



IN THE MATTER OF

**TERASEN GAS (VANCOUVER ISLAND) INC.
AND
TERASEN GAS INC.**

**SYSTEM EXTENSION AND
CUSTOMER CONNECTION POLICIES REVIEW**

DECISION

December 6, 2007

Before:

Anthony J. Pullman, Commissioner

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COMMISSION ORDER NO. G-152-07

APPENDIX A LIST OF EXHIBITS

1.0 THE APPLICATION

On July 31 2007 Terasen Gas Inc. (“TGI”) and Terasen Gas (Vancouver Island) Inc. (“TGVI”) (collectively “Terasen” or the “Companies”) filed with the British Columbia Utilities Commission (“the Commission” or “BCUC”) their System Extension and Customer Connection Policies Review Application (the” Application”) under Section 61 of the Utilities Commission Act (“UCA” or “the Act”).

Terasen requested that the Application should be heard by way of a written process, and requested that a process be established whereby a decision on this Application could be rendered by the middle of October 2007.

The filings were in response to i) Order No. G-160-06, wherein the Commission approved TGI’s 2006 Annual Review and Mid-Term Settlement Review and agreed that TGI should conduct a review of its system extension and customer connection policies including the Main Extension (“MX”) test in 2007 in conjunction with TGVI for submission by the end of the second quarter of 2007; and ii) Order No. G-161-06, wherein the Commission approved TGVI’s 2006 Negotiated Settlement Update and agreed with TGVI’s suggestion that a review of its system extension and customer attachment and connection policies was warranted, and that, due to changes in the market place since the last System Extension Test (“SET”) Guidelines, its review of the policies would consider other external realities and be broader than a simple MX test review.

On June 28, 2007, Terasen filed an application with the Commission for approval to delay the submission of its system extension and customer connection policies review due to staffing resource constraints, as well as to review Terasen Gas (Whistler) Inc’s (“TGW”) policies in order to make specific recommendations for TGW in addition to TGI and TGVI. By Letter No. L-61-07, the Commission agreed that a submission of a consolidated application was desirable and directed Terasen to submit the application no later than July 31, 2007.

In the Application, Terasen states that TGW currently uses the MX test and connection policies that were used by TGVI prior to 2006, but that after further consideration and in light of the introduction of natural gas to the Whistler area during the latter half of 2008, it is of the view that it would be reasonable to retain TGW's current policy while TGW remains a propane system, and bring forth an application to review its Policies after the successful conversion of its system to natural gas (Exhibit B-1, Cover Letter).

Terasen sought Commission approval for the following changes to the Companies' system extension and connection policies:

- With respect to Connection Fees and Charges for Terasen Gas Inc. and Terasen Gas (Vancouver Island) Inc.:
 - to eliminate the Service Line Installation Fee ("SLIF") of \$215;
 - to implement a Service Line Cost Allowance ("SLCA") of \$1,535;
 - to cease using the Service Line Cost Allowance for new main extension applications; and
 - to increase the Service Line Cost Allowance to recognize the benefits of energy efficiency.

- With respect to the Main Extension Tests for Terasen Gas Inc. and Terasen Gas (Vancouver Island) Inc.:
 - to continue using the discounted cash flow main extension test;
 - to use distribution related costs to determine the System Improvement ("SI") charge for Terasen Gas (Vancouver Island) Inc.;
 - to use a Profitability Index ("PI") of 0.80 as the lower economic threshold for passing individual main extensions;
 - to use an aggregate Profitability Index of 1.10 as the threshold for all main extensions completed on an annual basis; and
 - to eliminate the Service Line Installation Fee and the Service Line Cost Allowance for new main extensions.

- With respect to the proposed Energy Usage and Efficiency Allowance for Terasen Gas Inc. and Terasen Gas (Vancouver Island) Inc.:
 - to approve the proposed allowances in the Main Extension Test and the Service Line Cost Allowance to encourage gas fired space and water heating, high efficient space and water heating, and high efficient space and water heating in Leadership in Energy and Environmental Design (“LEED™”) Building.

(Exhibit B-1, p. 30)

By Order No. G-90-07 dated August 13, 2007, the Commission determined that the Application would be examined through a written process and established a Regulatory Timetable (Exhibit A-1). Notices of intervention were received from British Columbia Hydro and Power Authority (“BC Hydro”); British Columbia Old Age Pensioners’ Organization et al. (“BCOAPO”); and the Ministry of Energy, Mines and Petroleum Resources (“MEMPR”).

Information Requests were filed with the Companies as follows:

Filed by		Date filed	Date responded to
Commission	IR 1	August 29, 2007	September 18, 2007 September 24, 2007
Commission	IR 2	September 27, 2007	October 2, 2007
BC Hydro	IR 1	September 6, 2007	September 18, 2007
BC Hydro	IR 2	September 26, 2007	October 1, 2007
BCOAPO	IR 1	September 7, 2007	September 18, 2007
MEMPR	IR 1	September 26, 2007	October 1, 2007

Terasen submitted Argument on October 29, 2007; BC Hydro and BCOAPO filed Arguments on November 2, 2007, to which Terasen submitted its Reply on November 9, 2007.

2.0 REGULATORY BACKGROUND

2.1 Background to present Application

In 1996 the Commission held a generic hearing into utility tests for approving system extensions. The purpose of the system extension hearing was to look broadly at the system extension policies of the Utilities to determine if opportunities existed to improve the fairness and efficiency of these policies and to make them more consistent with one another. On September 5, 1996 the Commission issued Order No. G-80 -96 in which the Commission concluded that it could issue voluntary guidelines and not directions with respect to utility system extension tests.

