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Public Utilities Commission

New England Gas Company  
A Division of Southern Union Company

Docket No. 3476

Direct Testimony of Lawrence Kaufmann, PhD

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**I. INTRODUCTION**

**Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

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

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

A. I am a Partner at Pacific Economics Group LLC (“PEG”). My responsibilities include designing and providing empirical support on performance-based regulation (PBR) plans for energy utility clients. One of my specialties is service quality regulation. I am currently involved in a major service quality PBR project in Queensland, Australia. I have also advised energy utilities in New Zealand and Canada, and regulatory staff in Argentina and Bolivia, on service quality regulation. In the US, I have submitted testimony on service quality regulation for gas and electric utilities in Massachusetts, Kansas, Hawaii, Oklahoma and Kentucky. This testimony addresses the optimal design of regulatory plans that are intended to maintain, and in some cases improve, a utility’s quality of service.

**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. WHAT IS THE PURPOSE OF THIS TESTIMONY?**

A. The purpose of this testimony is to evaluate the service quality proposals submitted by the New England Gas Company (the “Company”) and the Division of Public Utilities and Carriers (the “Division”) to the Rhode Island Public Utilities Commission (the “Commission”). The Company was required to propose a service quality incentive (SQI) plan pursuant to a rate settlement approved by the Commission. The Division’s SQI plan was submitted as an alternative to the Company’s proposal. My testimony will analyze the merits of these proposals by drawing on the economic literature concerning

the optimal design of SQI plans and precedents for approved SQI plans for US energy utilities. I will also propose certain modifications to the Company's SQI plan that would make it more consistent with objective principles for SQI plan design.

**Q. CAN YOU BRIEFLY SUMMARIZE YOUR CONCLUSIONS?**

A. Yes. Broadly speaking, the Company's proposed SQI plan is consistent with recognized principles for the sound design of service quality plans and with standard industry practice. Indeed, the Company's plan is similar to many approved SQIs for energy utilities in the nation and region. Components of the Company's plan that are consistent with standard industry practice and objective principles for SQI plan design include:

- relying on financial penalties rather than Commission-approved remedial action plans as the primary means of protecting against quality degradation;
- using the Company's own historical data to set performance benchmarks;
- establishing deadbands based on the historical data to account for variations in performance data that occur for reasons outside the Company's control;
- the ability to "offset" bad performance on some quality indicators with good performance on other indicators when assessing the overall quality of service;
- evaluating the Company's service-quality performance on an annual basis;
- a multi-year term (three years).

In contrast, the Division's proposal is, in many respects, not consistent with sound principles for SQI plan design. The Division's proposal incorporates command-and-control mandates that are inimical to how incentive plans, including SQI plans, should be designed. The Division's proposal calls for monthly reviews of service performance, quarterly penalty assessments, and annual re-designs of the SQI plan, but does not present an objective framework to guide these reviews. These proceedings are therefore likely to invite subjective and unpredictable plan modifications, which would impose significant administrative burdens on the Company, the Division's and the Commission, and would mandate a level of reporting and regulatory monitoring that is out of the mainstream for approved energy SQI plans. In addition, the Division's method of

evaluating service-quality performance would provide a distorted assessment of the Company's quality of service and exaggerate the extent of service quality problems. Frequent and unpredictable changes to components of the plan, including performance benchmarks, would also have the effect of substantially impairing the Company's ability to plan and manage operations to achieve targeted service-quality goals. None of these features are necessary to promote high quality service to the Company's customers. In fact, by imposing new burdens and impairing the Company's operating flexibility, the Division's proposal may be counterproductive.

**Q. HOW IS THE TESTIMONY ORGANIZED?**

- A. The testimony is organized in four general sections. The first section presents an introduction to the economics of service quality and service quality incentive plans. The second section surveys approved service-quality PBR plans for US gas and electric utilities. The third section presents a list of objective criteria to be used to design SQI plans. The fourth section evaluates the SQI plans of the Company and the Division using the criteria presented in Section 3.

***II. THE BASICS OF SERVICE QUALITY ECONOMICS AND SERVICE QUALITY INCENTIVES***

**Q. PLEASE EXPLAIN WHY SERVICE QUALITY IS IMPORTANT IN COMPETITIVE AND REGULATED MARKETS.**

- A. Service quality plays an important role in nearly all markets. Consumers choose among goods and services in the marketplace based on their price and quality. If customers believe that a product does not offer good quality for the money, they will purchase other products that offer more appropriate price-quality terms. Firms providing poor quality products (at a given price) therefore suffer financially as sales are lost to competitors. By the same token, firms providing superior quality for the money are rewarded with additional sales and profits. Firms in competitive markets therefore have powerful incentives to provide appropriate quality levels on the products that customers demand. Firms are also financially motivated to offer an array of products that cater to customers' different tastes and price-quality preferences.

The latter point is important for understanding how economists think about product quality. As one author has stated, “when one investigates quality in economics, one is asking, in effect, what is it about a good or service that makes it more desirable”?<sup>1</sup> Economists make this open-ended question more manageable by conceiving of products as a (finite) bundle of attributes, each of which is desirable in the sense that it satisfies consumer tastes and preferences. Products differ in terms of the mix and “magnitudes” of these attributes. The abundance of quality-differentiated products in the marketplace therefore reflects differences in product attributes that are bundled together in firms’ attempts to appeal to the multiplicity of consumer tastes and preferences.

**Q. CAN YOU PROVIDE AN EXAMPLE THAT DEMONSTRATES THE IMPORTANCE OF DIFFERENT QUALITY ATTRIBUTES IN THE MARKETPLACE?**

- A. Yes. Consider the Cadillac Coup de Ville and the Volkswagen Beetle. Both are automobiles and provide the same basic transportation service, but they also differ in many important respects. A partial list of these quality attributes would include comfort, style, handling, dependability, and fuel efficiency. All of these characteristics are valuable to consumers, and consumers would generally prefer “more” rather than less of each. Since the Cadillac has “more” of most of these attributes than the VW, it is generally considered a higher quality product.

Of course, higher quality comes at a price. The Cadillac Coup de Ville carries a higher price tag than the VW Beetle both because it is costly to produce the superior quality attributes and because consumers are willing to pay more for these characteristics. Economists would say that each of the quality attributes identified above (and no doubt others) carries an implicit price. For example, each additional square foot of interior space in the Coup de Ville compared to the Beetle carries a price that partly explains the overall price differences between the cars. Economists can quantify the implicit prices

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<sup>1</sup> S. Payson (1994), *Quality Measurement in Economics: New Perspectives on the Evolution of Goods and Services*, Edward Elger, p. 2.

for various quality attributes through statistical methods. These implicit prices can also be aggregated in so-called hedonic price indexes that summarize overall quality differences between products. Clearly, quality attributes are not priced explicitly in the marketplace, but it does not follow that the estimation and use of hedonic prices is simply an academic exercise. One example where these economic concepts are applied is by the Bureau of Labor Statistics, which computes hedonic prices indices and adjusts for changes in the quality of some products when it computes the Consumer Price Index.

One important implication of this analysis is that market prices reflect a type of “adding up” of the (implicit) prices that customers are willing to pay for different quality attributes. But, when comparing two products, it is not uncommon for one product to have more of some attributes but not others. This is apparent in our Cadillac-VW example. The Cadillac dominates on most quality characteristics but not on fuel efficiency. If a Coup de Ville could be designed with the same quality characteristics as before but the same fuel efficiency as the VW Beetle, the Cadillac would be even more desirable since it has closed the gap on one of the few quality attributes where VW had an advantage. The result would be an even *larger* price differential between the Cadillac and VW. Thus, to satisfy the “adding up” property above, customers must effectively “offset” the negative value of the Cadillac’s fuel efficiency against the vehicle’s other positive attributes vis-à-vis the Beetle. This negative offset occurs even though the Cadillac has a higher overall price and quality level. This point applies more generally. That is, consumers make judgments about overall service quality by offsetting relatively poor performance on some quality measures against superior performance on other quality measures. This is an important feature of how customers evaluate quality in competitive markets and how those quality judgments are reflected in consumer choices and market prices.

**Q. YOU HAVE DISCUSSED FIRMS' INCENTIVES TO MEET CONSUMER DEMANDS FOR QUALITY IN COMPETITIVE MARKETS. DO REGULATED FIRMS HAVE THE SAME INCENTIVES TO PROVIDE APPROPRIATE SERVICE QUALITY LEVELS AS FIRMS IN COMPETITIVE MARKETS?**

- A. Firms providing regulated services do have certain incentives to provide appropriate service quality levels to their customers. One reason is that competition can exist from other products for the end uses that regulated services provide to customers. For example, gas competes with heating oil to provide residential heating services in much of New England. All else equal, a gas distributor providing poor service quality would be expected to serve a lower share of this market, thereby losing revenues and opportunities to spread fixed costs. Nevertheless, these market forces are weaker for regulated services like gas distribution than in most competitive markets. Regulation must therefore play an important role in ensuring that utility customers receive appropriate service quality.

**Q. DO ECONOMISTS BELIEVE THAT SERVICE QUALITY REGULATION IS LIKELY TO BE MORE EFFECTIVE IF IT OBEYS CERTAIN PRINCIPLES?**

- A. Yes. Generally speaking, most economists believe that well-designed incentive plans are more effective than regulatory "command and control" in delivering value (both price and quality) to utility customers. The heart of the problem with command and control methods is the significant burden that regulators must bear to acquire knowledge of utility operations. For example, if regulators knew the service quality levels that customers demand and the least cost methods of providing these quality levels, they would simply set benchmarks that reflect customers' quality expectations and prices that recover the minimum cost of providing quality. Unfortunately, it is sometimes difficult even for company managers to recognize best practices with respect to quality provision and cost control. The challenge is much greater for regulators since they have less direct experience with utility operations. Economists call this situation one of information asymmetry.

Information asymmetries can only be redressed through substantial data exchange, processing and analysis. These data exchange and processing efforts are administratively burdensome and are unlikely to result in an efficient resolution to service-quality issues. There is accordingly an inherent tradeoff between the effectiveness of command and control regulation and its cost. Effective command and control regulation can typically be achieved only at great regulatory cost. These higher costs are inevitably reflected in higher prices for customers.

Incentive-based regulation is intended to be an improvement in regulatory “technology” that delivers greater benefits to customers even as it reduces regulatory costs. The main idea behind SQI plans, like all incentive plans, is to establish rules that create inherent incentives for utilities to meet desired regulatory objectives. A well-designed SQI plan will create incentives for the utility to operate in an efficient and effective manner for the benefit of customers, so there is less need for continuous and detailed regulatory scrutiny of utility operations. An essential feature of incentive regulation is therefore the existence of well-defined rules that (1) provide clear guidance to the utility in structuring its operations to achieve the desired objectives, and (2) create a framework that allows for an objective evaluation of the Company’s performance, which is essential in minimizing administrative burdens for regulators and the Company.

