

## SECTION 7.0

### Rate Design

## 7.0 Rate Design

EGNB is proposing to maintain the 2013 underlying billing determination factors and 2013 customer charges approved in the September 20, 2012 (as supplemented on September 26, 2012) Board Decision. The overall level of the 2014 fixed cost recovery from the monthly fixed charges is approximately the same as those in 2013, with a small increase attributable to the attachment of new customers. The proposed revenue allocations and rate design allows EGNB to recover its annual revenue requirement while meeting market and legislative constraints on the various rate schedules.

The following summarizes the elements in the rate design relating to the billing determination factors and monthly customer charges for each of EGNB's rate classes currently approved by the Board.

### Rate Design Elements and Monthly Charges

Rate Class	Min (Monthly Demand Peak)	Max (Monthly Demand Peak)	Customer Charge (\$/month)	Demand Charge (\$/GJ)
<b>Small General Service</b>	-	<60 GJ	16.00	n/a
<b>Mid-General Service</b>	60 GJ	<250 GJ	50.00	n/a
<b>Large General Service</b>	250 GJ	n/a	For customers with max. consumption up to 650 GJs/month: 125.00  For customers with max. consumption greater than 650 GJs/month: 225.00	n/a
<b>Contract General Service</b>	1,000 GJ	<10,000 GJ	n/a	13.30
<b>Industrial Contract General Service</b>	10,000 GJ	-	3,300.00	15.00
<b>Off-Peak Service</b>	n/a	n/a	50.00	n/a

### Regulation with Competitive and Captive Customers

EGNB faces a complex system of customers with various competitive alternatives as it seeks to provide natural gas service in New Brunswick. Prices equal to or only slightly below the cost of service are not sustainable for the Small General Service class of customers because the prices based on a cost of service study exceed the price for competitive alternatives for customers in the class. Losing these customers would mean that other customers would see their rates increase as more of the common and shared costs are allocated to those classes of service. There would be a net rate impact of even higher cost to be borne by the remaining customers than would be borne if the amount of common and shared costs not recovered under the competitive rate classes is allocated to other customers.

Put another way, the concept of subsidy free rates (explained in detail below) provides a basis for regulatory agencies to allow rates that produce different returns than the system average to reflect competitive considerations and Stand-Alone Cost (SAC) analysis. There is no theoretical or practical reason that class rates of return need to be equalized so long as rates fall within the zone of subsidy free rates. Regulatory policies may be used to dictate the magnitude of the return differential that is acceptable but ultimately the unique circumstances for each different utility will determine the revenue to cost ratio that is the practical outcome of the Constrained Market Price (CMP) process. This concept is discussed more fully below.

Even where there are no competitive market considerations, it is common to see widely varying revenue to cost ratios as a result of explicit or implicit regulatory policy considerations. For example, it is common for the cost of service study to show classes of service both above and below the system average return. Typically, even without competitive issues, residential returns are likely to be below fully allocated costs while small commercial and industrial customers are well above the system average return. For some classes of service, the return calculation has little or no meaning in any event. For example, in some utilities the only rate base cost for interruptible customers is metering. In that case, the return may be many times higher than other returns to reflect the policy that these customers need to make some contribution to the shared facilities that are available because firm customers ultimately support the system costs. This is

the inherent fallacy of relying on cost of service precision (it is not precise) and expecting that all classes should have specific, maximum revenue to cost ratios.

In the case of EGNB, the rates for Small General Service face competitive pressures related to the source of energy available to provide the end uses of heating and water heating. These competitive values differ based on the customer class within the rate class - residential and small commercial. The following table illustrates the comparative cost of electricity between residential and commercial customers.

Comparison of Cost per kWh Residential and Commercial\*

kWh Use	Residential	Commercial	Difference
5,000	\$0.10	\$0.1231	+23.1%
7,300	\$0.10	\$0.1118	+11.8%
10,000 (50% LF)	\$0.10	\$0.1125	+12.5%

\*Excludes any customer related costs as those are sunk costs when considering alternative heating and water heating costs for electric customers.