In the Decision the Commission explained the following critical terms:

- a *connection* refers to the physical facilities required to connect a customer's premises to service from a utility distribution main or line, generally located in a public street, lane or road, or in a utility right-of-way;
- a *utility system* includes all transmission and distribution system mains or lines other than customer connections;
- the term *system extensions* is a term used by both gas and electric utilities to refer to extensions to the gas or electricity distribution systems. Gas utilities also commonly refer to such system extensions as *main extensions* whereas electric utilities often refer simply to *extensions*;
- *expansion* of the gas or electricity distribution system includes system extensions but can also include growth in the number of customers arising from infill growth;
- *infill growth* refers to the addition of new customers who attach to the existing distribution system, and thus only require a connection from the street to their premises in order to receive service. Infill growth may require reinforcement of the system in order to provide adequate service, but does not require a system extension;
- reinforcements of the system required for providing adequate service are termed *system improvements*; and
- utilities generally have *connection policies* which include the conditions of connection and charges that apply to all new customers (Order No. G-80-96, p. 3).

In order to facilitate a degree of consistency and to assist utilities with regard to approaches it anticipated using in its reviews of system extensions or extension tests, the Commission provided the following guidelines in order to indicate the type and format of the information which it may require in its reviews:

1. The Commission recommends that evaluation of system extensions be based on a discounted cash flow evaluation method that includes, to the extent feasible, all incremental costs and benefits associated with a particular system extension over a time period long enough to consider the full impact of the extension. The Commission also recommends that, as a general principle, the costs of system extensions be allocated to those customers who cause them.
2. The Commission recommends that the Utilities evaluate system extensions both from a social perspective, which applies a social discount rate, and a utility perspective, which applies a discount rate based on each utility's cost of capital.
3. The Commission recommends that Utilities submit extension tests or information that analyzes system extensions on a disaggregated basis. However, where the benefits of aggregation exceed the costs as may be the case for situations involving routine, short extensions, the Commission will consider Utility proposals for dealing with such situations. The Commission recommends that these proposals be based on the incremental cost of extending the system and adding new customers.

For the purposes of annual statement filing, the Utilities initially may choose the level of aggregation they deem appropriate. The extent of aggregation will depend on the projects planned by each utility in a given year.

4. The Commission expects the Utilities to ensure that estimates are as accurate as possible without adding substantially to the administrative workload associated with estimating system extension costs. The Commission will rely on prudency reviews to examine the accuracy of system extension estimates.

5. The Commission recommends that the costs and benefits to be considered in the analysis of proposed system extensions include pre-construction estimates of the following:
 - (a) construction costs of the system extension;
 - (b) associated incremental system improvement costs, where these can be identified and assessed in a cost-effective manner;
 - (c) associated incremental operation and maintenance costs, where these can be identified and assessed in a cost-effective manner;
 - (d) net costs of connection (i.e., cost of connection less connection fees);
 - (e) net revenues from the system extension (i.e., customer payments less revenues to provide for commodity purchases and upstream transmission charges); and
 - (f) a reasonable consideration of externalities (for the social perspective evaluation).
6. The Commission recommends that Utility connection charges move toward recovery of the full costs of the service connection up to but not including the meter, and include incremental costs such as applicable system improvement costs. In addition, the Commission recommends that the Utilities come forward with options for connection fees that send an appropriate signal about the net social costs of less efficient energy use.
7. Until such time as the connection charge recovers all connection costs, the Commission recommends that the Utilities include the cost of the service connection and any revenues to be received from connection charges in their system extension test.
8. In cases where a customer contribution is required, the Commission anticipates that the cost would be borne by those customers benefiting from the system extension. In situations where the consideration of social costs may lead to contributions by other customers, the Commission will want to review the matter.

9. Alternative methods for collecting customer contributions are discussed in section 6.5 [of that Decision]. In the Commission's view, viable mechanisms would satisfy the following criteria:
- (a) introduce additional options for financing system extensions, thereby reducing the financing pressures on local government (i.e., the use of local taxation mechanisms);
 - (b) reduce the incentive for prospective customers to avoid the contribution charge by not applying for connection until after the system extension has been funded and constructed; thus the Commission recommends that, at a minimum, all customers who attach within the first five years to contribute to system extensions;
 - (c) ensure that those customers paying an initial contribution are reimbursed as additional customers connect, at least for a reasonable initial period; and
 - (d) minimize risk to the utility and its ratepayers while avoiding undue administrative burden, perhaps by including mechanisms such as deferral accounts or 'deadbands' within which no refund would be required.
10. If a community application for a system extension is close to break-even with respect to the financial cost test, the utility may be required to justify the extension with a preliminary comparative analysis of all feasible alternatives for meeting the community's energy service needs. This analysis would include recognition of significant social or environmental impacts associated with each alternative. The utility can either file this information voluntarily with its annual statement or expect to file it as part of a CPCN application, should a CPCN be required for the project.

(Order No. G-80-96, pp. 31-3)

2.2 Current Customer Connection Fees and Charges

Terasen states that TGI's current customer connection fees and charges have been in place since January 1, 1997 following the application of BC Gas Utility Ltd. (TGI's predecessor company) for approval of its SLCA proposal. In its Decision dated October 7, 1996 issued concurrently with Order No. G-104-96, the Commission approved TGI's submission to set a SLCA at \$1,100 and also directed TGI to implement a flat charge of \$300 inclusive of the existing \$85 administrative charge

for all new services to residential and commercial customers. In accordance with the Decision, TGI subsequently filed amendments to its Gas Tariff to establish:

- A customer Application Fee of \$85;
- A SLIF of \$215 representing the minimum customer contribution per service line, and
- A SLCA of \$1,100 representing the cap on service line costs over which the customer must make a contribution.

Terasen states that TGVI adopted TGI's customer connection policies effective January 1, 2006 following Commission Order No. G-126-05, which approved the negotiated settlement reached by TGVI regarding its June 2005 Application for Approval of Forecast Rates and Revenue Requirements for Years 2006 and 2007. Since that time TGVI has used the same MX test methodology as is used for TGI, based on TGVI inputs, and also adopted the SLCA of \$1,100, the SLIF of \$215 and the customer Application Fee of \$85 (Exhibit B-1, pp. 10-11).