**Q. PLEASE EXPLAIN IN GENERAL TERMS HOW A SERVICE QUALITY INCENTIVE PLAN CREATES APPROPRIATE INCENTIVES FOR UTILITIES TO MAINTAIN SERVICE QUALITY.**

- A. SQI plans create appropriate incentives by replicating the market-type forces in which a firm’s financial performance is linked to its service quality performance. A firm operating under a SQI plan may be penalized if its service quality declines. In some plans, utilities may also be rewarded for service-quality improvements (similar to firms in competitive markets). Since SQI plans are designed to simulate the market forces that deliver appropriate quality levels to customers in competitive markets (by linking financial considerations to performance), there is less need for detailed regulatory scrutiny of utility operations to ensure that customers receive adequate service quality.

Utilities, like firms in competitive markets, will be highly motivated to avoid the financial penalties that result from poor service-quality performance.

**Q. PLEASE EXPLAIN WHY INCENTIVES TO MAINTAIN SERVICE QUALITY ARE GENERALLY STRENGTHENED WHEN A SQI PLAN IS IN EFFECT FOR A MULTIPLE YEAR PERIOD.**

A. To create strong performance incentives, the incentive regulation plan must be in place for a multi-year period. This is because a multi-year plan creates a more stable operating and regulatory environment for the utility, and this stability serves as an incentive for the utility to undertake service-quality initiatives and achieve more effective results for customers in the long-term. It takes time to change operations in ways that improve service quality. Many of these efforts entail up-front implementation costs, and therefore, it is not reasonable to modify the SQI plan before operational changes have borne fruit, particularly if new costs have been incurred. Premature modifications in the components of an SQI plan could require further costly (and unwarranted) changes in operations, which would act as a disincentive to utility managers in making long-term investments in service-quality improvements.

**Q. PLEASE EXPLAIN THE BASIC ELEMENTS OF A SQI PLAN.**

A. There are three basic elements in a SQI plan: a series of indicators of the Company's quality of service; related performance benchmarks, generally with deadbands around those benchmarks; and a method for translating a utility's quality performance into a change in utility rates via rewards or penalties. We briefly discuss each of these elements in turn.

**Q. PLEASE DEFINE "QUALITY INDICATORS."**

A. Quality indicators are the aspects of a utility's service quality that are measured and monitored under the SQI plan.

**Q. WHAT CRITERIA SHOULD BE USED FOR ELECTING QUALITY INDICATORS?**

- A. Ideally, individual quality indicators should satisfy three criteria: (1) they should be related to the aspects of service that customers value; (2) they should focus on monopoly services; and (3) utilities should be able to affect the measured quality.

**Q. PLEASE EXPLAIN THE FIRST CRITERION.**

- A. Since measured service quality can ultimately affect customer rates, indicators should be linked to aspects of utility service that customers actually value. This may seem obvious, but a strict application of these criteria excludes indicators that have been included in some plans. For instance, the knowledge and courtesy of phone center employees may be a legitimate quality indicator, but the goal of establishing worker training programs to build these skills is not.

**Q. PLEASE EXPLAIN THE SECOND CRITERION.**

- A. Indicators should focus on the quality of the activities for which there are few if any alternative suppliers. This is consistent with the principle that regulation, including regulation of service quality, is less necessary in competitive markets. Market forces are likely to create acceptable quality levels when products are available from multiple providers.

**Q. PLEASE EXPLAIN THE THIRD CRITERION.**

- A. Utilities should be able to influence measured quality through their own behavior. It is nonsensical to link shareholder rewards or penalties to outcomes that are unrelated to management actions. As I discuss later in the testimony, the measured quality of energy distribution service is also potentially influenced by a number of external factors that are beyond managerial control. These factors vary substantially between distributors and some are quite volatile. If random or unforeseen incidents can affect important quality dimensions, the impact of these events should be eliminated from the indicators. For example, gas odor-call response measures can be designed to exclude periods of extreme weather, such as severe storms.

**Q. HOW SHOULD THE OVERALL MIX OF QUALITY INDICATORS BE CHOSEN?**

A. Overall, quality indicators should not focus on some areas while ignoring others because performance may deteriorate in the non-targeted areas. Comprehensiveness can be achieved simply by adding indicators to a plan. However, regulatory costs often rise accordingly since more utility and Commission resources must be devoted to quality monitoring and measurement of quality indicators. Some Commissions have been sensitized to the regulatory costs of complex service quality plans. In these jurisdictions, service-quality incentives have been simplified by relying on fewer, but more broadly based, indicators.

**Q. PLEASE DEFINE "QUALITY BENCHMARKS."**

A. Quality benchmarks are the standards against which measured quality is judged.

**Q. WHAT CRITERIA SHOULD BE USED TO SELECT QUALITY BENCHMARKS?**

A. One important criterion is that benchmarks should be calculated on the same basis as the quality indicators. If the data used to measure quality are not comparable to those used to set the benchmark, the SQI plan will be unworkable in that it will not be possible to determine how the utility's performance compares to the benchmark, and therefore, whether there is a basis for penalizing the utility.

**Q. CAN YOU PROVIDE AN EXAMPLE THAT DEMONSTRATES THIS POINT?**

A. Yes. Consider a company that has traditionally defined and measured leak call responsiveness as the percentage of times that a company representative responds to a gas odor call within 45 minutes. A benchmark could be based on the company's performance on this indicator over a multi-year period. Now suppose an SQI plan is established that measures leak call responsiveness as the percentage of times that a company representative begins to repair the leak within 45 minutes of the odor call. The latter definition is more restrictive and will almost certainly exclude times when a company representative arrived within 45 minutes but did not necessarily begin to repair leaks within that time. An SQI plan that measures leak call responsiveness in this way

will “benchmark” this indicator against historical performance that, in fact, corresponds to a different measure of leak call responsiveness. This is almost literally a case of “comparing apples to oranges.” In this example, this inconsistency would tend to penalize the company unfairly because its service quality performance would be measured according to a more demanding standard relative to its quality benchmark (and historical performance).

**Q. WHAT OTHER CRITERIA ARE IMPORTANT FOR SELECTING APPROPRIATE QUALITY BENCHMARKS?**

A. Another important criterion is that benchmarks and deadbands should reflect external business conditions in a utility’s service territory. In the present context, external business conditions can be defined as factors that affect measured quality performance but are beyond the control of utility management. The list of relevant factors includes weather, the degree of ruralization in the territory (typically increasing response times to customer calls for on-site service), the mix of residential, commercial, and industrial customers, the incidence of poverty, the heterogeneity of languages spoken, the rate of growth in customer numbers, the tendency of customers to relocate, and regulatory changes such as a restructuring of the industry to promote competition. Such factors differ across companies and may change over time for each individual company. Some are volatile in the sense that they are prone to fluctuations that are hard to predict. A failure to control for these business conditions can expose utilities to arbitrary penalties and rewards.

**Q. WHAT INFORMATION SOURCES CAN BE USED TO SET BENCHMARKS?**

A. Two main data sources can be used to set benchmarks. The first is the Company’s historical performance on a quality indicator. The second is peer performance.

**Q. BRIEFLY ANALYZE THE MERITS OF USING A UTILITY’S HISTORICAL PERFORMANCE TO SET BENCHMARKS.**

A. The use of past utility performance to set benchmarks is appealing in many respects. Historical benchmarks reflect a company’s own operating circumstances. Historical data will reflect the *typical* external factors faced by the Company if the period used to set

benchmarks is long enough to reflect the expected temporal variations in these factors. Longer periods are more likely to achieve this goal than shorter periods and are therefore preferred. If only short time series are available at the outset of a SQI plan, benchmarks can be updated at the outset of future plans as more data become available. The rules for updating benchmarks should be spelled out clearly in advance to create the appropriate performance incentives and minimize administrative burdens.

**Q. ARE HISTORICALLY-BASED BENCHMARKS APPROPRIATE IF THE EXPLICIT PURPOSE OF A SQI PLAN IS TO PREVENT SERVICE QUALITY FROM DECLINING?**

- A. Yes. In fact, historically-based benchmarks are the only reasonable choice if the objective of the SQI plan is to prevent service declines from the levels traditionally experienced by a company's customers. Quality assessments then focus directly on whether there has been service degradation.

**Q. PLEASE BRIEFLY ANALYZE THE MERITS OF PEER-BASED BENCHMARKS.**

- A. In principle, peer-based benchmarks may be attractive since they reflect the operation and outcomes of competitive markets, where firms are penalized or rewarded for their price and quality performance relative to their competitors. In practice, however, industry-based benchmarks are often problematic. One reason is that uniform and publicly available data are not collected for utility quality indicators. Differences in measure definitions would make peer data non-comparable and inappropriate as benchmarks. Even if measures are defined comparably across utilities, peer benchmarks should control for differences in utility business conditions that affect quality performance. Controlling for the impact of business conditions on expected service quality performance is complex and virtually unprecedented in utility regulation. For all of these reasons, the use of industry-based quality benchmarks in SQIs is quite rare.

**Q. PLEASE PROVIDE AN EXAMPLE OF HOW BENCHMARKS THAT DO NOT REFLECT A UTILITY'S EXTERNAL BUSINESS CONDITIONS CAN LEAD TO INAPPROPRIATE PENALTIES.**

A. Consider a SQI plan where a utility is rewarded or penalized depending on how its measured quality compares to that of another utility. Assume that both companies measure every quality indicator in the same way. This plan would still lead to unreasonable penalties or rewards if one utility had a more demanding territory (e.g. more severe weather). Not controlling for the effect of business conditions in that service territory would tend to handicap the utility serving that territory and, over time, lead to penalties that did not reflect its real quality performance.

**Q. SHOULD BENCHMARKS BE STABLE OVER THE TERM OF A SQI PLAN?**

A. Benchmarks should be as stable as possible over the term of a SQI plan. Stable benchmarks give utility managers more certainty over the resources they must devote to providing adequate service quality, as reflected in those benchmarks. It is harder for managers to hit a "moving target," particularly if operational changes can only be implemented over longer periods. Stable benchmarks therefore promote more effective, longer-term service quality programs.

**Q. HOW MUCH DATA SHOULD BE USED TO SET BENCHMARKS?**

A. In general, as much historical data as possible should be used to set benchmarks. The objective is for the benchmark to reflect the *typical* external factors that are faced by the Company. These external factors can vary from year to year, so ideally you need a historical period that reflects the full range of external factors that are faced by the Company. Longer periods are naturally more likely to capture the full range of external factors than shorter periods. Benchmarks based on shorter periods are therefore less likely to be reliable in the sense that they reflect a company's typical external business conditions. As a rule of thumb, some regulatory Commissions have concluded that benchmarks are not reliable unless they are the mean of at least three annual, historical data points.

