BAY STATE GAS COMPANY

Direct Testimony of Lawrence R. Kaufmann, PhD

D.T.E. 06-xx

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Lawrence R. Kaufmann. My business address is 22 East Mifflin, Suite 302, Madison, WI, 53705.

Q. WHAT IS YOUR POSITION AND WHAT ARE YOUR RESPONSIBILITIES?

A. I am a Partner at Pacific Economics Group LLC ("PEG"). My work includes designing and providing empirical support on performance-based regulation ("PBR") plans for energy utility clients. My specific duties include designing regulatory plans that create strong performance incentives, supervising research on the productivity and input price trends of utility industries, benchmarking utility cost performance, and expert witness testimony. I have been involved in PBR-related projects for a large number of gas and electric utility clients.

Q. WHAT IS YOUR PROFESSIONAL AND EDUCATIONAL BACKGROUND?

A. Prior to co-founding the Madison office of PEG in 1998, I was employed from 1993 until 1998 as a Senior Economist at Christensen Associates, an economic consulting firm based in Madison. I received a PhD in Economics from the University of Wisconsin in 1993.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY?

A. Yes. I filed both direct and rebuttal testimony on the PBR plan proposed by Bay State Gas in D.T.E. 05-27 and by Boston Gas Company in D.T.E. 03-40. I also co-authored a report that was attached to testimony on service quality PBR in Massachusetts (D.T.E. 99-84) and testified before the Department in that proceeding.

Q. HAVE YOU TESTIFIED BEFORE OTHER COMMISSIONS?

A. Yes. I have filed testimony on PBR issues in Rhode Island, Kansas, Hawaii, Oklahoma, and Kentucky. I have co-authored reports that were attached to PBR testimony in California and British Columbia. I have also testified overseas in Australia and New Zealand on PBR issues.

Q. WHAT IS THE PURPOSE OF THIS TESTIMONY?

A. This testimony will address Bay State Gas Company's ("Bay State" or the "Company") proposal to recover revenues that have been lost due to the decline in average gas use per customer (AUPC). Bay State proposes to recover these revenues through the exogenous factor component of its approved PBR plan.

Q. CAN YOU SUMMARIZE YOUR CONCLUSIONS?

A. Yes. There has been a long-term trend of declining AUPC in the natural gas industry. Since 2002 this trend has accelerated, as consumption has fallen in response to the rapid increase in natural gas prices. The acceleration in declining AUPC has been particularly dramatic for gas distributors in the Northeast US. Both the longer-term trend, and the recent acceleration, of declining AUPC are exogenous events which are beyond the control of utility managers and reflect circumstances that uniquely affect the natural gas industry.

The Department recently addressed the issue of exogenous cost increases resulting from higher natural gas prices in D.T.E. 05-66. In that proceeding, the Department concluded that the recent increase in bad debt expense for Boston Gas Company could be recovered through the exogenous factor in that company's PBR plan. I have carefully reviewed the rationale which the Department used in D.T.E. 05-66 to justify exogenous recovery of bad debt expense, and I believe it applies even more strongly to Bay State's proposed recovery of revenues that have been lost due to declining AUPC. I therefore believe that Bay State's proposal to recover revenues lost because of an exogenous decline in gas usage is consistent with Department precedent and should be allowed.

Q. HOW IS THE TESTIMONY ORGANIZED?

A. Following this introduction, the testimony is organized in three sections. Section II discusses the issue of declining AUPC in the natural gas industry and shows that this decline has accelerated since 2002, particularly in the Northeast US. Section III discusses the criteria that the Department developed in D.T.E. 05-66 for allowing exogenous cost recovery and evaluates whether those criteria are satisfied with respect to Bay State's proposed recovery of lost revenues due to declining AUPC. Section IV presents concluding remarks.

II. NATURAL GAS USAGE AND REVENUE TRENDS

Q. WHAT HAS BEEN THE RECENT EXPERIENCE IN NATURAL GAS USAGE PER CUSTOMER?

A. For many US gas distributors, there has been a long-term trend of declining gas delivery volumes per customer. This pattern is particularly evident for residential customers. For example, one study by the American Gas Association (AGA) estimates that gas consumption per household has declined by 22% since 1980 in weather-normalized terms. This trend is due, in part, to demand-side management programs, but it also depends greatly on the use of more energy efficient appliances, materials and insulation in new construction. All these factors tend to reduce gas consumption per customer, on average.