Terasen states that the current SLCA was determined in 1996 by applying an MX test as a proxy for new residential customer connections to determine a target service line cost. Actual service line cost information was then reviewed to determine the maximum amount or cut-off point that would result in the average service line cost equal to the target cost. The cost of a main used in the test was based on TGI's then average cost of \$516 per new customer service. A target service line cost that would support a PI of 1.0 was then determined to be \$475 based on average consumption of 130 GJ per annum. The costs of all new service line connections completed in the period from January to September in 1996 resulted in an actual average cost of \$659. The 1996 service line costs were then evaluated further to determine the maximum allowance that would result in reducing the average service line cost equal to the target cost of \$475. The resulting maximum allowance was determined to be \$1,100. These parameters are summarized as follows:

1996 Data	Per Customer Service
Average Consumption	123 GJ per annum
Average Main Cost	\$516
Target Service Line Cost	\$475
Average Service Line Cost	\$659
Maximum Allowance	\$1,100

Terasen states that, based on the cost data related to 1996 service line installations, the proposed allowance of \$1,100 would have required 13 percent of new customers to pay contributions and that TGI submitted at that time that this allowance presented a fair balance toward offsetting high service line costs and reducing the operating and administrative costs such as those required for preparing individual cost estimates and processing of contributions (Exhibit B-1, pp. 11-12).

By Order No. G-104-96, the Commission accepted the methodology used by TGI and approved TGI's application to set a SLCA at a maximum of \$1,100 effective January 1, 1997. In addition, however, the Commission also determined that all customers would be required to make a minimum connection fee of \$300, inclusive of the \$85 Application Fee, regardless of the actual installation costs. The Company subsequently retained the \$85 Application Fee and established the SLIF of \$215 as the minimum contribution by customers toward the cost of service line connection.

Since the determination of the SLCA was calculated using the MX test on a proxy customer and included an average cost for a main, Terasen observes that TGI had proposed that the SLCA value be set at \$1,100 in 1996 without consideration of a minimum contribution of \$215. The net effect of the SLCA and the SLIF is that TGI's maximum investment toward service line installation costs is limited to \$885 (\$1,100 less \$215) per new customer installation. Terasen submits that the intent of the SLCA calculation was to determine the maximum investment that it could make without unduly impacting existing customers. Therefore, if a minimum contribution is required, the SLCA should be increased. For example, if the maximum investment is determined to be \$1,100 and a minimum customer contribution of \$215 is required then the SLCA could be increased to \$1,315. In addition, Terasen submits that the MX test used to determine the SLCA included the average cost of a main on a per customer service basis, so that, in the case of a customer connecting to existing main, by

determining the maximum allowance based on setting the PI to 1.0, this customer is implicitly also contributing to the cost of the existing main in addition to the direct contribution represented by the SLIF of \$215. Finally, in the case of the new main extensions, the MX test already incorporates the expected cost of the new main extension facilities as well as the service line costs in order to determine whether a customer contribution is required. Therefore, applying the SLCA in new main extensions could result in a requirement for a contribution even if the overall MX test results in a PI significantly greater than 1.0 (Exhibit B-1, pp. 10-11).

2.3 Current Main Extension Test

Terasen states that TGI and TGVI currently use the same discounted cash flow test to evaluate main extensions, however the inputs for the tests vary between each utility. The TGI test was first approved by Commission Order No. G-104-96. TGVI adopted TGI's customer connection policies beginning January 1, 2006 following Commission Order No. G-126-05. The TGI/TGVI MX test is a twenty year discounted cash flow ("DCF") analysis which compares the present value ("PV") of cash inflows to the PV of the cash outflows from a proposed system extension. The cash inflows of the MX test are the revenues from rates and fees paid by customers served by the main extension. The revenues used in the test are delivery margin revenues and do not include commodity costs or midstream charges. The cash outflows are the estimated costs for TGI/TGVI to build and operate the extension including capital costs for materials and installation of the main, service line and meter, ongoing operating and maintenance costs and an allowance for system improvement costs.

Terasen states that it uses the MX test to determine an extension's PI that represents a ratio of the PV of expected revenues to the PV of expected costs, and explains that a PI of 1.0 or greater means that the expected PV of the inflows equals or exceeds the PV of the outflows [i.e. the Net Present Value ("NPV")] equals or is greater than zero) and the system extension can proceed without the need for a customer contribution. If the PI is less than 1.0, a contribution in aid of construction may be required to make up the shortfall in order that the system extension can be built without negative economic impact to its existing customers (Exhibit B-1, pp. 18-19).

Terasen sets out the following parameters currently used in the 20 year discounted cash flow main extension test by the Companies:

Revenue		
	<i>Consumption Estimates</i>	From Residential End User Study
	<i>Revenue (based upon Consumption)</i>	Specific to each utility and Rate Class. Revenues are for distribution margin only and do not include the cost of commodity
	<i>Application Fee</i>	\$85
Capital Costs		
	<i>Installation Costs</i>	Direct Capital Cost for the Main Extension, Service Line and Meters/Regulators. Based upon geographical costing model.
	<i>Overhead Rate</i>	Incremental indirect capital costs – currently 32%.
	<i>Service Line Installation Fee</i>	\$215
Incremental Operating Costs and Expenses		
	<i>Operation & Maintenance</i>	Yearly incremental O&M by Rate class
	<i>Property Tax- 1% in Lieu of General Municipal Taxes</i>	1% of gross revenues (including commodity costs)
	<i>Property Tax – General, School and Other</i>	2% of assessed value of mains and services
	<i>System Improvements</i>	Currently \$0.35/GJ for TGI (Rates 1 and 2), \$0.50/GJ for TGVI
	<i>Income Taxes</i>	Combined federal and provincial corporate income tax rate (including surcharges and/or capital taxes, if applicable.) Capital Cost Allowance – as per applicable CCA rates
Other Factors		
	<i>Discount Rate</i>	Incremental weighted average cost of capital (real, after-tax)

Terasen states that with the exception of SI charges, the input factors listed above are reviewed on a regular basis, in most cases annually, and updated as appropriate (Exhibit B-1, pp. 21-22).