**Q. WHEN EVALUATING DATA SOURCES THAT MAY BE USED TO COMPUTE BENCHMARKS, SHOULD ANY FACTORS BE KEPT IN MIND WHEN ASSESSING THE SUITABILITY OF AVAILABLE DATA?**

A. Yes. To the greatest extent possible, the data used to set benchmarks should be comparably measured on a historical basis. For example, if there was a change in information systems used to record power outage data, historical data compiled under a previous system may not be appropriate for setting a benchmark that will be used to evaluate reliability measured under a new system. Second, to the greatest extent possible, historical data used to set the benchmark should be measured on the same temporal basis as how the company's service quality performance will be measured under the SQI plan. For example, if the Company's measured service quality performance will be evaluated annually, the benchmark to which measured quality is compared should also be calculated using annual data. Both of these points are, in fact, corollaries of the first criterion listed above, that benchmarks should be calculated on the same basis as the quality indicators.

**Q. PLEASE DEFINE "DEADBANDS."**

A. Deadbands refer to a zone around the benchmarks within which utility performance is neither penalized nor rewarded.

**Q. YOU HAVE DISCUSSED THE VALUE OF USING A COMPANY'S HISTORICAL DATA TO SET SERVICE QUALITY BENCHMARKS. WHY IS IT OFTEN APPROPRIATE TO INCLUDE DEADBANDS AROUND HISTORICALLY-BASED BENCHMARKS?**

A. Although historical averages of company performance will reflect typical external factors faced by a company, they will not control for shorter-term fluctuations in external factors around their norms. Some business conditions that can affect measured quality are quite volatile from year to year. Weather is the salient example, and it can affect a host of service-quality measures (e.g. response times to service calls, the number of meters read, the number of calls to the phone center and therefore response time, etc.).

Deadbands can control for these year-to-year fluctuations in external factors. For example, suppose the value of a quality indicator is known to fluctuate in a certain range due to external factors. The mean value of this indicator over a suitable historical period would reflect the typical *long run* external business conditions faced by the utility. Variation in the Company's performance around this historical mean will accordingly reflect *short run* fluctuations in those business conditions. Deadbands should therefore reflect the observed historical variability in measured service quality performance. One straightforward measure of this year-to-year variability is the standard deviation of the quality indicator around its mean.

**Q. ARE DEADBANDS MORE OR LESS APPROPRIATE AS THE AMOUNT OF DATA AVAILABLE TO COMPUTE BENCHMARKS DECLINES?**

- A. Deadbands become more appropriate as the amount of data used to compute the benchmark declines. The reason is that, when the benchmark is based on less historical data, there is less certainty that the benchmark reflects the full range of external factors that a company may confront. Deadbands therefore become even more important in protecting a utility from unreasonable penalties – or in some cases, protecting customers against unreasonable rewards – that can result from unusual external factors and do not reflect the company's real service quality performance.

**Q. ARE DEADBANDS EVEN MORE APPROPRIATE IF SQI PLANS ALLOW ONLY FOR PENALTIES, LIKE THOSE PROPOSED BY THE COMPANY AND THE DIVISION ?**

- A. Yes. If SQI plans allow only for penalties, deadbands are especially important for protecting against inappropriate penalties. In these plans, companies can be penalized if "bad" business conditions like severe weather push measured service quality performance below the benchmark. In other years, mild weather or similar favorable factors may improve measured service quality. In a symmetric plan with no deadband, a company tends to be penalized when external business conditions are bad and rewarded when business conditions are good. These types of penalties and rewards would balance out over time. The SQI plan would therefore be fair, on average, and would not lead to

arbitrary rewards or penalties. However, in a penalty-only plan with no deadband, the Company is penalized for bad business conditions but never receives offsetting rewards. The penalty/reward mechanism would therefore, on average, impose arbitrary and unfair penalties and not reflect the Company's real service quality performance.

This is a strong argument in favor of retaining deadbands in SQI plans that only allow for penalties. This logic also demonstrates that plans that allow for both penalties and rewards increase the likelihood that, over the multi-year term of a SQI plan, overall penalties and rewards are likely to be reasonable and reflect a company's real service quality performance. However, if the plan does not allow for rewards, this same logic implies that good performance on some quality indicators should offset bad performance on other indicators when computing overall penalties. Allowing such offsets is another important means of mitigating the impact of unfavorable external factors on measured quality and increasing the likelihood that penalties that may occur under the plan reflect the company's real service quality performance.

**Q. HAVE YOU REVIEWED THE BENCHMARKS AND DEADBANDS PROPOSED BY THE COMPANY AND THE DIVISION?**

A. Yes, I have.

**Q. IN GENERAL TERMS, DO THE BENCHMARKS AND DEADBANDS IN THESE PROPOSALS CONFORM TO THE OBJECTIVE CRITERIA YOU HAVE SPECIFIED IN THIS SECTION?**

A. In general, the benchmarks and deadbands proposed by both the Company and Division fall short of and fail to conform with these criteria. In some cases, this is due to the lack of available data. I will analyze the Company's and Division's benchmarks and deadbands, and propose certain modifications to those benchmarks and deadbands, in Section 5 of this testimony.

**Q. PLEASE DEFINE THE PENALTY/REWARD MECHANISM.**

A. The penalty/reward mechanism is used to reward or penalize the utility for its service quality performance. It accomplishes this by linking a quality assessment to a change in utility rates or allowed returns. In general, measured performance that “exceeds” the benchmarks signals superior quality and a possible reward. Performance below the benchmarks indicates sub-standard quality and a possible penalty.

**Q. IN GENERAL, HOW SHOULD THE PENALTY/REWARD RATES FOR DIFFERENT QUALITY INDICATORS BE SET?**

A. The penalty/reward rates that apply to different quality indicators should reflect their value to customers. For example, if safety was twice as important to gas distribution customers as prompt telephone service (for given defined metrics for each), it is reasonable for the penalty/reward rate for safety to be twice as great as that for telephone service. Penalty/reward rates that reflect customer value appropriately compensate customers for changes in the quality of service they experience. Such penalty/reward rates also send the right signals to managers about where resources to improve quality should be allocated.

**Q. SHOULD THE PENALTY/REWARD MECHANISM ALLOW PENALTIES ON SOME INDICATORS TO BE OFFSET BY BETTER PERFORMANCE ON OTHER INDICATORS?**

A. Yes. This is especially appropriate if the SQI plan allows only for penalties and not rewards. As discussed above, in these types of plans, offsets are an important mechanism for ensuring that companies are not penalized for external business conditions that can impact their measured service quality. Offsets become even more critical if the amount of data used to set benchmarks and deadbands is limited. Again, with limited data, there is less confidence that the benchmarks and deadbands will reflect the full range of external business conditions that a company may confront. The company is therefore subject to a greater likelihood of penalties due to unfavorable external factors that affect its measured service quality performance.

However, offsets are also appropriate more generally. Consumers of all services, including regulated services, invariably offset the implicit value of some quality attributes against other attributes when making judgments about overall service quality. Penalties and/or rewards that are linked to the service quality that customers actually experience should therefore reflect this feature.

**Q. HOW OFTEN SHOULD A GAS UTILITY'S SERVICE QUALITY PERFORMANCE BE EVALUATED AND POTENTIALLY SUBJECT TO PENALTIES?**

- A. SQI plans should not evaluate gas utility performance too frequently. Overly frequent performance reviews are likely to give a distorted view of a gas distributor's quality performance because performance evaluations over short intervals are distorted by the seasonal nature of the gas distribution business. Customer requests for various types of service vary throughout the year. Quality levels are likely to vary inversely with the demands placed on Company resources used to provide quality. To some extent, utilities do adjust their operations to reflect peak demands, but the resources used to provide quality cannot be "ramped up" or "ramped down" instantaneously or without cost. It is therefore reasonable to expect quality performance to fluctuate over the course of the year. I believe that on a given quality indicator, the most natural period over which to evaluate utility performance is one year.

***III. SQI PLAN PRECEDENTS***

**Q. ARE THERE APPROVED SQI PLANS FOR US ENERGY UTILITIES?**

- A. Yes. SQI plans are well established in US regulation. These incentive plans are sometimes included as part of a larger package of PBR programs. SQIs are also sometimes a component of merger agreements. I have surveyed a large number of these plans in conjunction with my analysis of the Company and Division SQI proposals. Appendix One presents a survey of approved SQIs for US energy utilities.

Although time constraints prevented this survey from being all-inclusive, I believe it is a more than representative sample of approved SQI plans for US energy utilities.<sup>2</sup>

**Q. WHAT DID YOUR SURVEY OF SQI PRECEDENTS REVEAL?**

A. For the purposes of this review, I believe my survey of SQI precedents revealed five relevant points. First, there are SQI plans that allow for both penalties and rewards and plans that allow only for overall penalties. Plans that allow only for overall penalties are somewhat more common, but prominent examples of plans where the utility can be rewarded include Southern California Edison, San Diego Gas and Electric, Northern States Power, Otter Tail Power, and National Grid-Massachusetts. In the past, several New York plans have also allowed for both penalties and rewards. Some plans implement rewards and penalties via adjustments in an earnings-sharing mechanism (ESM). Better service quality raises the allowed ROE in the ESM and reduces the probability of sharing earnings, while the opposite is true when service quality declines.

Second, in penalty-only plans, it is common for utilities to be able to “offset” good performance on some quality indicators against poor performance on other indicators. Examples include the plans that apply to investor-owned gas and electric distributors in Massachusetts and National Grid-Rhode Island. Such offsets also naturally occur in plans that allow for rewards.

Third, all of the surveyed SQIs are multi-year plans. As a general rule, SQIs do not invite annual reviews or modifications of indicators, benchmarks or penalty/reward rates. In some cases, benchmarks are updated according to formulas (*e.g.* rolling averages) that are specified at the outset of the plan. However, in these cases, formulas rather than fixed benchmarks were applied primarily because of the lack of data at the outset of the plan. This use of rules (including fixed benchmarks for the duration of the

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<sup>2</sup> We also investigated a number of other approved PBR plans and found that they did not include formal SQI provisions. Examples included recent PBR plans for Consumers Gas and Union Gas (both in Ontario, Canada), Ontario Power Distributors, and Mid-American Energy.

plan) rather than regulatory discretion is consistent with the principles of sound design of incentive mechanisms.

Fourth, there are many examples of benchmarks based explicitly on a company's historical performance. One good example is in the neighboring state of Massachusetts, where a statewide examination of service quality issues established benchmarks for each utility based entirely on the Company's past performance on a service quality indicator. For all indicators except SAIFI and SAIDI, benchmarks were to be based on 10 years worth of data; benchmarks for SAIFI and SAIDI were based on five years' worth of data. In contrast to the many examples where benchmarks are based on a company's own historical experience, there are almost no examples of benchmarks based explicitly on peer performance.

