformation led both to creative efforts by some utilities to characterize the full range of their program preferences as meeting that requirement and to justification by other utilities to propose that market transformation initiatives emerging in the Northeast be the bulk of their program activity. As settling parties met with the utilities and worked to finalize efficiency plans, a general convergence of program mix developed, in which the underlying criterion of market barriers was applied to support a variety of program strategies, including retrofit, market-driven, lost opportunity, and market transformation. Applying the barriers criterion to assess whether markets could be addressed unsupported by the private sector also enabled planners to determine the nature, if any, of limits to market access, and this in turn provided the information necessary to select the appropriate program approach to treating customers and markets. This approach ensured that energy-efficiency programs supported by ratepayer funds were targeted in ways which maximized their value.

References

Commonwealth of Massachusetts. 1997. *An Act Relative to Restructuring the Electric Utility Industry in the Commonwealth, Regulating the Provision of Electricity and Other Services, and Promoting Enhanced Consumer Protections Therein*.

Commonwealth of Massachusetts Department of Public Utilities (MDPU). December 1996. *Electric Utility Restructuring Plan: Model Rules and Legislative Proposal*. D.P.U. 96-100.

Commonwealth of Massachusetts Department of Public Utilities (MDPU). May 1996. *Investigation by the Department of Public Utilities upon its own motion commencing a Notice of Inquiry/ Rulemaking, pursuant to 220 C.M.R. §§ 2.00 et seq., establishing procedures to be followed in electric industry restructuring by electric companies subject to G.L. c.164*. D.P.U. 96-100.

- Eto, J., C. Goldman, and S. Nadel. 1998. *Ratepayer-Funded Energy Efficiency Programs in a Restructured Electricity Industry: Public-Policy Issues and Options for Regulators and Legislators*. LBNL-41479. Berkeley, Calif.: Lawrence Berkeley National Laboratory.
- Eto, J., R. Pahl, and J. Schlegel. 1996. *A Scoping Study on Energy-Efficiency Market Transformation by California DSM Programs*. Prepared for the California Demand-Side Management Measurement Advisory Committee. LBNL-39058, UC-1322. Berkeley, Calif.: Lawrence Berkeley National Laboratory.
- Hastie, S., C. McDonald, M. King, and R. Smithers. 1996. *Market Transformation in a Changing Utility Environment: A Guidebook for Regulators*. Prepared for National Association of Regulatory Utility Commissioners. SRC Report No. 8196-R1. Bala Cynwyd, Penn.: Synergic Resources Corporation.
- Keating, K., D. Goldstein, T. Eckman, P. Miller. 1998. "Wheat, Chaff and Conflicting Definitions in Market Transformation." *In Proceedings of the 1998 ACEEE Summer Study on Energy Efficiency in Buildings, 7*. Washington, D.C.: American Council for an Energy-Efficient Economy.