2.4 Rationale for the Proposed Changes

Terasen states that the traditional regulatory approach to reviewing connection policies is similar to that of cost of service methodology and that system extension and connection tests and policies should:

- promote fair and equitable treatment of customers and avoid undue discrimination;
- send proper price signals;
- be simple and easy to understand and implement; and
- promote economic efficiency.

(Exhibit B-1, p. 3)

Terasen sets out its specific objectives in this Application as follows:

- to signal better value for customers wishing to attach to the system;
- to ensure that the system extension test and policies measure the right factors, be simple to understand and administer with results that send the appropriate economic signal to the customer;
- to encourage energy conservation through the test and attachment policies; and
- to encourage the “right fuel” choice, having regard to Terasen’s belief that natural gas is an appropriate fuel for space and water heating applications and that the connection policies and tests should send the appropriate signal to customers for these energy uses.

(Exhibit B-1, p. 4)

Terasen examines the market conditions that drive consumer fuel choice and states that they have significantly changed since 1997 when its current customer connection and system extension policies were put in place, with some of the more significant changes including:

- commodity pricing, where the price differential between gas and electricity has narrowed and has eroded much of the traditional operating cost advantage of natural gas. Terasen believes that market-based pricing of natural gas compared to the cost-based pricing of electricity from Heritage assets has created a misconception among many consumers and builders that natural gas space and water heating systems are now more expensive to operate than their electric equivalent;
- a number of technological and regulatory code changes that directly affect the market share of natural gas, such as the requirement that new buildings use high efficiency furnaces, which, due to the venting requirements of high efficiency furnaces, also requires a high efficient water heater be installed. This additional cost is creating additional barriers to connect to natural gas and Terasen therefore needs to ensure that customers do not pay higher connection fees as a result of pursuing energy efficiency measures;
- the housing market, where developers continue to be the decision makers for energy choice with their decisions being often driven by profit for the developer rather than the long term operating costs and benefits for the ultimate customer, and where potential buyers are not making energy choice a priority in their buying decision, due to the robust housing market; rapid price increases in new housing stock; and the reduced price advantage of natural gas; and
- the market shift to multi-family dwellings and condominium apartments, which are increasingly being built with electric baseboard heating systems, again due to the low relative up-front capital cost, compounded by the relatively small operating cost impact due to the smaller floor spaces.

Terasen states that “The cumulative effect of these changes in the market place is that customers and developers are making sub-optimal decisions both from a cost and a societal perspective (as presented through the BC Government’s 2007 Energy Plan (“2007 Energy Plan”)). It is the belief of the Companies that in order to send the appropriate price signals, mitigate these impacts and ensure that the right decisions are made, a reduction in the upfront connection costs is appropriate and should be made at this time” (Exhibit B-1, pp. 8-9).

Terasen states that as a result of the current economic climate, and specifically the release of the 2007 Energy Plan, the connection and attachment policies should help meet societal and governmental policy and objectives, including promoting energy efficiency and conservation and also encourage the optimal consumer energy mix.

Terasen describes the 2007 Energy Plan as “a made in BC solution to the common global challenge of ensuring a secure, reliable supply of affordable energy in an environmentally responsible way”. Terasen notes that the document outlines 55 policy actions to help the Province achieve this goal, and that the Companies support the 2007 Energy Plan. Terasen identifies the following policy actions where achievement of the 2007 Energy Plan’s objectives will be dependent on changes in the approach to customer connection and system extension policies for both gas and electric utilities:

- Policy Action #2, states “Ensure a coordinated approach to conservation and efficiency is actively pursued in British Columbia”. This action further states that “some programs, such as targeting household space and water heating, may not be justified on the basis of either electricity savings or gas savings alone. However, a coordinated effort may be cost-effective”;
- Policy Action #3 “Encourage[s] utilities to pursue cost effective and competitive demand side management opportunities”. The action further states that “Energy efficiency is a critical piece of all BC utility resource plans”;
- Policy Action # 4 “Explore with B.C. utilities new rate structures that encourage energy efficiency and conservation”. The action further states that utilities are encouraged to “explore, develop and propose to the Commission additional innovative rate designs that encourage efficiency [and include] tariffs focused on promoting energy efficient new construction ...”; and
- Policy Action # 24 states, “A policy action of The BC Energy Plan is to review the BC Utilities Commission’s role in considering social, environmental and economic costs and benefits as a part of its regulatory framework”.

Terasen believes that the changes it requests in this Application are consistent with these 2007 Energy Plan policy actions (Exhibit B-1, pp. 3-4).

2.5 Customer Impact

Terasen states that the impact of its proposed changes on its net additions to its plant in service and revenue requirements will be as follows:

(\$000)	2008	2009	2010
Net Additions To Plant			
TGI			
SLIF change	2,535	2,440	2,400
SLCA change	1,105	1,105	1,105
TGVI			
SLIF change	785	775	775
SLCA change	525	525	525
TOTAL	4,950	4,845	4,805
Incremental Revenue Requirements			
TGI	124	489	841
TGVI	42	169	294
TOTAL	166	658	1,135

(Source: Exhibit B-5, BCOAPO 1.3.2)

Terasen states that the impact on a GJ of gas would be less than one cent per GJ in the case of TGI and zero in the case of TGVI as a result of that utility's rate setting mechanisms (Exhibit B-5, BCOAPO 1.3.2).

Terasen states that its calculations of the impact of eliminating the SLIF on its 2007-2011 revenue requirements do not attempt to model the benefits of any increase in customer attachments that may arise from eliminating the SLIF and other modifications to the system extension and connection policies sought in the Application. Terasen notes that, while its calculations indicate revenue requirements will increase in the future "it is important to recognize that customers being added to the system through new main extensions are more than paying for their incremental costs as indicated by MX PIs well in excess of 1.0 on average" (Exhibit B-9, BCUC 2.36.1).