Fifth, in every case that I am aware of, the Company's service quality performance is evaluated no more than annually. In some cases the utility reports monthly data to its Commission. But none of the plans compare these monthly data to benchmarks and make these comparisons the basis for either Commission sanctions (*e.g.* penalties or rewards) or mandates (*e.g.* remedial actions). In fact, I am not aware of any approved SQI plan whose primary purpose is to compel remedial correction plans rather than rely on financial incentives (penalties and sometimes rewards) as the means of delivering adequate service quality to customers.

#### ***IV. CRITERIA FOR EVALUATING SQI PROPOSALS.***

##### **Q. BEFORE ANALYZING THE COMPANY AND DIVISION SQI PROPOSALS, PLEASE SUMMARIZE THE OBJECTIVE CRITERIA THAT SHOULD BE USED TO EVALUATE A GIVEN SQI PROPOSAL.**

- A. Based on my analysis of the literature on service-quality economics; service-quality regulation, and standard industry practice for energy utilities, I believe the following objective criteria should be used to evaluate SQI proposals.

## General

- A well-designed SQI plan relies to the greatest extent possible on objective, well-defined rules to regulate service quality; these objective rules substitute for the subjective and less predictable processes of command and control regulation;
- A SQI plan should be designed to replicate market forces in which a firm's financial performance is linked to its service-quality performance so that utilities, like firms in competitive markets, will be motivated to avoid financial penalties from poor service quality performance;
- The SQI plan should be in place for a multi-year period to create the right incentives; a multi-year plan creates a more stable operating and regulatory environment and enables utility managers to implement more effective, longer-term service quality initiatives;
- It is most natural to evaluate service quality performance on an annual basis since a utility's service quality performance fluctuates over the year, especially when there are seasonal differences in customer demands for service; less-than-annual evaluation periods can provide a distorted assessment of the utility's quality performance.

## Quality Indicators

Quality indicators should

- be related to aspects of service that customers value;
- focus on monopoly services;
- reflect measures that utilities can influence through their own behavior.

## Quality Benchmarks

Quality benchmarks and deadbands should :

- be measured on the same basis as the performance indicators;
- be sensitive to the impact of external business conditions in a company's service territory that are beyond management control but can affect measured quality
- ideally, be stable over the term of the plan;

- A company's historical data is attractive for setting benchmarks and deadbands since the historical average will reflect external factors faced by the Company; the average is more likely to encompass typical external factors as the amount of historical data used to compute the average increases.
- If the purpose of the SQI plan is to prevent quality degradation, the Company's own performance is the only sensible data that can be used to set benchmarks.
- Although historical averages reflect typical long-term external factors, they do not reflect short-term fluctuations in those factors; deadbands can control for short-term fluctuations in business conditions and should be derived using data on variations in company performance (*e.g.* standard deviations) relative to the mean.
- Deadbands become even more appropriate as the amount of data available to set benchmarks diminishes.
- Although peer data is an option for setting benchmarks and deadbands, it is rarely practical to do so because data are often not measured comparably between companies and companies face different external business conditions.

### Penalty/Reward Mechanism

A financial penalty/reward mechanism should :

- reflect the relative value of performance indicators to customers; such penalty/reward rates appropriately compensate customers for changes in the quality of service they experience and send the right signals to utility managers about how to allocate resources;
- assess penalties/rewards for the overall level of service provided to customers through the use of offsets; customers in competitive markets invariably "offset" poor quality on some quality indicators with better quality on other indicators when reaching judgments about the overall quality of service, and a penalty/reward mechanism should reflect this same process;
- deadbands and offsets are especially important in protecting against arbitrary penalties when the penalty/reward mechanism allows only for penalties and as the amount of data available to set benchmarks declines.

**V. EVALUATION OF COMPANY AND DIVISION SQI PLANS**

**Q. HOW WILL YOU ANALYZE THE DIFFERENCES BETWEEN THE SQI PROPOSALS PUT FORTH BY THE COMPANY AND THE DIVISION?**

A. I will divide these differences into broad, thematic differences and more narrow and specific differences. I deal with each set of differences in turn.

**Q. WHAT ARE THE BROAD, THEMATIC DIFFERENCES BETWEEN THE COMPANY AND DIVISION SQI PLANS?**

A. I believe there are six main thematic differences between the SQI plans.

1. The rationale for the plan.
2. How overall service quality performance is evaluated.
3. How *often* service quality performance is evaluated.
4. The term of the plan.
5. The establishment of benchmarks.
6. The cost of attaining quality.

**Q. PLEASE DESCRIBE DIFFERENCES IN THE RATIONALE OF THE COMPANY AND DIVISION SQI PLANS.**

A. The Company's SQI plan is designed to maintain appropriate service quality by penalizing the Company in the event that quality declines. In contrast, the Division has designed a plan with a central purpose of identifying service-quality "problems" and presenting those alleged problems to the Commission with a remedy.

A SQI plan that emphasizes Commission-approved remediation plans is more reminiscent of command and control regulation than incentive-based SQI plans. I believe this approach is misguided and is likely to be counterproductive, since the evaluation of service-quality performance, and resolution of possible problems, cannot fairly and reasonably take place in short intervals, especially given the seasonal nature of the gas distribution business. As a result, the Division's proposal would focus the Company's efforts and resources on a burdensome administrative process to identify quick fixes for what may be a temporary issue.

Moreover, such a design could create disincentives for the Company to evaluate and implement meaningful, long-term initiatives. The Company has first hand knowledge of its operations and customers. It can almost certainly solve problems more effectively by using its own internal resources than by developing plans and beginning a consultation process with an outside group. I believe that a well-designed SQI plan will be more effective than “command and control” procedures in promoting the Commission’s goals for maintaining the quality of service.

The Division’s proposal is also not consistent with well-designed SQI plans. As discussed earlier in this testimony, such plans should focus on the service quality “outputs” that are actually delivered to and experienced by customers. The Division apparently wishes to examine and approve the Company “inputs” that go into delivering service quality. This would invite needless litigation and impose unnecessary burdens on the Company and regulatory staff.

**Q. IS THERE ANY EVIDENCE IN RHODE ISLAND THAT IS RELEVANT FOR EVALUATING THE ADMINISTRATIVE BURDENS THAT WOULD BE REATED BY THE DIVISION’S PROPOSAL?**

- A. Yes. The implications of the Division’s approach can be seen in testimony recently presented in Rhode Island by Verizon.<sup>3</sup> Since January 1996, Verizon-RI has been subject to an SQI that computes an overall measure of the Company’s quality of service. The original SQI added up measures on individual indicators, with a maximum score of 42. This process allowed good performance on some indicators to offset bad performance on other measures. A score of 28 was considered passing, but if the Company did not have an overall measure of at least 28 it was subject to a penalty formula.

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<sup>3</sup> Testimony of Theresa O’Brien on Behalf of Verizon New England Inc. d/b/a Verizon Rhode Island. July 1, 2002, Docket 3445.

The Verizon testimony presents data on the monthly value of the Company's overall quality index and on each of the component indicators for the 76 months between when the plan took effect and the time of the testimony. This data shows that Verizon failed to satisfy the overall service-quality benchmark and was subject to penalties in only two months (February 1996 and April 1996). However, if the Division's proposal for New England Gas had applied to Verizon, the Company would not have been able to offset performance on different indicators, and performance on every indicator in each month would have been monitored and potentially "actionable." Verizon would have been required to present a remedial action plan for each of these service quality violations. Data presented in the testimony shows that, if the Division's standards applied, Verizon would have violated the service-quality standards 70 times rather than twice and would have had to present 70 separate remedial plans to the Commission over a 76 month period! Nearly every month, on average, Verizon would have found itself explaining its service quality "problems" and discussing plans to correct those problems. The Division clearly believes such detailed scrutiny of Verizon operations was not necessary since it did not mandate remedial plans as part of the new settlement.

**Q. PLEASE DESCRIBE HOW THE SQI PLANS DIFFER IN MEASURING THE OVERALL QUALITY OF SERVICE PROVIDED BY THE COMPANY.**

A. The Company's proposal allows good service quality performance on some indicators to offset bad performance on other indicators, while the Division's proposal does not. The Company's proposal with respect to offsets is more reasonable and, as discussed earlier in this testimony, entirely consistent with how customers actually evaluate whether service quality is adequate. When reaching judgments about the overall quality of available products, customers invariably "offset" relatively poor performance on some quality attributes against better performance on other attributes.

**Q. IS THERE ANY EVIDENCE IN RHODE ISLAND THAT IS RELEVANT FOR EVALUATING THE IMPORTANCE OF OFFSETS WHEN MEASURING SERVICE QUALITY PERFORMANCE IN SQI PLANS?**

A. Yes. The importance of offsets is also apparent in the Verizon testimony. As noted, the original SQI added up measures on individual indicators, with a maximum score of 42.

This process allowed good performance on some indicators to offset bad performance on other measures. This is consistent with the “adding up” process of implicit prices for quality attributes described above. A score of 28 was considered passing, but if the Company did not have an overall measure of at least 28 it was subject to a penalty formula.

The Verizon testimony shows that Verizon failed to satisfy the overall service quality benchmark and was subject to penalties in only two months. But, if the Division’s proposal for New England Gas had applied to Verizon, the Company would have violated the service-quality standards 70 times rather than twice over those 76 months. In other words, there were many instances of monthly performance on an indicator falling short of a benchmark, but very few cases where the overall service-quality index fell short.

This demonstrates that failing to include offsets can lead to dramatically different conclusions on whether a utility is providing appropriate service quality. An inability to offset different indicators’ performance for Verizon would have inappropriately magnified the Company’s reported service quality problems and penalties. The Division apparently agreed that offsets did not distort Verizon’s measured service quality, since it recently reached a settlement with Verizon that retained such offsets. I believe this decision by the Division was correct and should also apply to SQIs for New England Gas.

**Q. PLEASE DESCRIBE DIFFERENCES BETWEEN THE SQI PLANS REGARDING HOW OFTEN THE COMPANY’S SERVICE QUALITY PERFORMANCE IS EVALUATED.**

- A. The Division proposes that the Company’s measured quality be compared to benchmarks every month, while the Company proposes that this comparison be done annually. The Company’s proposal is clearly more consistent with standard practice for energy utilities. In fact, I’m not aware of any approved energy utility plan that includes

a monthly evaluation period, and if any such plans do exist they are certainly not in the mainstream of approved plans for US energy utilities.