Q. DO GAS UTILITIES TEND TO SERVE INCREASING NUMBERS OF CUSTOMERS OVER TIME?

A. Yes. Nearly all gas distributors are experiencing growth in their service territories and, therefore, in their obligation to connect and serve new natural gas customers.

Q. IF A GAS DISTRIBUTOR IS SERVING INCREASING CUSTOMER NUMBERS, AND AVERAGE GAS USAGE PER CUSTOMER IS DECLINING, WHAT ARE THE IMPLICATIONS FOR THAT DISTRIBUTOR'S COSTS AND REVENUES?

A. For most gas distributors, if customer numbers are increasing and average use per customer (AUPC) is declining, the changes in a distributor's revenues will tend to lag the changes in its gas distribution costs. This results from the fact that there is an imbalance between gas distribution costs and the design of gas distribution rates.

This issue can be better understood by considering the structure of gas distribution costs and revenues. Most gas distribution costs (*e.g.*, services, meters, and new distribution main) are largely fixed and driven by the number of customers served. At the same time, most distributors' rates are designed so that more revenues are generated from volumetric, rather than customer charges. This mismatch between gas distributors' cost structure and rate design becomes problematic when customer

numbers increase but volumes per customer decline. All else equal, the combination of increasing customer numbers, declining AUPC, and a volumetric-intensive rate design will cause revenue growth to lag cost growth.

Q. HAS THE RECENT INCREASE IN NATURAL GAS PRICES AFFECTED THESE TRENDS?

A. Yes. These problems have been exacerbated by the recent increases in natural gas commodity prices. Many customers react to higher gas commodity prices by reducing their natural gas consumption. This accentuates the trend of declining usage per customer. This, in turn, further reduces gas distribution revenues, which depend on throughput. Since gas distribution costs remain largely fixed, distributors' returns are negatively impacted by higher commodity prices.

Q. ARE THERE DATA THAT DEMONSTRATE THAT GAS USAGE PER CUSTOMER HAS BEEN IMPACTED BY THE RECENT INCREASE IN NATURAL GAS PRICES?

A. Yes. Exhibit LRK-1 is a table I prepared on trends in average gas use for residential and commercial gas customers in the US. Data is presented for the 1997-2005 period and for the two sub-periods of 1997-2002 and 2002-2005. I have examined trends before and after 2002 since, beginning in that year, annual natural gas prices have generally increased steadily. The table presents data on both the "normalized" and "non-normalized" change in gas usage per annum for residential and commercial customers. Non-normalized usage is simply equal to total consumption for residential and commercial customers. "Normalized" usage has been adjusted for weather, using a regression that relates residential and commercial natural gas consumption to heating degree days. Data are presented for each State in the continental US and for six regional aggregates: the Northeast; the Southeast; the North Central; the South Central; the Northwest; and the Southwest. The normalized data are more useful than non-normalized data for evaluating underlying consumption patterns since the latter depend greatly on transitory and unpredictable weather conditions. I will therefore confine my remarks to the normalized AUPC data.

For the US as a whole, gas usage per residential and commercial customers declined by an average of 1.58% per annum over the 1997-2005 period. The trend decline in AUPC was 1.5% per annum from 1997 to 2002. This declining trend accelerated to 1.74% per annum in the 2002-2005 period.

The figures are even more striking for the Northeast region. For northeast gas distributors, AUPC declined at a 0.43% rate from 1997 to 2002. In the 2002-2005 period, AUPC declined by 2% per annum. No other US region experienced an acceleration of this magnitude during the 2002-2005 period, when natural gas prices were generally increasing.