As the table illustrates the cost per kWh is between 11.8% and 23.1% higher for small commercial customers compared to residential customers served under the SGS rate even assuming a fifty percent monthly load factor for those customers whose electric service includes a demand charge. Commercial customers who consume a similar amount of electricity as residential customers pay much higher kWh charges and the larger electric customers pay more as well but not by as large a margin. If load factor declines the differential increases while if load factor increases, the differential declines. Even at a 100% load factor the average cost per kWh is still higher for commercial customers albeit the difference is slight.

The table illustrates the difference in the target competitive price within the Small General Service rate class based on the electric pricing differences for residential and commercial customers. Conceptually, it is appropriate to use some of this differential to reduce the dollars of common and shared costs that need to be reallocated under the CMP process. In that case, there would be fewer dollars shifted to other classes as a result of setting rates at a competitive price. The table also illustrates the differences in commercial rates compared to residential rates that may well reflect relatively different earned returns for the two electric service rates. With the

current legislative restrictions imposed on EGNB, a blended electricity cost has been proposed to determine the market based rate for the SGS class to achieve a similar objective.

The typical gas regulatory process is not concerned with a situation where certain customers or classes of customers have real and significant competitive options while other customers are largely captive to the system. Essentially, gas service has always been competitive for every class of customer. This competition has been mostly related to specific end uses and to limited market areas where technology and customer end-use requirements permitted this competition to be effective. The issue of competition for end-use service, however, is not new in the context of regulation overall. As a result regulatory agencies have addressed these issues in the broader context of regulation for telephone service, rail service and oil pipeline service. There are clear lessons from these other industries that apply to cost of service and pricing issues when competitive options represent a viable alternative to utility service. The following explains the overall approach for dealing with the competitive/captive markets recognizing that as long as competitive opportunities exist no customers are truly captive.

As markets evolve, there may be new technological advances or restructured markets that create new, viable competitive options within a traditional regulated monopoly service. The process of addressing the issues of competitive service while maintaining the viability of the regulated entity has been addressed by regulatory bodies such as the United States Federal Communications Commission (FCC), the United States Surface Transportation Board (STB) and the United States Federal Energy Regulatory Commission (FERC). The FCC dealt initially with competition for telephone equipment, long distance service and finally cellular phone service. The STB dealt with competition for rail service from any number of transportation service alternatives. The FERC has dealt with competition for oil pipeline service including products pipelines. In each case, it is possible to observe the processes used to address the mix of competitive and captive services in light of the obligation to allow the utility a reasonable opportunity to earn its allowed return.

The following table provides a summary of the rights and obligations under the regulatory compact associated with utility service:

Utility Rights and Obligations

<b>OBLIGATIONS</b>	<b>RIGHTS</b>
<b>Obligation to serve.</b>	<b>Right to a reasonable return.</b>
<b>Provide safe and reliable service.</b>	<b>The provision of service is subject to reasonable rates, rules and regulations.</b>
<b>Charge non-discriminatory rates.</b>	<b>Receive protection from competition.</b>
<b>Charge just and reasonable rates.</b>	<b>Right of expropriation.</b>

These rights and obligations are not unlimited in any sense. They are constrained at various times under legislative requirements and under tariff provisions approved by the regulatory agency. For example, the obligation to serve is limited by the tariff provisions related to service line extensions including mains. The rights and obligations provide constraints on opportunistic behavior by both regulators and utilities. Regulators cannot deprive the utility of its opportunity to earn a market based return of and on the assets used in providing utility service. Thus, for rates to be just and reasonable, the rates must provide the utility the opportunity to earn a reasonable return. The reasonable return of and on a utility’s investment in serving customers is also constrained by the requirement that the investments be prudent and used and useful. This interaction between rights and obligations becomes critically important where service provision occurs in both competitive markets and captive markets.

Where some customers have competitive options, the regulator is not relieved of the obligation to allow the utility an opportunity to earn the allowed return through rates that in total recover the cost of service including a reasonable return. Essentially, this means that the rate revenues from competitive customers plus the rate revenues from captive customers must equal the total revenue requirement or the cost of service.