Even more fundamentally, monthly evaluations are flawed and will yield unreliable inferences on the Company's quality performance. There is fluctuation in service quality performance in all markets. In his Direct Testimony, Mr. LeLash says "to a customer, day-by-day and even hour-by-hour performance is relevant." Although this may be true, it does not follow that customers expect the same level of service day-by-day and hour-by-hour from firms in either competitive or regulated markets, or that they are willing to pay for a level of service that is invariably at the highest level. For example, customers' tolerance for confusion and rude employees at a department store's return counter will be much different on December 26 than on June 26. Customers also do not expect the same waiting times and promptness of service from McDonald's at noon as at 9 PM. Consumers clearly understand that service will be somewhat worse during these peak hours and will not "penalize" the Company by taking their business elsewhere if they fail to live up to service performance levels they deliver at less busy times. It would not be reasonable to penalize the Company, either directly or by mandating remedial action plans, for the same normal fluctuation in its quality performance. This is especially relevant because the Company's business is more seasonal than most, which makes it more difficult to deliver uniform quality levels in every month of the year.

**Q. PLEASE DESCRIBE DIFFERENCES BETWEEN THE TERMS OF THE COMPANY DIVISION SQI PLANS.**

- A. The Division advocates for a series of three, one-year service quality plans, since they believe the indicators, benchmarks, and penalty rates should be examined and adjusted each year. The Company proposal is for a three-year plan where indicators, benchmarks, deadbands, and penalty allocations are fixed for the term of the plan. All of these factors will be reviewed and updated when the three-year plan expires.

The Company's proposal is more reasonable on this point. As discussed earlier, multi-year plans create better incentives than plans that are updated annually. A longer-term plan will provide the Company with the ability to plan and manage its operations to achieve the designated benchmarks, as well as maintaining the incentive to make the long-term investments necessary to ensure that service meets or exceeds the benchmarks. In addition, a three-year term is well within the mainstream of regulatory practice, and many approved SQIs have longer terms. In contrast, I am not aware of any approved service quality plan where all the main elements are subject to change each year.

**Q. PLEASE DESCRIBE THE DIFFERENCE BETWEEN THE BENCHMARKS IN THE COMPANY AND DIVISION PLANS.**

- A. The Division sets benchmarks in a number of ways, some of which are not always clear or explicit. However, it endorses the concept of considering peer performance when choosing benchmarks. In contrast, the Company's benchmarks and deadbands are, with only a few exceptions, based on its own historical performance on a measure.

As a general matter, the Company's proposal concerning benchmarks is more reasonable. Determining whether peer information can be used to set appropriate benchmarks requires an evaluation of many complex issues about the data comparability and business conditions that are beyond the Company's control. There is no indication that the Division has seriously considered these issues. At a minimum, detailed analysis of these factors is needed before peer-based information can be used to set reliable benchmarks.

In contrast, the Company's use of its historical data to set benchmarks is well within the mainstream of US regulatory practice. The Company's historical data are also clearly sensitive to the Company's own operating conditions. In contrast, the Division's benchmarks are not derived explicitly from verifiable data and are therefore largely subjective. While I believe the Company's benchmarks are largely reasonable, I also

believe some of the deadbands around these benchmarks recommended by the Company should be changed. I discuss these further in the next sub-section.

**Q. PLEASE DESCRIBE DIFFERENCES BETWEEN THE COMPANY AND DIVISION PROPOSALS REGARDING THE COST OF ATTAINING SERVICE QUALITY TARGETS.**

A. Although neither proposal discusses the relationship between service quality and cost, the Division's proposal appears to be less sensitive to the importance of cost-quality tradeoffs. This is especially evident in Mr. LeLash's statement that the Company's call center should staff for peak times and not to deliver an average level of service quality over a sustained period of time. I believe this suggestion is unlikely to be cost effective because the seasonality of the gas distribution business leads to monthly fluctuations in service quality performance. If the call center were staffed year round to achieve the proposed benchmarks for telephone performance in every month, this staff could be underutilized during much of the year. This would raise costs and prices for customers. Although this cannot be stated with certainty, I believe these higher prices are unlikely to be matched by gains in the value of customer service delivered to customers. The reason, as discussed in Section 2, is that customers understand that service quality often diminishes during peak periods and do not penalize companies for these temporary service issues.

**Q. TURNING NOW TO THE MORE NARROWLY DEFINED DIFFERENCES BETWEEN THE COMPANY AND DIVISION PROPOSALS, ARE THERE DIFFERENCES IN THE CHOICES FOR QUALITY INCIDENTS?**

A. Both proposals have the same basic set of indicators, although there are differences in how some are measured. Most of the selected indicators are also mainstream measures of utility quality attributes. The one unusual choice is the total number of meters tested. However, I understand that this is included because of statewide regulations and is accepted by all parties. Therefore, even though there are few precedents, this indicator appears to be an acceptable response to a "local" service quality concern.

The Division proposes to base the ASA on a 120 second standard, with a benchmark of 80%. The 120-second standard is not consistent with industry practice and, more importantly, the Company has not historically collected data on this basis on a consolidated company basis. Using this measure for the ASA would therefore not be consistent with the historical data used to establish the benchmark, which is inconsistent with one of the objective criteria previously identified for designing SQI plans.

On the meter-reading indicator, the Company proposes to base this on the percentage of meters assigned to be read while the Division proposes that it be based on total active meters. The Division's concern apparently is that the Company may manipulate the number of assigned meters to improve its performance on this measure. I do not believe that this is a realistic concern. The Company has pre-established and assigned schedules for meter reading routes. These meter reading schedules create a direct quantitative relationship between the number of meters that are read and the number of active meters over the course of a year. The Company can provide this information to the Commission, if necessary, on an annual basis. This should be sufficient to protect against gaming concerns. Given this protection, and the fact that the Company has not historically collected data according to the Division's definition, it is more reasonable to use the Company's proposed on-cycle meter reading measure.

The service appointments measure differ between the proposals in that the Division proposes to exclude instances where the Company met an appointment but the customer did not. This could, effectively, penalize the Company for actions beyond its control, since the Company has already shown up for a scheduled appointment (and incurred the cost of doing so) but can still be penalized for a future, rescheduled appointment. The Company deserves credit for the appointment it did meet. More importantly, the Company's historical data on service appointments is not consistent with the Division's proposed measure, which means that the historical data could not be used to set the benchmark if the Division's proposed measure were to be adopted, which is a factor in support of the Company's proposal.

The safety measures differ in that the Division wants response times to measure the amount of time it takes to fix the problem, not simply the time it takes a Company representative to arrive to address the emergency. This is not consistent with how gas leak responsiveness is measured in other approved plans and is also counter-intuitive. The immediate safety concern is addressed when a Company employee arrives and shuts off the gas, if that is what circumstances require. In addition, the Company has not historically collected data on the amount of time it takes to fix gas leak problems, which means that the Company's historical data are not comparable with the Division's proposed measure and therefore could not be used to set a benchmark. This factor supports the Company's proposed definition of this measure.

**Q. TURNING NOW TO THE CHOICES FOR BENCHMARKS AND DEADBANDS, DO YOU BELIEVE ANY CHANGES TO EITHER THE COMPANY OR DIVISION PROPOSALS ARE JUSTIFIED IN LIGHT OF THE OBJECTIVE CRITERIA DEVELOPED FOR DESIGNING SQI PLANS?**

A. Yes. I believe a slight change in the Company's method for computing deadbands would represent an improvement over either the Company or Division proposals. For most measures, the Company's deadbands are equal to one standard deviation around the mean value of the measure. These deadbands are computed using monthly data observations. However, it is not necessary or appropriate for deadbands to reflect monthly data variations if service quality is being measured and evaluated on an annual basis. This is because monthly data are more variable than annual data, so standard deviations derived from monthly data will lead to wider deadbands than those based on annual data. More fundamentally, this is an example of benchmarks or deadbands that are inconsistent with how the service quality indicators are measured, which was identified as one of the criteria for objectively designing SQI plans.

**Q. WHAT CHANGES DO YOU PROPOSE TO THE COMPANY'S DEADBANDS AND/OR BENCHMARKS?**

A. I propose that benchmarks and deadbands be set according to the following principles.

- Benchmarks and deadbands are fixed over the term of the plan using the best available data at the start of the plan.

- When annual data are available, they should be used to set benchmarks and deadbands since the indicators themselves will be measured using annual data.
- In some cases, however, only monthly data are available. For these measures, the Company's originally proposed benchmarks and deadbands will be retained, with the exception of that for the total number of meters tested, where the deadband is eliminated. This is a transitional measure only, and it is expected that when the plan is updated, annual data will be used to set all benchmarks and deadbands.
- When more than one annual data point is available, annual observations for each measure are used to set benchmarks. The benchmark is the mean of the annual observations of the data, and the deadband is equal to the standard deviation of annual data observations. Applying these principles to the Company's data implies the following benchmarks and deadbands:

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<u>Measure</u>	<u>Benchmark</u>	<u>Deadband</u>	<u>LowBand</u>	<u>Company</u>	<u>Division</u>
Aband call rate	15.1%	1.7%	16.8%	24.4%	20%
Avg speed answer	55.9%	1.7%	54.2%	48.6%	NA
On-cycle meter reads	94.4%	0.1%	94.3%	93.4%	94%
Testing of meters	15,000	0	15,000	14,250	15,000
Meter tests completed	77.4%	3.9%	73.5%	73.5%	73.5%
Service appoints met	97.2%	0.6%	96.6%	96.4%	95%
Leak response-bus hrs	83.2%	3.4%	79.8%	79.8%	80%
Leak response-other	86.3%	4.2%	82.1%	82.1%	80%

In the table above, the "low band" is the level at which penalties are imposed. For the sake of comparison, I have also included the levels where penalties would be imposed for each indicator in both the Company and Division proposals.

Overall, my proposal leads to lower bands that are usually more demanding than those proposed by either the Company or the Division. The PEG lower bands are more

demanding than those proposed by the Company for five of the eight indicators. I did not modify the lower bands on the three indicators where there were not two annual data observations. I also eliminated the deadband for meter testing since the Company did not have a full year of historic data on meter tests.

On most indicators, my proposal also leads to more demanding lower bands than those in the Division's proposal. The one exception is for leak responsiveness during business hours, but the lower bands here are almost identical.<sup>4</sup>

Although these changes make the SQI plan more demanding, I believe the targets remain achievable since they are still based directly on the Company's past experience. In addition, this methodology relies on well-defined rules and statistical principles and will "self-adjust" over time as annual data points are developed, rather than requiring a subjective (and arbitrary) determination as to the "appropriate" level of service. Thus in addition to setting more reasonable benchmarks and deadbands in the current SQI plan, this approach creates a more rigorous and predictable foundation for updating benchmarks and deadbands in future SQI plans. For all these reasons, I believe these benchmarks and deadbands are more appropriate and consistent with the criteria for objectively designing SQI plans than those presented in either the Division or Company proposals.