Q. ARE THESE TRENDS THE RESULT OF EXOGENOUS FACTORS THAT ARE BEYOND THE CONTROL OF GAS DISTRIBUTION MANAGERS?

A. Yes. The long-term trend in AUPC stems primarily from changes in construction materials and more energy efficient appliances which reduce households' demand for natural gas. The acceleration of this trend was due to the increase in natural gas prices in recent years. Gas distributors obviously have no control over new construction in their territories, but must still connect and provide service to new homes and businesses that typically use less natural gas than existing customers. Distributors also have no control over commodity prices for natural gas and, in Massachusetts, distributors do not profit from the natural gas supplies that they procure on behalf of customers.

Q. DO THESE TRENDS UNIQUELY AFFECT THE LOCAL GAS DISTRIBUTION INDUSTRY?

A. Yes. Gas distributors are monopoly providers of gas delivery services to end users in their service territory and have an obligation to serve a growing customer base. This is largely a fixed cost business. When the number of customers increases and AUPC declines, the change in gas distribution costs will outpace the change in distribution revenues, all else equal. This disparity will be exacerbated by increases in natural gas commodity prices that tend to depress AUPC further. This mismatch between changes in costs and changes in revenues results from a constellation of factors which are unique and inherent to the gas distribution industry – most importantly, the

structure of gas distribution costs, the design of gas distribution rates, the obligation to serve a growing number of customers, and the exogenous decline in AUPC over time.

Q. BASED ON THIS INFORMATION, WHAT DO YOU CONCLUDE?

A. I conclude that there has been a consistent decline in average natural gas usage for residential and commercial customers. This decline has accelerated in recent years due to the increase in gas commodity prices, and the accelerated decline has been particularly sharp for Northeastern gas distributors. The effect of declining AUPC is to cause revenue changes to lag cost changes, thereby adversely impacting gas distributors' earnings. These trends are also exogenous in the sense that they are beyond the control of gas distribution managers, and they uniquely affect the local gas distribution industry.

III. EXOGENOUS RECOVERY OF BAD DEBT EXPENSE AND REVENUES LOST TO DECLINING USE PER CUSTOMER

Q. HAS THE DEPARTMENT RECENTLY CONSIDERED THE ISSUE OF EXOGENOUS RECOVERY OF EXPENSES THAT RESULTED FROM HIGHER NATURAL GAS COMMODITY PRICES?

A. Yes. The Department considered this issue in D.T.E. 05-66, where Boston Gas filed for the recovery of an increase in its bad debt expense stemming from the recent increase in gas commodity prices.

Q. PLEASE SUMMARIZE THIS FILING AND THE OUTCOME OF THE PROCEEDING.

A. In D.T.E. 05-66, Boston Gas argued that $9,381,629 in its under-recovered bad debt expense met the Department's standard for exogenous cost recovery and should be recovered through the exogenous factor in its approved PBR plan. The company claimed this was justified because 1) the increase in bad debt expense resulted from higher gas commodity prices over which Boston Gas had no control; 2) the higher bad debt expense resulted from changes in the natural gas marketplace that uniquely

affect the natural gas industry; and 3) the increase in bad debt expenses were not captured in the GDP-PI.

The Department agreed with Boston Gas's claim that the increase in its bad debt expense was due to unprecedented increases in gas commodity prices. The Department also found that the impact of higher gas prices on gas-related bad debt expense, and on the ability of distributors to recover such expenses, is unique to the local gas distribution industry because distributors must purchase gas for customers they are obligated to serve. The Department also agreed that the cost changes associated with higher natural gas prices are not included in the GDP-PI as applied in Boston Gas's PBR plan.

At the same time, the Department said that cost changes associated with natural gas market conditions that uniquely affect the local gas distribution industry and are beyond company control should not be construed as automatic grounds for exogenous recovery. The Department allowed Boston Gas to recover gas-related bad debt expense as an exogenous cost because: 1) it was under a PBR plan and could not file a rate case to recover the costs; 2) the cost change is significantly above the levels approved in Boston Gas's last rate case; 3) the cost change was associated with a pass-through item (*i.e.* natural gas purchase costs); and 4) the cost change is not included in the GDP-PI.