3.0 CONNECTION FEES AND CHARGES

Terasen proposes that for new customer connections to existing mains:

- the minimum contribution or SLIF of \$215 be eliminated;
- the SLCA be based on a maximum investment from the utility of \$1,535 for both TGI and TGVI. For example, if it is determined that the SLIF is eliminated the SLCA would be equal to \$1,535. On the other hand if it is determined that the SLIF should remain at \$215, the proposed SLCA is \$1,750; and
- additional allowances should be made to the SLCA to recognize the benefits of energy efficiency measures.

(Exhibit B-1, p. 18)

3.1 Application to both TGI and TGVI

Terasen states that although TGVI and TGI currently have different rate structures and customer consumption patterns, applying the same SLCA across both service areas would have the benefit of being easier to administer and to explain to customers and developers. From the customer's perspective, it would also provide similar price signals and provide equal opportunity to new customers regardless of location, and that the respective data for TGI and TGVI demonstrate that a maximum allowance of \$1,535 would recognize the cost differences and changes in customer consumption patterns being experienced at each utility. In addition, the application of the same SLCA will reduce the administrative costs associated with determining new customer connections and, if the SLCA was set at \$1,535, would require contributions from 19 percent and 36 percent of TGI and TGVI's new connections respectively (Exhibit B-1, p. 17).

Terasen notes that TGVI's Negotiated Settlement approved by Commission Order No. G-126-05 states at section 13 that "TGVI also proposed to adopt TGI customer connection policies commencing in 2006. This proposal is accepted." TGVI therefore changed its SLCA to match that of TGI which is currently \$1,100 for an individual premise, although that does not take into consideration TGVI's individual cost structure.

Terasen states that, in this Application, both utilities should use the same methodology when it does not lead to greater complication or difficulty. For the purpose of the MX test, the parameters within the test are specific to each utility. As part of this Application the Companies propose the continuation of the current methodology, updated as appropriate, and including different threshold levels, since they believe it is in the interest of both utilities' customers to ensure that the test is simple and that having a common SLCA will result in less customer confusion than if the SLCA's were different (Exhibit B-3, BCUC 1.31.1.2).

None of the Intervenors comment on Terasen's proposal.

Commission Determination

The Commission Panel approves Terasen's proposal to apply the same SLCA across the service areas of both TGI and TGVI.

3.2 Service Line Installation Fee

In proposing to eliminate the minimum contribution or SLIF of \$215, Terasen submits that the SLIF is a barrier to customer connections, the importance of which is magnified in the current competitive market place, where developers continue to be the decision makers for energy choice and paid 93 percent of the connection charges. The SLIF increases the cost to attach to the gas distribution system and therefore discourages developers from choosing natural gas as an energy source, as the SLIF represents a cost that must be paid no matter what the economic justification of the project.

Terasen points out those new customers who are not on main extensions (infill attachments) are currently required to pay the \$85 Application Fee; the \$215 SLIF; and to be subject to the service line cost allowance. Terasen submits that it incurs no main extension costs for these infill customers and that the only costs it incurs in attaching them are the administrative costs associated with the processing of the new account information (covered by the \$85 Application Fee) and the capital costs associated with the service line and the meter. The SLCA is intended to determine what costs

for a service line can be supported by the revenues expected from a new customer, and all costs associated with connecting new customers (including infill customers) are factored into the calculation of the SLCA. Terasen submits that for infill customers there are no connection-related costs that are not taken into account before consideration of the SLIF, and therefore there are no costs that this charge is designed to cover. For new customers on main extensions all connection and extension-related costs are taken into account in the application fee and the MX test, and therefore there are no costs for the SLIF to cover (Terasen Argument, para. 24).

Terasen notes that in its Decision respecting Order No. G-104-96 the Commission concluded that a connection fee be implemented so that customers “more fully contribute to the cost of the service line”. Terasen submits that, as new customers are already fully contributing to the cost of the service line through the determination of the SLCA (and the contribution of costs above the SLCA), or through an MX test, the SLIF is at worst a cost barrier, and at least an over contribution by a new customer. “The unintended effect of the SLIF is either that economic customers are charged a fee and as such are discouraged from attaching to the system or that new economic customers are over contributing. If the SLIF results in a customer not attaching, existing customers will not benefit from the attachment of an economic customer” (Terasen Argument, para. 25).

BCOAPO supports the elimination of the SLIF (BCOAPO Argument, p. 2).

BC Hydro submits that under the Commission’s guidelines all existing BC Hydro and Terasen customers have paid for their service connection and that past and present generations of customers should be treated consistently unless there is some cost causation reason for doing otherwise. BC Hydro submits that it would be “in the interests of inter-generational equity and that it would maintain consistent treatment of customers of both BC Hydro and Terasen to continue the current practice of requiring new customers to pay for their service connections,” and submits that the SLIF should not be eliminated (BC Hydro Argument, pp. 1-2).

In Reply, Terasen submits that BC Hydro does not dispute that the SLIF is a cost barrier or results in over-contribution by a new customer but rather submits that the SLIF should be retained on the basis that past and present generations of customers should be treated similarly, saying that it would be in

the interests of inter-generational equity to continue the current practice. Terasen submits that “In other words it is the position of BC Hydro that even if a charge to customers is unwarranted and not supported by an analysis of the costs of the utility, the charge should continue simply because customers in the past have been required to pay that charge” (Terasen Reply, para. 12-13).

Terasen considers “the interests of intergenerational equity”, citing the National Energy Board (“NEB”) Pipeline Tolls and Tariffs definition of intergenerational equity as “Inequity occurring when a generation of customers does not pay, at the expense of another generation, its fair share of the costs incurred by the utility in providing service”. Terasen submits that preserving intergenerational equity does not mean that past and present customers be treated in exactly the same manner and that the evidence in this proceeding indicates that new customers being connected to the TGI and TGVI systems are paying more than the costs associated with their addition to the system (Terasen Reply, para. 15).