**Q. PLEASE DESCRIBE DIFFERENCES REGARDING THE PENALTY STRUCTURE BETWEEN THE COMPANY AND DIVISION SQI PLANS.**

- A. The proposals agree on the total potential penalties but differ on how penalties are allocated among indicators. I believe the Company's allocation is more consistent with industry practice and *a priori* notions about the quality attributes customers value most. The Company allocates nearly half of potential penalties to the two safety measures, which are clearly the most important customer concerns. In contrast, the Division's proposal allocates more penalties to scheduled customer appointments than either of the

safety odor calls. This does not appear to reflect relative customer valuations. After all, while all these measure the responsiveness of utility personnel to customer service requests, the utility's response to odor calls is potentially a matter of life or death, while meeting scheduled appointments is mostly a matter of convenience. It should also be noted that the Company's allocation is also quite similar to what was recently approved for gas utilities in Massachusetts, which undertook an especially thorough and comprehensive statewide examination of service quality issues.<sup>5</sup>

Regarding the other penalty allocations, the Company puts more weight on indicators where there is a direct link between customers and utility personnel (the abandoned call rate, ASA, and service appointments) than on indicators where the link to customer service quality is indirect (meter tests and meter reads). With the exception of service appointments met, which receives the greatest weight, the Division puts equal weight on all of its non-safety indicators. It is reasonable to assume that customers place more value on service attributes they experience directly rather than those affecting them indirectly. I therefore conclude that the Company's allocation of penalties on these indicators is also more reasonable.

**Q. ARE THERE DIFFERENCES IN HOW ACTUAL PENALTY AMOUNTS WILL BE CALCULATED, FOR A GIVEN LEVEL OF SERVICE QUALITY PERFORMANCE, IN THE COMPANY AND DIVISION PROPOSALS?**

- A. There appear to be. I say this because the Division's proposal does not specify exactly how penalties will be calculated for a given level of service quality performance. However, since this proposal does specify penalty amounts and benchmarks at which penalties will be incurred, it appears that the Company would potentially be subject to the full penalty amount when its service quality performance fell below the benchmark and was not later brought above the benchmark in conjunction with a filed remediation

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<sup>4</sup> An alternative and more statistically rigorous approach to setting deadbands would be to use a test statistic approach. Although conceptually appealing, this approach is also much more complicated. So in the interest of simplicity, I have not proposed such an approach here.

<sup>5</sup> Notwithstanding the thoroughness of this investigation, I do not agree with every decision the Commission made in the Massachusetts proceeding.

plan.<sup>6</sup> Because the Division proposal levies penalties quarterly, however, the “full penalty amount” in its proposal would be one-fourth of the Division’s proposed annual penalties for the indicator.

This is very different from how actual penalty amounts would be calculated in the Company’s proposal. On each quality indicator, the Company will determine penalty amounts (and, with the exception of the safety indicators, the amount of penalty offsets) according to a formula. In this formula, penalties will begin when performance is inferior to the lower band. The maximum penalty amount on a quality indicator will be incurred when the indicator’s measured service quality performance is two deadbands below the benchmark. Penalties (and penalty offsets) between zero and the maximum amount will be determined by linear interpolation between these values when service quality performance is between one and two deadbands below the benchmark.

**Q. CAN YOU PROVIDE AN EXAMPLE THAT DEMONSTRATES HOW THE COMPANY’S SQI PLAN WOULD CALCULATE PENALTIES FOR A GIVEN LEVEL OF PERFORMANCE ON A SERVICE QUALITY INDICATOR?**

A. Yes. Consider the scheduled service appointments indicator using the Company’s proposed penalty amounts and my recommended benchmarks and deadbands. The benchmark for this indicator is 97.2%, the deadband is 0.6%, and the maximum penalty amount is \$60,000 per year. Penalties would therefore begin when the percentage of appointments met falls below 96.6%; the maximum penalty of \$60,000 would be incurred if the percentage of appointments met was 96% or below. If the Company met 96.3% of its appointments in a given year, its performance would be mid-way between a penalty of zero and \$60,000, so it would incur a penalty of \$30,000.

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<sup>6</sup> Here and in the discussion below, “below” should be understood as signaling inferior performance; on some indicators *e.g.* the abandoned call rate, inferior performance will be registered with higher values on the indicator.

**Q. WHICH OF THESE METHODS FOR CALCULATING PENALTY AMOUNTS FOR SERVICE QUALITY PERFORMANCE IS MORE REASONABLE?**

A. The Company's proposed approach is more reasonable. One reason is that it is simply more clear how actual penalties would be calculated in this SQI plan. In addition, under the Company's plan, penalty amounts would be more commensurate with actual service quality performance. Worse service quality performance would generally be associated with higher penalties under the Company proposal. In the Division proposal, although it is not entirely clear how penalty amounts are calculated, the process appears to be akin to an "on/off" switch: full penalties are incurred whenever performance hits a threshold level, but beyond that level penalties are not sensitive to service quality performance. It is clearly more reasonable to have a penalty/reward mechanism that leads to higher penalties as service quality performance deteriorates. The Company's proposal achieves this goal more effectively than the Division's and is therefore more reasonable.

**VI. CONCLUSION**

**Q. PLEASE SUMMARIZE YOUR TESTIMONY.**

A. Service quality incentive plans can be valuable regulatory tools in ensuring that adequate quality is delivered to utility customers. It is critical, however, that SQIs be designed appropriately. An SQI that is poorly designed can distort incentives, create new regulatory burdens, and ultimately do more harm than good.

The Company and the Division have presented fundamentally different proposals for regulating the Company's quality of service. The Company's proposal is broadly consistent with principles for sound design of service-quality plans and, with a few exceptions, is in line with industry practice. Indeed, the Company's plan is similar to many approved SQI plans for energy utilities in the nation and region. In contrast, the Division's proposal is not consistent with objective principles for SQI plan design and may be unprecedented. The Division's proposal would encourage needless litigation and impose unnecessary burdens on the Company and regulatory staff. The administrative burdens associated with this proposal are not necessary to promote high quality service.

Although the Company's proposal is likely to create incentives to maintain or improve the quality of its service, further improvements are possible. One relatively simple adjustment is the change in deadbands recommended in this report. This change will lead to generally more demanding, yet still attainable, service standards than those contained in either the Company or Division proposals. Indeed, the deadbands recommended in this report are more consistent with the Company's historical experience than those originally suggested.

**Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

A. Yes.

## Survey of Approved US Service Quality Incentive Plans

### A. Choices for Individual Indicators: Public Safety

Jurisdiction	Company	Indicators	Benchmarks	Weights
New York	Brooklyn Union Gas - Benchmark Plan	- Emergency telephone responsiveness	90% of calls handled within 20 seconds, 9-5 M-F	20% of threshold services
		- Emergency field responsiveness	98% of customer requests for emergency service responded to in 1 hour	20% of threshold services
	Brooklyn Union Gas - Price Cap Plan	- Emergency telephone responsiveness	85.6% of calls handled within 20 seconds, 9-5 M-F	10%
		- Emergency field responsiveness	94.4% of customer requests for emergency service responded to in 1 hour	5%
Massachusetts	Boston Gas	- Response to odor calls	95% of odor calls responded to in 1 hour	14.3%
	Gas companies <sup>1</sup>	- Response to odor calls	95% of odor calls responded to within 1 hour	45%
Oregon	PacifiCorp	- Major safety violations	0.0 violations	NA <sup>2</sup>

<sup>1</sup> The plan applies to all gas utilities in Massachusetts. These include Bay State, Berkshire, Blackstone, Boston-Key Span, Colonial - Key Span, Commonwealth - NSTAR, Essex County - Key Span, Fall River Gas - New England Gas, Fitchburg Gas and Electric Light, North Attleboro Gas - New England Gas, Boston Edison - NSTAR, Commonwealth Electric - NSTAR, Eastern Edison - National Grid, Fitchburg: Unifil, Massachusetts Electric - National Grid, and Western Mas Electric Co. - Northeast Utilities

<sup>2</sup> There is no maximum penalty that can be assessed in this category.

**B. Choices for Individual Indicators: Non-Emergency On-Site Services**

Jurisdiction	Company	Indicators	Benchmarks	Weights
New York	Brooklyn Union Gas - Benchmark Plan	- Same day appointments	89.1% of same day appointments kept within a 6 hour standard.	3.5% of non-threshold services
		- Future day appointments	77.1% of future day appointments kept.	7.5% of non-threshold services
	Brooklyn Union Gas - Price Cap Plan	- Same day responsiveness	83.6% of same day appointments kept within a 6 hour standard.	15%
		- Service appointments kept	88.4% of appointments kept.	15%
	Consolidated Edison	- Work orders, initial phase	Average 6 days between receipt of customer request and issuance of service layout for initial phase completion.	NA <sup>1</sup>
		- Work orders, final phase	Average 7.9 days between receipt of customer request and completion of final inspection.	NA <sup>1</sup>
	Consolidated Edison	- Work orders, initial phase	Average 7.5 days between receipt of customer request and issuance of service layout for initial phase completion.	NA <sup>1</sup>
		- Work orders, final phase	Average 10 days between receipt of customer request and completion of final inspection.	NA <sup>1</sup>
National Fuel Gas	- Non-emergency appointments kept	92% of appointments kept on an a.m./p.m. or daily basis depending on appointment type.	NA <sup>1</sup>	
	- New service installations	91% of new service installations completed within 10 calendar days.	NA <sup>1</sup>	
National Fuel Gas	- Non-emergency appointments kept	91% of appointments kept on an a.m./p.m. or daily basis depending on appointment type.	NA <sup>1</sup>	
	- New service installations	91% of new service installations completed within 10 calendar days.	NA <sup>1</sup>	
	Rochester Gas & Electric	- Appointments kept	99% of appointments kept.	NA <sup>1</sup>
California	Southern California Gas	- On-time arrival for a service call	94.2% on-time arrival for service appointments	NA <sup>2</sup>
		- Satisfaction with appliance service representative	93.3% very satisfied	
Massachusetts	Boston Gas	- Service calls met	95% of service calls met on same day as requested.	14.3%
	Gas and electric companies <sup>3</sup>	- Percent of service appointments met as scheduled	Average of most 10 recent years	12.5%
Maine	Central Maine Power - Bundled	- Customer installations	72% of installations on time.	20%
	Central Maine Power Company - Distribution	- Percent of new service installed by date promised to customer	93%	12.5%
		- Market responsiveness	100% of enrollements from competitive electricity providers processed within the timeframe provided by the Commission	12.5%
	Bangor Hydro	- Service order timeliness	89% of all orders fulfilled by goal dates	14.3%
- Market responsiveness		100% of enrollements from competitive electricity providers processed within the timeframe provided by the Commission	14.3%	

<sup>1</sup> Service quality indexes were not computed; instead, there is a direct link between service quality performance and rewards or penalties.

<sup>2</sup> There is no maximum penalty, which effectively means no allocation can be set.