Furthermore, the Department ruled that there was "a larger question involved here, larger than the working of regulatory formulas" (D.T.E. 05-66 at 15). Gas distributors have an obligation to serve customers, and they are constitutionally guaranteed the opportunity, given efficient management, to recover costs that are reasonably and necessarily incurred to serve customers. This opportunity is necessary for companies to maintain financial integrity and attract capital which, in turn, is necessary to continue providing service to new and existing customers. It would not be consistent with distributors' constitutional guarantees to deny cost recovery, thereby harming a company's financial integrity, because of factors that are largely beyond that company's control.

Q. DO YOU BELIEVE THAT BAY STATE'S PROPOSAL TO RECOVER LOST REVENUES THROUGH THE EXOGENOUS FACTOR IS CONSISTENT WITH THE CRITERIA THE DEPARTMENT DEVELOPED IN D.T.E. 05-66 FOR THE RECOVERY OF EXOGENOUS EVENTS?

A. Yes. The loss of Bay State revenues due to the decline in its AUPC is: 1) beyond the Company's control; 2) results from factors that uniquely affect the gas distribution industry; and 3) not captured in the GDP-PI. In my opinion, these conditions are satisfied more strongly and unambiguously than in the case of bad debt expense, for which the Department allowed exogenous recovery in D.T.E. 05-66. In addition, like Boston Gas in that proceeding, Bay State is subject to a 10 year PBR plan and cannot file a rate case to recover the costs; the exogenous event results from a cost pass through item; and the revenues in question are below those approved in Bay State's last rate case. Given that Bay State is under a 10 year rather than five year PBR plan, it is all the more important that the Department recognize declining AUPC as an exogenous factor in Bay State's PBR.

Q. PLEASE EXPLAIN WHY THE LOSS IN REVENUE IS BEYOND COMPANY CONTROL.

A. In the most general terms, while gas distributors have an obligation to provide delivery services to customers in their service territory, they have little ability to influence the volume of natural gas that is actually delivered to customers. Delivery volumes are ultimately determined by customers' demands. Gas distributors are obligated to deliver whatever volume of natural gas that their customers demand.

In recent years, the demand for natural gas has been negatively impacted by higher prices for the natural gas commodity. The negative impact of higher gas prices on gas usage for residential and commercial customers has been particularly evident in the Northeastern US, as demonstrated by Exhibit LRK-1. Therefore, the precipitating factor in Bay State's recent decline in AUPC, and its associated loss of revenues, is the increase in gas commodity prices. This is the same factor that the Department identified as being responsible for the increase in bad debt expenses for Boston Gas, for which the Department allowed exogenous recovery in D.T.E. 05-66.

Q. DO YOU BELIEVE THE LINKAGE BETWEEN HIGHER GAS PRICES AND LOWER DELIVERY VOLUMES IS STRONGER THAN THE LINK BETWEEN HIGHER GAS PRICES AND INCREASED BAD DEBT EXPENSE?

A. I do, for several reasons. First, it is matter of fundamental economic theory that higher prices for a good or service lead to a decline in the quantity demanded of that good or service. Because it is a cost pass through item, Bay State can do nothing to mitigate the impact of higher prices in the natural gas marketplace on the prices that are charged for natural gas to its customers. Accordingly, there is a direct and unavoidable linkage between changes in the market prices for natural gas and Bay State's delivery volumes.

In contrast, the link between natural gas prices and bad debt expense is both more indirect and more manageable. Unlike the close and inexorable link between prices and the quantities that consumers demand, gas prices and bad debt expense are connected through a longer chain of activities. Gas distributors first purchase natural gas on customers' behalf, bill them for the quantities they consume, and observe that customers fail to pay their bills in full before contacting these customers and attempting to arrange for final payment. Only after the latter steps fail to eliminate arrearages are debt expenses considered to be "bad" and written off. Thus, while there is likely to be a link between changes in gas commodity prices and bad debt expense, this relationship only becomes manifest through a series of interactions between the distributor and its customers that unfolds over a considerable period of time.

Relatedly, because high gas prices are linked to bad debt expense via a series of distributor activities, gas distributors have some ability to manage this relationship. Billing and collecting from customers are normal, ongoing business activities that companies can control, *inter alia*, through their own collection efforts. A distributor's ability to plan for and manage bad debt expense may also be heightened by the fact that high gas prices are generally observable in advance of the winter heating season, and managers can foresee that higher prices will affect customers' ability to pay their bills during the peak winter months.