Commission Determination

The Commission Panel is of the opinion that the primary purpose of extension and connection policies is to promote fair and equitable treatment of customers and, more specifically, to ensure that existing customers are not adversely affected by the addition of a new customer or customers. The Commission Panel agrees with Terasen that in the case of new infill customers, the existence of the SLCA limits the cost of the service connection to an amount that does not adversely affect existing customers. In the case of customers who are on new main extensions, the Commission Panel accepts Terasen’s submission that both extension and connection-related costs will be covered in the MX test, and that existing customers are protected from harm without the SLIF. Therefore, the SLIF is redundant and should be eliminated. The Commission Panel does not agree with BC Hydro’s submission that the SLIF remain in place in the interests of intergenerational equity and finds that the public interest will not be served by retaining the SLIF and approves Terasen’s proposal to eliminate it both from the SLCA and the MX test.

3.3 Service Line Cost Allowance

Terasen describes how TGI's SLCA was calculated in 1996, saying that the target service line cost was arrived at by running the main extension test for one customer with typical yearly consumption. The Target Service Line Cost was calculated by setting the cost of the main to the prevailing average amount in 1996 (i.e. \$516) and iterating the service line cost until the PI ratio reached 1.0 (or the NPV was zero). The Target Service Line that resulted from the foregoing step using 1996 data in the SLCA Application was \$475. The prevailing average cost of service lines at that time was \$659. The final step therefore in determining the SLCA was to take the frequency distribution of service line costs and set the upper limit at the level that would reduce the average service line cost to the Target Service Line Cost. The upper limit in 1996 for the cost of service lines that reduced the average service line cost to the target level of \$475 was \$1,100. This series of calculations formed the basis for setting the SLCA at \$1,100 in 1996 (Exhibit B-5, BCOAPO 1.5.1).

Terasen states that a review was performed of TGI's 2006 actual cost data to determine the maximum allowance, or SLCA, based on the same methodology used in the 1996 application, by applying the current MX test to a single proxy customer based on current inputs and 2006 normalized consumption of a residential customer of 96.9 GJ per year. In 2006 TGI's average direct cost of new main installation per customer service was \$620, which, when input into the current MX test, resulted in a target service line cost of \$1,170 to provide a PI of 1.0. The average cost per service line prior to the consideration of any contributions of all 2006 service line costs for Rate 1 and Rate 2 Customers was \$1,161. Since the average cost is less than the target rate of \$1,170, none of the 2006 service lines would have to be excluded to bring the average cost down to the target level, and thus the maximum allowance based on this set of data would be in excess of \$3,500 (Exhibit B-1, p. 14).

Terasen states that this calculation of the maximum allowance was based on average normalized consumption across TGI's residential customer base, but that since 1996, TGI has experienced a decline in average annual usage rate which is expected to continue as customers upgrade to higher efficiency appliances and also as a result of a higher proportion of multi family homes associated

with new customer connections. In order to address the decline in annual use rates, sensitivity analyses were also performed assuming average consumption of 90 GJ per year and of 80 GJ per year, which resulted in a maximum allowance of \$2,925 and \$1,535 respectively (Exhibit B-1, p. 14).

TGI Customer Service Line Maximum Cost Allowance

Average Annual Consumption GJ	96.9	90	80
Average Main Cost	\$620	\$620	\$620
Target Service Line Cost	\$1,181	\$1,064	\$910
Average Service Line Cost	\$1,161	\$1,161	\$1,161
Maximum Allowance	>\$3,500	\$2,925	\$1,535
% of Customers > Maximum	0%	8%	19%

(Source: Exhibit B-1, p. 15)

In Argument Terasen observes that the calculations supporting the request in the Application to increase the SLCA to \$1,535 are based on the conservative assumptions for TGI of an average residential consumption of 80 GJ per year, which is well below the normalized 2006 average residential consumption of 96.9 GJ per year (Terasen Argument, para. 32).

Terasen states that TGVI's 2006 data were also evaluated to determine the maximum allowance by applying the same methodology based on TGVI's inputs and average costs and that a MX test was applied to a proxy customer based on the 2006 average cost of new main per customer service of \$1,086 and the normalized 2006 average consumption for a residential customer of 60.2 GJ per year. The target service line cost was determined to be \$1,072 which when compared to the 2006 service line costs yielded a maximum allowance of \$1,473 per customer (Exhibit B-1, p. 15)

Terasen states that TGVI's average annual use per customer is increasing as its new customers have higher consumption than the existing average, and that it performed two sensitivity analyses: the first assuming that the consumption of new customers is 10 percent greater than the current average across the customer base; and the second to determine the consumption level that would support a maximum allowance of \$1,535 to match TGI's proposed maximum allowance, as shown in the following table:

TGVI Customer Service Line Maximum Cost Allowance

Average Annual Consumption GJ	60.2	66	61
Average Main Cost	\$1,086	\$1,086	\$1,086
Target Service Line Cost	\$1,072	\$1,250	\$1,093
Average Service Line Cost	\$1,573	\$1,573	\$1,573
Maximum Allowance	\$1,473	\$2,133	\$1,535
% of Customers > Maximum	35%	21%	36%

(Exhibit B-1, pp. 14-15)

3.4 Duplexes

Terasen discusses the SLCA for duplexes stating that a SLCA of \$1,985 was approved by the Commission Order No. G-19-99 based on TGI's February 1, 1999 application and that the \$1,985 was based on two times the \$1,100 SLCA less the \$215 SLIF. Since a duplex involved attaching two accounts on a single service line the \$1,985 was based on allowing twice the net service line investment as for a typical single family installation.

Terasen states that it was an oversight that updating the SLCA for duplexes was not addressed in the Application and that both TGI and TGVI propose that the same logic be applied as that approved in the February 1, 1999 Application. If the proposal to eliminate the SLIF is approved, Terasen's proposed SLCA for duplexes is \$3,070, but if the \$215 SLIF is not eliminated Terasen's proposed SLCA for duplexes is \$3,285 (Exhibit B-3, BCUC 1.21.1).