<sup>3</sup> The plan applies to all electric utilities except National Grid. The gas companies are as detailed under footnote 1 of sheet A. The electric companies include Boston Edison - Nstar, Commonwealth Electric - Nstar, Fitchburg Gas & Electric and Western Mass Electric - Northeast Utilities

**C. Choices for Individual Indicators: Reliability**

Jurisdiction	Company	Indicators	Benchmarks	Weights
Maine	Central Maine Power - Bundled	- CAIDI <sup>1</sup>	180 outage minutes per customer.	20%
		- SAIFI	Minimum index value of 2.0	20%
	Central Maine Power - Distribution	- CAIDI <sup>1</sup>	2.58 hours per year	12.5%
		- SAIFI <sup>1</sup>	1.8 interruptions per year	12.5%
	Bangor Hydro	- CAIDI <sup>1</sup>	2.13 hours per year	14.3%
- SAIFI <sup>1</sup>		1.43 interruptions per year	14.3%	
Oregon	PacifiCorp	- SAIDI	3-year weighted average of the three most recent years	8% <sup>2</sup>
		- SAIFI	3-year weighted average of the three most recent years	8% <sup>2</sup>
		- MAIFI	3-year weighted average of the three most recent years	8% <sup>2</sup>
Rhode Island	The National Grid Group - RI	- frequency of interruptions per customer served	Minimum of 1.43 (coastal area)	20.8%
			Minimum of 1.27 (capital area)	20.8%
		- duration of interruptions per customer served	Minimum of 82.7 minutes per customer (coastal area)	20.8%
			Minimum of 70.3 minutes per customer (capital area)	20.8%
Massachusetts	Electric Companies <sup>3</sup>	- SAIFI	Average of 5 years most recent years	22.5%
		- SAIDI	Average of 5 years most recent years	22.5%
	National Grid - MA <sup>4</sup>	- SAIFI	Maximum of 1.3 <sup>4</sup>	16.7%
		- SAIDI	Maximum of 101.60 <sup>5</sup>	16.7%
		- Dx line losses	N/A	8.3%
North Dakota	Northern States Power Co.	- CAIDI	Maximum of 102.4 minutes	14.3%
		- SAIFI	Maximum of 1.04 outages per year	14.3%
	Otter Tail	- CAIDI	Maximum of 4.6 minutes	14.3%
		- SAIFI	Maximum of 23.9 outages per year	14.3%

<sup>1</sup> Data for the indicator excluded during outages that affect more than 10% of the customers in any of CMP's 11 service areas. below the benchmark

<sup>2</sup> These weights are calculated without safety penalty violations since such violations do not have a maximum penalty.

<sup>3</sup> The plan applies to all electric utilities except National Grid. The electric companies include Boston Edison - Nstar, Commonwealth Electric - Nstar, Fitchburg Gas & Electric and Western Mass Elec

<sup>4</sup> 100% of penalties for these measures of reliability will be assessed on electric revenues.

For the customer service measures, detailed under telephone services, metering/billing, customer satisfaction and other, 80% of penalties will be assessed on electric revenues and 20% will be on gas rev

<sup>5</sup> Benchmarks update annually based on five year rolling averages of historical performance. All figures are initial values.

**C. Choices for Individual Indicators: Reliability**

Jurisdiction	Company	Indicators	Benchmarks	Weights
New York	Rochester Gas & Electric	- System Average Interruption Frequency Index (SAIFI)	Minimum index value of 1.27.	NA <sup>1</sup>
		- Customer Average Interruption Duration Index (CAIDI)	Minimum index value of 1.73.	NA <sup>1</sup>
	New York State Electric & Gas	- SAIFI	Varies by district served.	NA <sup>1</sup>
		- CAIDI	Varies by district served.	NA <sup>1</sup>
	Niagara-Mohawk Power	- SAIFI	0.93 outages per year	NA <sup>1</sup>
		- SAIDI	Maximum index value of 2.07	NA <sup>1</sup>
	National Grid- NY	- SAIFI	Under 0.93	18.3%
- CAIDI		Under 2.07	18.3%	
- No of Momentary Interruptions Per Year		- For 115KV Maximum of 200	3.1%	
		- For 23-69KV Maximum of 725	3.1%	
	- For Dx Maximum of 2000	3.1%		
Consolidated Edison	SAIFI:	Varies by network and radial circuits	NA <sup>1</sup>	
		CAIDI:	Varies by network and radial circuits	NA <sup>1</sup>
	Long Island Lighting	- SAIFI: by Divisions	Varies by district served.	NA <sup>1</sup>
- CAIDI: by Divisions		Varies by district served.	NA <sup>1</sup>	
California	San Diego Gas & Electric	- System Average Interruption Duration Index	70 minutes	NA
	San Diego Gas & Electric	- System Average Interruption Duration Index	52 Minutes	25.8%
		- System Average Interruption Frequency Index	0.90 outages per year	25.8%
		- Momentary Average Interruption Frequency Index	1.28 outages per year	7.0%
	Southern California Edison	- Average Customer Minutes of Interruption	59 minutes, declining by two minutes each year during the life of the plan.	55% (together)
		- Total interruptions per year	10,900	

<sup>1</sup> Service quality indexes were not computed; instead, there is a direct link between service quality performance and rewards or penalties.

**D. Choices for Individual Indicators: Telephone Services**

Jurisdiction	Company	Indicators	Benchmarks	Weights
New York	Brooklyn Union Gas - Benchmark Plan	Correspondence responsiveness	84.1% of responses to written inquiries within 12 calendar days	1.8% of non-threshold services
		Non-emergency telephone responsiveness	35.1% of calls answered within 45 seconds, M-F, 9-5	7.5% of non-threshold services
		Abandoned calls	Maximum 3.2% of calls abandoned before contact with a representative	5% of threshold services
	Brooklyn Union Gas - Price Cap Plan	Non-emergency telephone responsiveness	73.2% of calls answer within 45 seconds, M-F, 9-5.	7%
	National Fuel Gas	Telephone responsiveness	74% of calls answered within 30 seconds.	NA <sup>1</sup>
	National Fuel Gas	Telephone responsiveness	72% of calls answered within 30 seconds.	NA <sup>1</sup>
	Rochester Gas & Consolidated Edison	Abandoned calls	Maximum 2.8% calls abandoned.	NA <sup>1</sup>
	Consolidated Edison	Abandoned calls	Maximum 5.1% calls abandoned.	NA <sup>1</sup>
National Grid- NY	- Percent of calls answered within 30 seconds	Minimum of 77 calls answered within 30 seconds	7.7%	
California	Southern California Gas	- % Emergency calls answered within 20 seconds	90% emergency calls	NA <sup>2</sup>
		- % non-emergency calls answered within 60 seconds	80% non-emergency calls	
		- Satisfaction with telephone customer service representative	89.7% very satisfied	
		- Satisfaction with scheduling of an appointment for a field service call	78.1% very satisfied	
San Diego Gas and Electric	- % personal and electronic calls answered within 60 seconds	- 80% of calls answered within 60 seconds on a 24 hour annual basis	10.3%	
Massachusetts	Boston Gas	- Percent of calls answered within 30 seconds	95% - Emergency 80% - Service and billing	14.3%
	Gas and electric companies <sup>3</sup>	- Percent of calls answered within 20 seconds	Average of most 10 recent years	12.5%
	National Grid - MA <sup>4</sup>	- Percent of calls answered within 20 seconds	Minimum of 68.5 calls answered within 20 seconds	8.3%
Maine	Central Maine Power - Bundled	- Phone employees knowledgeable	82% of customers surveyed report phone center employees were knowledgeable when contacted.	20%
	Central Maine Power - Distribution	- Percent of business calls answered within 30 seconds <sup>5</sup>	80%	12.5%
		- Percent of outage calls answered within 30 seconds	80% (for calls received on the company's outage line)	12.5%
	Bangor Hydro	- Percent of business calls answered within 30 seconds	80%	14.3%
Rhode Island	The National Grid Group - RI	- Percent of calls answered within 20 seconds	Minimum of 72.4 calls answered within 20 seconds	8.3%

<sup>1</sup> Service quality indexes were not computed; instead, there is a direct link between service quality performance and rewards or penalties below the benchmark.

<sup>2</sup> There is no maximum penalty, which effectively means no allocation can be set.

<sup>3</sup> The plan applies to all electric utilities except National Grid

<sup>4</sup> Benchmark updates annually based on five year rolling averages of historical performance. Figure is initial value.

<sup>5</sup> Data for this indicator excluded on days when more than 10% of the customers in any of CMP's 11 service areas experience outages.

E. Choices for Individual Indicators: Metering/Billing

Jurisdiction	Company	Indicators	Benchmarks	Weights
New York	Brooklyn Union Gas Benchmark Plan	- Estimated meter reads	Maximum 15.4% of meters not read during actual cycle.	5.8% of non-threshold services
		- Billing field investigations	Average 19 days to conduct field investigation.	5.6% of non-threshold services
		- Meters read on schedule	98.8% of meter reads read on date promised.	10% of threshold services
		- Billing accuracy	92.5% of bills adjusted for less 3% of total.	15% of threshold services
		- Payments not passed	0.43% payments not passed within one business day.	15% of threshold services
	Brooklyn Union Gas - Price Cap Plan	- Estimated meter reads	20.8% of meters not read during actual cycle.	15%
	Brooklyn Union Gas - Price Cap Plan	- Estimated meter reads	20.0% of meters not read during actual cycle.	15%
	National Fuel Gas	- Bill adjustments	1.9% of bills adjusted.	NA <sup>1</sup>
		- Estimated readings	19.9% of meter readings estimated.	NA <sup>1</sup>
	Consolidated Edison Edison	- On-cycle meter reads	90.2% of meters read on schedule.	NA <sup>1</sup>
- Billing accuracy		99.7% of bills not adjusted due to company error.	NA <sup>1</sup>	
Consolidated Edison Edison	- On-cycle meter reads	86.9% of meters read on schedule.	NA <sup>1</sup>	
	- Billing accuracy	97.2% of bills not adjusted due to company error.	NA <sup>1</sup>	
Rochester Gas & Electric	- Bills adjusted	2.7% of bills adjusted.	NA <sup>1</sup>	
	- Estimated bills	13.7% of bills estimated.	NA <sup>1</sup>	
National Grid-NY	- Percent meters read	Minimum of 88.5	7.7%	
Massachusetts	Boston Gas	- On-cycle meter reads	95% of meters read on cycle.	14.3%
		- Bill adjustments	Less than 65% of total DPU consumer division customer bill adjustments	14.3%
	Gas and electric companies <sup>2</sup>	- Bill Adjustments	Average of most 10 recent years	5.0%
		- On-cycle meter reads	Average of most 10 recent years	10.0%
National Grid - MA <sup>2</sup>	- Percent meters read	Minimum of 88.5	8.3%	
Maine	Bangor Hydro	- Bill error rate	0.40%	14.3%

<sup>1</sup> Service quality indexes were not computed; instead, there is a direct link between service quality performance and rewards or penalties.

<sup>2</sup> The plan applies to all electric utilities except National Grid. The electric companies include Boston Edison - Nstar, Commonwealth Electric - Nstar, Fitchburg Gas & Electric and Western Mass Electric - Northeast Utilities.