The nature of the linkage between gas prices and the quantity of gas demanded is very different. This relationship depends almost entirely on customers', as opposed to the utility's, behavior. Indeed, the relationship between prices and quantities demanded is captured in the market demand curve, which is one of the fundamental building blocks of economic analysis. The demand curve is also distinct from the supply curve, which reflects producers' behavior in the marketplace. When natural gas prices increase, consumers naturally respond by reducing their consumption. Distributors have little ability to "manage" or offset this response. On the contrary, they have an obligation to deliver whatever volumes of gas their customers' demand.

Q. PLEASE EXPLAIN WHY THE LOSS IN REVENUE DUE TO DECLINING USAGE UNIQUELY AFFECTS THE LOCAL GAS DISTRIBUTION INDUSTRY.

A. Gas distributors have a unique obligation to provide natural gas delivery service to customers in their service territory. In Massachusetts, distributors do not profit from this service but sell gas at cost to customers. However, declining gas usage does reduce distributors' revenues, which depend on throughput. Declining usage also tends to impact distributor earnings negatively because gas distribution is a largely fixed cost business, so most distribution costs do not fall when customers' usage falls.

In contrast, other sectors of the natural gas industry are less adversely affected than gas distributors when commodity prices rise and gas usage declines. Gas producers actually stand to benefit financially when natural gas prices increase. Gas pipelines are largely indifferent to the amount of gas delivered to end users since their tariffs are designed on a "straight fixed variable" basis that reflects the cost structure of the pipeline industry. Essentially, pipelines' fixed costs are recovered through charges that do not depend on the volumes of gas delivered through the pipelines. Only pipelines' variable costs are recovered through volumetric charges. Accordingly, pipelines revenues and earnings are less sensitive to volumes delivered than is the case for gas distributors.

Q. DO YOU BELIEVE THE IMPACT OF HIGHER GAS PRICES ON VOLUMES IS MORE UNIQUE TO THE GAS DISTRIBUTION INDUSTRY THAN THE IMPACT OF BAD DEBT EXPENSE?

A. Yes, I do. Again, one reason is that the linkage between volumes and prices is direct and specific to the natural gas industry. The link between gas prices and bad debt expense is indirect at best.

I also believe that high gas prices can be expected to lead to revenue collection problems for businesses other than gas distributors. I believe it is much less likely that high gas prices will lead to material, observable declines in the consumption of other goods and services in the economy. Therefore, the "spillover" effects into other economic sectors due to higher gas commodity prices is likely to be greater with respect to revenue collection and bad debt expense than with respect to the volumes of goods or services demanded.

Q. PLEASE EXPLAIN.

A. Because utility services are essential – and there is a possibility that service will be terminated at some point for failure to pay – many customers are likely to prioritize their gas bills. If these customers have trouble making ends meet, they can pay for nearly any other product in the marketplace using credit card debt. The attempt to manage gas expenses could therefore lead to greater indebtedness more generally and thus spillover credit problems and bad debt expense. This interaction between managing utility and other living expenses for fixed income and low income people sometimes receives media attention and is referred to as the "heating or eating" dilemma.

Compared with bad debt expense, there will be less spillover impact from higher gas prices on consumption and sales volumes in the broader economy. One reason is that consumers can and will partially manage the impact of higher prices on their overall consumption through debt. In the short run, increasing indebtedness naturally reduces the impact that higher prices for a single product would otherwise have on consumption more generally.

In addition, customers consume a wide range of goods and services, and the impact of higher prices for a single service like natural gas will have a second order, and less pronounced, impact on the consumption of other goods or services in the marketplace. Economists separate the impact of a price increase on the consumption of different goods and services into two effects: the "substitution effect" and the "income effect." The substitution effect captures the impact that price increases for a given product have on the consumption of that product itself. The substitution effect is always negative, meaning that when the price of an individual product increases customers always respond by substituting their consumption away from that product. The income effect captures the indirect impact of price increases on the demand for goods and services due to the reduction in consumers' overall purchasing power. The income effect can be positive or negative depending on the nature of the good or service. In evaluating the impact of higher natural gas prices on consumers' demand, the substitution effect will apply only to natural gas usage and will be negative. The income effects will be spread throughout all the other goods and services that customers purchase and, as noted, may be either negative or positive. It follows that the substitution effect from higher gas prices can be expected to dominate any income effects, and natural gas volumes will be far more impacted by higher gas prices than the consumption volumes of any other good or service.