3.5 Uneconomic Customers

Terasen discusses "uneconomic customers" and observes that it is only for infill customers (i.e., customers connecting to existing mains for which an economic test is not conducted) that there is the possibility of uneconomic customers being attached, and that, for TGI, the frequency of infill customers is very low, accounting for only about 3 percent of new customer attachments, while for TGVI the percentage of infill customers has been declining to approximately 18 percent of new customer attachments in 2006. To be uneconomic an infill customer must also be a low volume gas user. Terasen submits that the percentage of customers using less than 20 GJ per year in 2006 was

3.5 percent for TGI and 12 percent for TGVI in 2006, which suggests that if all these potentially low volume infill customers were uneconomic, they would only represent 0.11 percent (i.e. 3% of 3.5%) of new customer attachments at TGI and 2.1 percent (i.e. 12% of 18%) of all new attachments at TGVI.

Terasen also submits that low consumption per customer tends to occur more frequently in multi-family developments where the capital costs per customer also tend to be lower and that for infill service lines to single family dwellings, customers are unlikely to go to the considerable expense involved in connecting to the system for a very small load.

Terasen submits that the SLCA takes into consideration all customers' average volume and costs, as such there will be many infill customers who attach to the system whose volumes are high, or costs to connect are low, or both. The connection of these customers is taken into consideration when calculating the SLCA (Terasen Argument, para. 34-6).

3.6 Pre-1997 Policies

In response to a Commission IR with regard to TGI's predecessor company's policies prior to the issue of its System Extension Guidelines (the "SET Guidelines") in September 1996, Terasen states that its predecessor company used to install up to 20 metres of service line measured from the property line to the meter at no charge and that extra charges of \$11 per metre were applied to service line lengths in excess of 20 meters, as well as for frost, concrete and pavement breaking (Exhibit B-3, BCUC 1.1.3). Terasen states that it is not appropriate to use the service line length provisions in other utility connection policies as a basis for the TGI and TGVI service line connection policies, and observes that service line installation costs vary depending on both the geographical location of the service line installation and the length of service line (Exhibit B-3, BCUC 1.1.3). Terasen addresses geographical location stating that major differences in the ease of service line installation exist throughout the service territory, with soil conditions in parts of the interior allowing for relatively easy service line installation, while West Vancouver has rock impeding installation, and much of the Lower Mainland has pavement and concrete that must be broken and replaced (Exhibit B-3, BCUC 1.1.4).

Terasen states that based on 2006 data, the average service line length for TGI is 20.4 metres, and for TGVI 17.3 metres, provides for illustrative purposes, data from which examples of the estimated cost of installing a 20 metre service line based on geographical location can be developed:

	Cost of a 20 Metre Service Line	Fixed Charge	Cost of Meter	Total Installation Cost
Vancouver	\$720	\$326	\$325	\$1,371
Fraser Valley	\$520	\$575	\$325	\$1,420
Vancouver Island	\$620	\$277	\$245	\$1,142

(Source: Exhibit B-3, BCUC 1.4)

3.7 Forecasting Service Line Cost Data

In response to a Commission IR the Companies compare the actual costs incurred to install service lines with actual costs incurred between April and December 2006. The following table sets out the results:

Service Line Installation Costs

	Forecast (\$000)	Actual (\$000)	Variance (\$000)	Variance (%)
TGI	\$5,918	\$7,910	-\$1,992	-34%
TGVI	\$1,817	\$3,365	-\$1,548	-85%

(Exhibit B-9, BCUC 2.38.5.1)

Terasen ascribes the difference between forecast and actual costs is due to the omission of indirect cost in the in the Geographic Code (“Geo-code”) pricing model used to determine the forecast service line costs and increases in install contractor pricing effective June 1, 2006 (Exhibit B-9, BCUC 2 38.5), and states that, in order improve its cost estimates, it proposes to review and update the Geo-code prices in the MX test at the beginning of each year. When the Geo-code prices are updated, historical costs and a forecast of future costs will be used to determine the appropriate Geo-code price for each area (Exhibit B-9, BCUC 2.38.5.1).

None of the Intervenors challenge Terasen’s proposed amount of the SLCA.

Commission Determination

The Commission Panel is not persuaded that a maximum allowance of more than \$3,500 per infill installation based on TGI's average consumption of 96.9 GJ per year is realistic. The Commission Panel notes that the Companies applied for a SLCA of \$1,535 and that this was not opposed by any Intervenor. The Commission Panel also notes that this amount is supported by consumption levels of 80 GJ per year for TGI and 61 GJ per year for TGVI. The Commission Panel notes that the application of TGI's pre-1997 methodology would also support the proposed amount of the SLCA which suggests to the Commission Panel that a SLCA in the amount of \$1,535 will not adversely affect existing customers.

The Commission Panel approves the SLCA of \$1,535 for single family dwellings and \$3,070 for duplexes as proposed by both TGI and TGVI.

The Commission Panel's directions to the Companies concerning forecasting costs of service line extensions are set out in Section 4 of these Reasons.

4.0 MAIN EXTENSION CUSTOMERS

Terasen proposes that for customers seeking mains extensions:

- to continue using the discounted cash flow main extension test;
- to use distribution related costs to determine the System Improvement Charge for Terasen Gas (Vancouver Island) Inc.;
- to use a Profitability Index of 0.80 as the lower economic threshold for passing individual main extensions;
- to use an aggregate Profitability Index of 1.10 as the threshold for all main extensions completed on an annual basis; and
- to eliminate the Service Line Installation Fee and the Service Line Cost Allowance for new main extensions.

(Exhibit B-1, p. 30)

4.1 MX Test

Terasen states that the MX test develops a PI which is the ratio of the discounted present value of all the forecast net cash inflows over twenty years divided by the discounted present value of the capital costs of attaching customers in the first five years of the main extension. While there are many components factored into the calculation of this ratio, Terasen states the following formula provides a summary of the major components:

$$\text{P.I.} = \frac{\text{NPV (Delivery Margin + Connection Fees - O\&M-SI Charge - Property Tax - Income Tax)}}{\text{NPV (Mains, Services and Meter Costs)}}$$

(Exhibit B-5, BCOAPO 1.5.1).