The issue of reasonable rates for customers who have no economic option to taking service from the utility is neither new nor novel. The concept has been discussed in economics literature and in regulatory decisions under several different descriptive terms such as “Constrained Market Prices” or “Constrained Differential Pricing”. As noted above these concepts have been applied in a number of regulatory settings. For example, the Interstate Commerce Commission, the predecessor regulatory agency to the STB, discussed the concept of CMP as a basis for establishing reasonable rates for captive shippers. In doing so they established three clear standards for assessing a reasonable level of rates: (1) revenue adequacy for the company; (2)

management efficiency for the service provided; and (3) the Stand Alone Cost (SAC) test. These three tests represent fundamental rights and obligations of the regulator and the utility.

The revenue adequacy test satisfies the utility's right to an opportunity to earn the revenue requirement including a return of and on the invested capital and a market based return on that capital. The management efficiency standard assures that there are no wasteful, imprudent or unnecessary costs included in the revenue requirement. As such the resulting rates are just and reasonable for both the utility and its customers. Finally, the SAC test assures those customers with no economically viable alternative to utility service that they pay no more than the costs that would be incurred to provide them the service if no competitive service customers were served by the utility.

All of this theory recognizes that the allocation of joint and common costs is arbitrary even when following principles of cost causation as EGNB explained in testimony related to its first cost of service analysis. In developing cost of service and calculating the return for any class of service using an embedded cost study, the allocated costs for common facilities, even when prepared with the best available data and analytical procedures, does not produce the actual cost to serve an individual customer or class of customers. By using the concept of SAC, regulators are assured that the customer or class of customers pay no more than for the cost of replicating the actual end-use service received with no inefficiencies or cross subsidies to other classes. It is important to recognize that the SAC need not be the exact same type of service but rather the lowest cost viable alternative for the customer's end-use. At the same time the aggregate rates for the utility cover the revenue requirement and satisfy the reasonable opportunity to earn the allowed return.

The use of CMP relies on two basic economic concepts: (1) differential pricing and (2) contestable markets. Differential pricing is critical for a regulated utility because economies of scale and economically efficient pricing based on marginal cost would not permit the utility to earn its allowed return. For that reason, it is necessary to permit prices in excess of marginal costs. An often discussed, the concept of Ramsey pricing is an example of a method to determine differential pricing. The theory of contestable markets provides a basis for competitive type outcomes even under monopoly conditions. These two concepts provide an

outcome that results in prices that reflect a competitive market outcome where the customer pays no more than would result from competition for the service.

If we consider all this information about costs and prices we find that economists define subsidy free prices as any set of prices for the utility where all prices exceed marginal cost but are less than SAC. It is also true that in almost all cases prices set on the basis of a cost of service study would be subsidy free even if some prices exceeded SAC. The difficulty is that prices above SAC are not sustainable and those customers would be lost by the utility. However, total utility costs would not decline by the amount of lost revenue requirement but instead would decline by the marginal cost of the service provided. This would mean higher prices for the remaining customers as a result of the loss of recovery in the categories of common and shared costs. The exact same conclusion applies in the event that customers with competitive alternatives are charged prices based on the cost of service study that exceed the competitive alternative. That is prices are not sustainable, customers will leave the system and remaining customers will face higher rates.

EGNB has followed the CMP process to develop class revenue requirements and the resulting rates in this case. For purposes of establishing rates for classes whose cost of service requirements were below market based rates, EGNB first determined the SAC based on the cost of the available alternate fuel, calculated according to the market based rate methodology approved by the Board and the constraints provided in the Rates and Tariffs Regulation. Using these costs EGNB has determined the maximum revenue that could be collected from the other classes of service to allocate the remainder of the revenue requirement. Having determined the maximum level of rates for the class this value served as the first, or upper bound, benchmark for assessing added revenue requirements to the classes. EGNB calculated the pure cost of service rates for each rate class and this served as a second, or lower bound, benchmark. No consideration was given to the revenue to cost ratio because that was not an operative constraint but merely a result that would fall out from the allocation of the revenue shortfall from the market constrained class to those classes not constrained by the market. With the upper and lower bounds for rates established, EGNB developed revenue requirements for each class keeping in mind three other practical issues. First, EGNB wants to provide an overall level of total bill impacts that remained reasonable based on its assessment of each class and its current



bill levels. Second, EGNB wanted to consider any competitive pressures faced within rate classes potentially resulting by the impact of bill increases. Finally, EGNB attempted to offer rate classes' competitive savings against their alternative fuels used across each rate class.