Q. DOES THE PROPOSED RECOVERY OF REVENUE LOSSES THROUGH THE EXOGENOUS FACTOR SATISFY THE DEPARTMENT'S CRITERIA THAT THE CHANGE IN QUESTION NOT BE INCLUDED IN THE GDP-PI?

A. Yes. Bay State's recent decline in gas usage, and the associated loss of revenues, stems from higher gas commodity prices. This is identical to the Department's finding in D.T.E. 05-66 that Boston Gas's higher bad debt expense resulted from the unprecedented increase in gas commodity prices. In D.T.E. 05-66, the Department concluded that "cost changes associated with increases in the price of natural gas are not included in the GDP-PI as it relates to Boston Gas's plan. Also, Boston Gas's PBR plan applies only to base rates, and not to its CGAC. Therefore, the Company cannot double-recover gas-related bad debt expenses" (D.T.E. 05-66 at 12). Because Bay State's PBR plan also applies to base rates and the changes for which it is

petitioning for exogenous recovery are associated with increases in the price of natural gas, the Department's conclusion in D.T.E. 05-66 that the exogenous changes are not included in the GDP-PI also apply to Bay State in this proceeding.

Q. ARE THE OTHER CRITERIA THAT THE DEPARTMENT ESTABLISHED IN D.T.E. 05-66 SATISFIED WITH RESPECT TO BAY STATE'S PROPOSED RECOVERY OF LOST REVENUE?

A. Yes. Like Boston Gas, Bay State is subject to a PBR plan and cannot file a rate case to recover the proposed revenue declines. The revenue changes are associated with higher gas commodity prices, which is a cost pass through item. Finally, the revenues in question are lower than those approved in the Company's last case. In terms of the implications for the Company's financial condition, this is functionally equivalent to the criterion established in D.T.E. 05-66 that the cost change is significantly above the levels approved in the Company's last rate case.

Q. BAY STATE IS PROPOSING TO RECOVER CHANGES IN REVENUES RATHER THAN CHANGES IN COSTS THROUGH THE EXOGENOUS FACTOR. IS THE RECOVERY OF EXOGENOUS CHANGES IN REVENUES CONSISTENT WITH THE DEPARTMENT'S CONCLUSIONS IN D.T.E. 05-66?

A. Yes. Although D.T.E. 05-66 directly addresses exogenous cost changes only, the recovery of exogenous revenue declines is consistent with the "larger question" that the Department said it was addressing in that proceeding. This larger issue was a utility's ability to maintain its financial integrity and attract capital. The Department said it would not be consistent with utilities' constitutionally guaranteed rights to deny the recovery of costs that are necessary to incur service but largely beyond company control, since doing so can undermine a company's financial integrity and ability to attract capital necessary to continue providing service. This rationale is equally applicable to the recovery of revenues. A $3 million exogenous decline in revenues has an identical impact on a company's earnings as a $3 million increase in exogenous costs. The larger question that the Department said was at stake in D.T.E. 05-66 implies that exogenous changes in revenues should be treated in the same manner as exogenous changes in costs. Bay State's proposal to recover revenue

losses due to the decline in its AUPC is therefore consistent with the Department's ruling in D.T.E. 05-66.