<sup>3</sup> Benchmark updates annually based on five year rolling averages of historical performance. Figure is initial value.

F. Choices for Individual Indicators: Customer Satisfaction

Jurisdiction	Company	Indicators	Benchmarks	Weights
New York	Brooklyn Union Gas Benchmark Plan	- Annual customer satisfaction	90.7% satisfactory responses to random customer survey.	8% of non-threshold services
		- Customer contact satisfaction	89% satisfactory responses of customers contacted by the utility over the last 12 months.	22% of non-threshold services
		- PSC contacts	230 contacts per month.	17.5% of non-threshold services
	Brooklyn Union Gas - Price Cap Plan	- PSC contacts	1953 contacts per year	23%
		- Contact survey	84.8% satisfactory responses from random customers who have contacted the utility in the last month.	10%
	National Fuel Gas	- Annual customer satisfaction	85.1% satisfactory responses to annual random survey.	NA <sup>1</sup>
		- Customer complaints	10 complaints to the PSC per 100,000 customers.	NA <sup>1</sup>
	National Fuel Gas	- Annual customer satisfaction	81.6% satisfactory responses to annual random survey.	NA <sup>1</sup>
		- Customer complaints	10 complaints to the PSC per 100,000 customers.	NA <sup>1</sup>
	Consolidated Edison	- PSC complaints threshold	8.0 divided by total customers multiplied by 100,000	NA <sup>1</sup>
		- PSC complaints performance	8.0 divided by total customers multiplied by 100,000, with rewards earned under stricter standards each year.	NA <sup>1</sup>
		- Visitor satisfaction	84.2% satisfaction on annual survey	NA <sup>1</sup>
		- Caller satisfaction	83.5% satisfaction on annual survey	NA <sup>1</sup>
		- Emergency center satisfaction	80.5% satisfaction on annual survey	NA <sup>1</sup>
	Consolidated Edison	- PSC complaints threshold	8.0 divided by total customers multiplied by 100,000	NA <sup>1</sup>
- PSC complaints performance		8.0 divided by total customers multiplied by 100,000, with rewards earned under stricter standards each year.	NA <sup>1</sup>	
- Visitor satisfaction		84.2% satisfaction on annual survey	NA <sup>1</sup>	
- Caller satisfaction		83.5% satisfaction on annual survey	NA <sup>1</sup>	
- Emergency center satisfaction		80.5% satisfaction on annual survey	NA <sup>1</sup>	
Rochester Gas & Electric	- Customer satisfaction survey	Initial customer satisfaction survey in first plan year. Benchmark set at a later date.	NA <sup>1</sup>	
	- PSC complaints	9 per 100,000 customers	NA <sup>1</sup>	
New York State Electric & Gas	- PSC complaints	5 per 100,000 customers	NA <sup>1</sup>	
	- Customer expectation survey	Complete study and report.	NA <sup>1</sup>	
	- Customer satisfaction index	84% satisfaction on annual survey	NA <sup>1</sup>	
	- Contact satisfaction index	89% satisfaction on follow-up survey of customers who contact the utility.	NA <sup>1</sup>	
New York State Electric & Gas	- PSC complaints	4 per 100,000 customers	NA <sup>1</sup>	
	- Customer expectation survey	Complete study and report.	NA <sup>1</sup>	
	- Customer satisfaction index	71% satisfaction on annual survey	NA <sup>1</sup>	
	- Contact satisfaction index	83% satisfaction on follow-up survey of customers who contact the utility.	NA <sup>1</sup>	
Niagara-Mohawk	- PSC Complaint Rate	10 per 100,000 customers	NA <sup>1</sup>	
	- Customer satisfaction index	Minimum index value of 80	NA <sup>1</sup>	
National Grid- NY	- PSC Complaint Rate	Maximum of 4 complaints per 100,000 customers	15.5%	
	- Residential Transaction Satisfaction Index <sup>2</sup>	- Year 1 Maximum of 79 - Year 2 Maximum of 80 - Year 3 and beyond Maximum of 81	7.7%	
	- Small/Medium Commercial and Industrial Transaction Satisfaction Index	- Year 1 Maximum of 74 - Year 2 Maximum of 76 - Year 3 and beyond Maximum of 78	7.7%	

<sup>1</sup> Service quality indexes were not computed; instead, there is a direct link between service quality performance and rewards or penalties.

<sup>2</sup> This index has three components: customer satisfaction with the telephone representative, field service representative and problem resolution.

**F. Choices for Individual Indicators: Customer Satisfaction**

Jurisdiction	Company	Indicators	Benchmarks	Weights	
Massachusetts	Boston Gas	- Complaints made to DPU	Less than 50% of total DPU complaints	14%	
	Gas and electric companies <sup>1</sup>	- DTE complaint rate	Average of most 10 recent years	5.0%	
		National Grid - MA <sup>2</sup>	- Customer Satisfaction Survey	Minimum of 90% satisfied	8.3%
			- Customer Contact Satisfaction	Minimum of 74.9% satisfied	8.3%
		- DTE complaint rate	Maximum of 0.87 cases per 1000 customer	8.3%	
Maine	Central Maine Power - Bundled	- PSC complaints	1.17 per 1,000 customers	20%	
	Central Maine Power - Distribution	- MPUC Complaint Ratio	1.17 complaints per 1,000 customers per year	12.5%	
		- Call center service quality survey	84% favorable answers to questions in two categories	12.5%	
	Bangor Hydro	- MPUC Complaint Ratio	1.52 complaints per 1,000 customers per year	14.3%	
California	Southern California Edison	- Customer satisfaction survey	64% of responses to annual survey in top two categories on a six point scale.	30.0%	
	San Diego Gas & Electric	- Customer satisfaction survey	92% "very satisfied" responses on annual survey.	NA	
	San Diego Gas & Electric	- Customer satisfaction survey	92.5% "very satisfied" responses on annual survey.	10.3%	
Oregon	Pacificorp	At Fault Customer Complaints	updated annually	76.0%	
Rhode Island	The National Grid Group - RI	- Customer Contact	Minimum of 76.2% surveyed customers satisfied w/ customer contact	8.3%	
North Dakota	Northern States Power Co.	- % positive response in a relationship survey	Minimum of 78%	14.3%	
		- % of positive response in a transaction survey	Minimum of 60%	14.3%	
	Otter Tail	- % positive response in a relationship survey	Minimum of 87%	14.3%	
		- % of positive response in a transaction survey	Minimum of 71%	14.3%	

<sup>1</sup> The plan applies to all electric utilities except National Grid

<sup>2</sup> Benchmarks update annually based on five year rolling averages of historical performance. All figures are initial values.

<sup>3</sup> Service quality indexes were not computed; instead, there is a direct link between service quality performance and rewards or penalties.

### G. Choices for Individual Indicators: Employee Safety

Jurisdiction	Company	Indicators	Benchmarks	Weights
California	Southern California Edison	OSHA Total Reportable Rate	13.0 accidents and illnesses per 200,000 hours worked.	15.0%
	San Diego Gas & Electric	OSHA Total Reportable Rate	8.80 OSHA- reportable frequency rate	20.6%
	Southern California Gas	OSHA Total Reportable Rate	10.3 accidents and illnesses per 200,000 hours worked.	NA <sup>1</sup>
Massachusetts	Boston Gas	- Lost time accidents; three year moving average	Less than the National Safety Council report <u>Work Injury and Illness Rates</u> , 3- year avg.	14.3%
	Gas and electric companies <sup>2</sup>	- Lost work time accident rate	Average of most 10 recent years rate per 200,000 employee hours	10%
	National Grid - MA <sup>3</sup>	- Lost work time accident rate	Maximum of 1.74 per 200,000 employee hours	8.3%
		- Restricted work case rate	Maximum of 6.27 per 200,000 employee hours	8.3%
North Dakota	Northern States Power Co.	- # of safety related incidents per 100 employees	Max of 5	14.3%
	Otter Tail	- # of safety related incidents per 100 employees	Max of 7.9	14.3%

<sup>1</sup> There is no maximum penalty, which effectively means no allocation can be set.

<sup>2</sup> The plan applies to all electric utilities except National Grid

<sup>3</sup> Benchmarks update annually based on five year rolling averages of historical performance. All figures are initial values.

**H. Choices for Individual Indicators: Other**

Jurisdiction	Company	Indicators	Benchmarks	Weights
New York	Brooklyn Union Gas Benchmark Plan	- PSC complaint responsiveness	80-1% of complaints addressed within 15 calendar days	5% of non-threshold services
		- Communication effectiveness residential heating	40-1% of customers "very familiar" with 60% of the company's core message	4% of non-threshold services
		- Communication effectiveness residential non-heating	30-1% of customers "very familiar" with 65% of company's core messages	2% of non-threshold services
		- STAR outreach effectiveness	45,001 customers identified for special protection, such as disabled or elderly	4% of non-threshold services
		- District office waiting time	7 minutes average waiting time	10% of threshold services
		- Social work	450 residential low income customers obtaining financial assistance	5% of threshold services
	Consolidated Edison	- Deferred payment default rate	21.1% of deferred payment agreements broken or voided.	NA <sup>1</sup>
		- Routine investigations	91.5% of investigations completed within 30 days.	NA <sup>1</sup>
	New York State Electric & Gas	- Standards of Excellence Program	100 on index of 16 customer related indicators.	NA <sup>1</sup>
		- Outreach and education	0 on index of involvement of customers in decision making process (scale -7 to 7)	NA <sup>1</sup>
- Uncollectible index		No movement in percentage of uncollectibles from 3 year average	NA <sup>1</sup>	
- Implementing improvements		No new milestones of implementation achieved, but action taken.	NA <sup>1</sup>	
National Grid- NY	- Low income customer assistance	Minimum of 95% of three performance goals <sup>3</sup>	7.7%	
California	San Diego Gas & Electric	- National rate comparison	118% of national system average rate index	NA <sup>1</sup>
	Southern California Gas	- Notification of payment due	Write to customer within 10 working days of failure to pay.	NA <sup>2</sup>
North Dakota	Northern States Power Co.	- Competitive residential price position	Maximum of 115% above peer group average	14.3%
		- Annual change in residential average price	Maximum of annual change in lowest priced Midwest utility + 0.05 cents/kwh	14.3%
	Otter Tail	- Competitive residential price position	Maximum of 115% above peer group average	14.3%
		- Annual change in residential average price	Maximum of annual change in lowest priced Midwest utility + 0.05 cents/kwh	14.3%

<sup>1</sup> Service quality indexes were not computed; instead, there is a direct link between service quality performance and rewards or penalties.

<sup>2</sup> There is no maximum penalty, which effectively means no allocation can be set.

<sup>3</sup> The three goals include # of enrollment of customers, # of energy services and # of management workshops.