The process used by EGNB meets the three criteria for the use of CMP to recover the total revenue requirements and provide EGNB with a reasonable opportunity to earn the allowed return. The following table provides the SAC ratio to the cost of service and the resulting revenue to cost ratio for each class of service from the process outlined in the paragraph above.

<b>Rate Class</b>	<b>Cost of Service</b>	<b>Market Based</b>	<b>Ratio of Market Based Rates to Cost of Service</b>	<b>Revenue to Cost of Service Ratio</b>
<b>Small General Service</b>	\$24,030,821	\$11,981,659	50%	52%
<b>Mid-General Service</b>	\$9,397,669	\$15,953,795	170%	144%
<b>Large General Service</b>	\$6,190,086	\$18,156,648	293%	150%
<b>Contract General Service</b>	\$4,309,401	\$12,558,584	291%	150%
<b>Industrial Contract General Service</b>	\$4,777,247	\$29,925,311	626%	145%
<b>OPS</b>	\$91,845	\$592,169	645%	220%

As the table illustrates, the SGS class has competitive rates that are below the fully allocated revenue requirement. Raising these rates would result in unsustainable revenue recovery and higher costs for other customers because those customers would have higher revenue requirements than those resulting from bearing the cost of the revenue shortfall. Having determined the ratio of market based rates to cost of service, EGNB first established rates for the Small General Service class where both competition and legislative regulation dictate the need to charge rates below the fully allocated cost of service. This requirement of the regulations under which EGNB operates is also a practical requirement for sustainable service to the SGS class. For the Small General Service class, competitive rates would cover only 48 percent of the allocated revenue requirement. The remaining shortfall in revenue required to allow EGNB an opportunity to earn its allowed return must be reallocated to the other classes of service in a way

that does not cause rates to exceed the market based rates that would be available to the class of service. This meant for example capping the Mid-General Service class at revenues less than 170 percent of the cost of service.

In addition to the constraints imposed by the alternative market based rates, EGNB recognized that the largest manufacturing customers also faced competitive pressures in their own markets. This meant that EGNB is proposing that any increase for Industrial Contract General Service customers should be limited as well. In order to determine the required contribution from the Industrial Contract General Service class, EGNB first increased rates from other classes to make up the revenue shortfall. In each case, the proposed rates for the other classes kept those rates below the market based rates and allocated a reasonable share of the additional revenue requirements to the Large General Service and Contract General Service classes that gave those classes approximately the same ratio of rates to market rates. Applying this methodology prior to any allocation to the Industrial Contract General Service allowed EGNB to increase the current rate level slightly for this class without pushing the other customer classes to rates that exceed market based rates. In the future, it will be necessary to balance both market based rate ceilings and the allocation to all classes to determine the most efficient means of revenue recovery. The Off-Peak Service rate was maintained at the current 2013 approved rate.

The resulting increases for the other classes of service are still below the market alternative but above the fully allocated cost of service. The table above outlining the revenue to cost ratios also illustrates the fallacy of capping class rates based on the revenue to cost ratio. The concept that cost analysis should form the ultimate basis for rate levels and hence revenue has found little support among those who practice ratemaking. For example, Russell Caywood in his introduction to cost analysis provides the following guidance:

*The limited place of costs in rate development is obvious in view of the many cost allocation theories and approaches, the widely accepted basis that the various classes of service do not have to earn the same rate of return, and the fact that either average or incremental pricing may be used, depending on the circumstances.<sup>1</sup>*

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<sup>1</sup> **Electric Utility Rate Economics**, Russell E. Caywood, McGraw Hill Book Company, Inc., 1972, pp. 146-147

To this list we might add the concepts of competitive and monopoly service provided with the same facilities, new costing theories such as standalone costs and a host of other issues that call into question various assumptions that underlie cost of service studies. In simplest terms, there is no basis for setting constraints on class revenue that prevent the utility an opportunity to recover its revenue requirement. There is also no reason to assume that any one method for sharing the benefits of a joint cost network must somehow reflect only a particular cost of service methodology and not policy goals that are important to both regulators and society.

A copy of the rate schedules are provided in Schedule 7.1 – Rate Schedules.