IV. CONCLUSION

Q. PLEASE SUMMARIZE YOUR CONCLUSIONS.

A. There has been a long-term trend of declining AUPC in the natural gas industry. Since 2002 this trend has accelerated, as consumption has fallen in response to the rapid increase in natural gas prices. The acceleration in declining AUPC has been particularly dramatic for gas distributors in the Northeast US. Both the longer-term trend, and the recent acceleration, of declining AUPC are exogenous events which are beyond the control of utility managers and reflect circumstances that uniquely affect the gas distribution industry. Indeed, I believe that exogenous declines in gas usage and revenue stemming from higher gas prices are less controllable and impact the gas distribution industry more uniquely than the increase in bad debt expense resulting from same. Since the Department allowed Boston Gas to recover higher bad debt expenses in D.T.E. 05-66 because of higher gas prices, the rationale advanced for exogenous recovery in that proceeding applies even more strongly to Bay State's current proposal. Bay State's filing also satisfies all the other criteria that the Department established in D.T.E. 05-66 for the recovery of exogenous events. Finally, the fact that Bay State is proposing to recover exogenous revenue declines rather than exogenous cost increases is irrelevant since a cost increase and revenue decrease of the same magnitude will have an identical impact on a company's earnings and financial integrity. For all these reasons, I believe that Bay State's proposal to recover revenues lost because of an exogenous decline in its gas usage is consistent with Department precedent and should be allowed.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

Exhibit LRK - 1

Trends in Average Gas Use for Residential & Commerical Gas Customers by State[1]

	region	1997-2005		1997-2002		2002-2005	
		Non-Normalized	Normalized[2]	Non-Normalized	Normalized[2]	Non-Normalized	Normalized[2]
National Aggregate		**-1.77%**	**-1.58%**	**-1.90%**	**-1.50%**	**-1.55%**	**-1.74%**
North East Aggregate		**-0.99%**	**-1.01%**	**-1.37%**	**-0.43%**	**-0.37%**	**-2.00%**
Connecticut	NE	-1.53%	-1.33%	-1.68%	-0.35%	-1.26%	-2.97%
D.C.	NE	-0.59%	-0.98%	-1.95%	-1.32%	1.68%	-0.42%
Maine	NE	3.20%	3.70%	7.32%	8.31%	-3.67%	-3.98%
Maryland	NE	0.93%	0.53%	0.67%	1.30%	1.35%	-0.75%
Massachusetts[3]	NE	-4.82%	-4.94%	-6.04%	-5.10%	-1.79%	-4.55%
New Hampshire	NE	0.64%	1.02%	-0.81%	0.37%	3.05%	2.09%
New Jersey	NE	-1.82%	-1.79%	-3.40%	-2.46%	0.81%	-0.68%
New York	NE	-0.69%	-0.75%	-0.05%	0.87%	-1.77%	-3.44%
Pennsylvania	NE	-1.32%	-1.25%	-2.47%	-1.48%	0.59%	-0.87%
Rhode Island	NE	-0.86%	-0.93%	-1.69%	-0.45%	0.53%	-1.73%
Vermont	NE	-3.05%	-2.51%	-4.88%	-3.76%	0.00%	-0.42%
Southeast Aggregate		**-0.55%**	**-0.87%**	**-1.00%**	**-0.96%**	**0.19%**	**-0.74%**
Delaware	SE	-0.46%	-0.81%	-1.14%	-0.16%	0.66%	-1.90%
Florida	SE	2.45%	0.85%	4.59%	2.76%	-1.12%	-2.33%
Georgia	SE	-1.00%	-1.46%	-1.68%	-2.12%	0.14%	-0.38%
North Carolina	SE	-0.66%	-0.52%	-1.98%	-1.09%	1.53%	0.44%
South Carolina	SE	-0.84%	-0.90%	-1.24%	-0.72%	-0.17%	-1.20%
Virginia[3]	SE	-2.06%	-1.52%	-3.28%	-2.26%	0.97%	0.34%
West Virginia	SE	-1.41%	-1.03%	-2.14%	-0.94%	-0.19%	-1.18%
North Central Aggregate		**-2.23%**	**-1.72%**	**-2.44%**	**-1.59%**	**-1.88%**	**-1.94%**
Illinois	NC	-1.93%	-1.24%	-1.98%	-1.06%	-1.84%	-1.54%
Indiana	NC	-1.76%	-1.13%	-2.78%	-1.55%	-0.06%	-0.44%
Iowa	NC	-3.09%	-2.44%	-3.34%	-2.47%	-2.67%	-2.40%
Kansas	NC	-2.68%	-2.17%	-0.96%	-0.61%	-5.55%	-4.75%
Michigan	NC	-2.28%	-1.95%	-2.70%	-1.89%	-1.60%	-2.04%
Minnesota	NC	-2.07%	-1.44%	-0.85%	-0.36%	-4.11%	-3.24%
Missouri	NC	-2.62%	-1.78%	-2.98%	-2.21%	-2.02%	-1.06%
Nebraska	NC	-4.02%	-3.39%	-4.16%	-3.84%	-3.79%	-2.64%
North Dakota	NC	-2.84%	-2.31%	-1.07%	-0.91%	-5.79%	-4.63%
Ohio	NC	-2.06%	-1.86%	-3.16%	-2.05%	-0.23%	-1.55%
South Dakota	NC	-2.54%	-1.77%	-2.87%	-2.34%	-2.00%	-0.83%
Wisconsin	NC	-2.60%	-2.15%	-2.31%	-1.58%	-3.08%	-3.10%
South Central Aggregate		**-1.94%**	**-1.28%**	**-1.86%**	**-1.37%**	**-2.08%**	**-1.14%**
Alabama	SC	-2.28%	-1.71%	-2.95%	-2.26%	-1.16%	-0.79%
Arkansas	SC	-1.48%	-0.82%	-0.32%	-0.39%	-3.40%	-1.53%
Kentucky	SC	-2.47%	-1.91%	-3.10%	-1.97%	-1.43%	-1.80%
Louisiana	SC	-1.70%	-0.57%	-0.94%	-0.56%	-2.97%	-0.57%
Mississippi[3]	SC	-1.86%	-1.20%	-1.44%	-1.01%	-2.91%	-1.68%
Oklahoma	SC	-1.93%	-1.32%	-1.54%	-1.74%	-2.59%	-0.62%
Tennessee	SC	-2.14%	-1.58%	-2.33%	-1.46%	-1.83%	-1.77%
Texas[3]	SC	-3.33%	-1.78%	-1.92%	-1.03%	-6.84%	-3.67%
Northwest Aggregate		**-2.19%**	**-2.15%**	**-1.53%**	**-1.93%**	**-3.29%**	**-2.53%**
Idaho	NW	-1.60%	-1.78%	-0.26%	-0.66%	-3.84%	-3.64%
Montana	NW	-2.48%	-2.41%	-0.97%	-1.48%	-4.99%	-3.95%
Oregon	NW	-1.73%	-1.86%	-1.26%	-1.54%	-2.51%	-2.40%
Washington	NW	-2.23%	-2.11%	-1.95%	-2.42%	-2.70%	-1.60%
Wyoming	NW	-2.86%	-2.48%	-1.64%	-1.91%	-4.90%	-3.42%
Southwest Aggregate		**-1.65%**	**-1.92%**	**-1.41%**	**-2.61%**	**-2.04%**	**-0.76%**
Arizona	SW	-2.92%	-2.05%	-2.89%	-2.28%	-2.99%	-1.66%
California	SW	-1.11%	-1.87%	-0.94%	-2.98%	-1.39%	-0.02%
Colorado	SW	-3.07%	-2.30%	-2.23%	-1.79%	-4.48%	-3.16%
Nevada	SW	-2.19%	-1.60%	-3.13%	-2.25%	-0.63%	-0.50%
New Mexico	SW	-3.35%	-2.72%	-3.33%	-2.89%	-3.39%	-2.42%
Utah	SW	-2.59%	-2.63%	-2.24%	-3.13%	-3.19%	-1.80%

1 Source of volume data: Energy Information Administration Form EIA-857, "Monthly Report of Natural Gas Purchases and Deliveries to Consumers"

2 Data are normalized using the estimated regression equation grcvn = -0.011+0.607*ghdd where grcvn is the annual change in residential and commercial gas volumes by state and ghdd is the annual change in heating degree days by state. The t-statistics on the regression coefficients are -4.718 and 22.981, respectively. Heating degree days data for this equation is from NOAA (National Oceanic and Atmospheric Administration) Historical Climatology Series 5-1.

3 Data is missing for 2005; period ends in 2004