Terasen sets out the current components of the TGI and TGVI calculations as follows:

Component	TGI	TGVI
Delivery Margin – per year	\$131.28	\$126.00
Additional Margin – per GJ	\$2.736	\$4.885
Application Fee	\$85.00	\$85.00
Incremental O&M (per customer year)	\$75.00	\$62.48
Property Tax		
-direct cost of mains	2.1%	1.9%
-in lieu - % of gross revenue	1.0%	1.0%
Income Tax rate	34.12%	34.12%
Capital Cost Allowance	4%	4%
Capital costs		
Direct cost of mains, services and meters	Estimated	Estimated
Overheads -% of direct costs	32%	32%
Discount Rate		
Incremental weighted average cost of capital (real, after tax)	4.45%	4.2%

(Source: Exhibit B-9, BCUC 2.35.2)

4.2 System Improvement Charge

Terasen states that the methodology used by TGI to calculate the SI charge was developed in 1994 and sought to allocate the costs for system improvements on the distribution system that result from increases in capacity from the addition of new customers by reviewing the forecast of system improvements and growth in peak day for a five year forecast period which is then converted to a per GJ amount. Terasen states that TGI's SI charge has been increased by inflation from its original calculation and is currently \$0.35/GJ., whereas TGVI has traditionally used a transmission SI based methodology. Prior to 2006 TGVI's SI charge included in its 15 year discounted revenue requirement MX test was \$0.50/GJ. The TGVI Negotiated Settlement, approved by Commission Order No. 161-06 and Reasons for Decision, determined that TGVI's SI charge should remain at \$0.50/GJ (Exhibit B-1, p. 22).

Terasen states that both TGVI and TGI calculated their SI charge using distribution five year growth and peak day forecasts for each utility consistent with the original TGI methodology, and that the resultant distribution SI for TGI was \$0.16/GJ and \$0.151/GJ for TGVI. Terasen believes that a consistent approach across both TGI and TGVI would be preferential as it would remove

unnecessary complexity from the MX test, and that a distribution derived SI charge is consistent with this philosophy.

Other than the specific changes sought in respect to System Improvements in this Application, Terasen states that it intends to continue the same process of regular review and updating of the main extension test factors (Exhibit B-1, p. 22).

Terasen provides greater detail concerning its calculations stating that the approach is to use a five year forecast of system improvement costs and growth in peak day demand. The first step in the calculation is to divide all the system improvement costs by the growth in peak day to arrive at a cost per peak GJ added. The cost per peak GJ is then converted into a charge that is applied to all of the GJs consumed on an annual basis. The conversion from peak GJ to GJ consumed annually is carried out by converting the peak GJ figure into annual consumption by dividing the peak GJ by (365 days * load factor). The capital carrying cost is used to arrive at a charge applied to all GJs consumed throughout the analysis period (currently 20 years) (Exhibit B-3, BCUC 1.4.1).

In response to a Commission IR Terasen provides an estimate of a transmission SI charge for TGI and TGVI of \$0.181/GJ and \$0.406/GJ respectively, but states that it is based on inputs and methodology that would have to be further validated before it could be included as an input into Terasen's main extension tests, in the event that was deemed appropriate. When combined with the proposed distribution SI, TGI would have a SI charge of \$0.341/GJ while TGVI's SI charge would be \$0.557/GJ (Exhibit B-3, BCUC 1.4.5).

Terasen states that it based the transmission SI charges on:

- TGI: As per the 2006 TGI Resource Plan, there are two transmission expansion projects in the 20 yr period (2007 – 2026 inclusive). Both projects are in the Interior and are scheduled to be added in 2015: Okanagan Reinforcement Project for \$38.7 million and the Kitchener-B Compressor Unit addition for \$23.5 million. No transmission expansion projects in the Lower Mainland are included, as the Nichol – Coquitlam loop or portions thereof are not required if the Mt. Hayes LNG facility proceeds or if Burrard Thermal is retired in 2014 as currently anticipated by BC Hydro.

- TGVI: The only facility included for the core market is the Mt. Hayes LNG Facility. Since the primary justification of the LNG facility is avoided gas supply costs and the balance avoided transmission costs, the LNG facility has been split 88 percent gas supply and 12 percent transmission, and as a result 12 percent (\$25.7 million) of the LNG capital costs have been treated as a transmission system improvement in 2011.

Terasen states that the calculation of the transmission SI charge is analogous to the distribution calculation where increases in transmission capacity are allocated to consumption, except that the transmission costs are examined over a 20 year period due to the infrequent nature of these types of improvements. Terasen continues to be of the opinion that the accurate estimation of the cost and timing of large transmission system improvements is difficult and is subject to large swings driven at times by the decisions taken by large industrial customers and that misapplication of a transmission SI charge could prevent the attachment of otherwise economic customers which help to keep rates low for all ratepayers. Terasen recommends that transmission SI costs be recovered through rates rather than through an SI charge applied to new customers (Exhibit B-3, BCUC 1.4.5).

Between filing the above response and filing its Argument, Terasen reconsiders its position and submits that upon further consideration, it believes that it is preferable to include transmission SIs in the MX test. However, Terasen submits that using the methodology employed for the determination of the distribution SIs is not the best approach for the determination of transmission SIs, and, because of the infrequency of future transmission expansion projects, may send the wrong price signal to customers. Terasen further submits that there may also be situations where the transmission system in a certain area is under utilized due to declining volumes from energy efficiency measures or changes in industrial consumption, and that, in such circumstances, customer rates could increase on a per GJ basis in order to recover the costs associated with the transmission system. Terasen submits that it would be in the best interest of existing customers for new customers to be encouraged to attach to the system, since adding customers to the system in this area would cause rates per GJ to decrease, in which case the transmission SI charge should be negative rather than positive. The Companies submit that since they have not determined the methodology for a transmission SI, they propose to determine the appropriate transmission SI charge annually and include it in their MX tests (Terasen Argument, para. 50).

BCOAPO agrees that both positive and negative impacts on the transmission system may be visited on existing distribution customers, but submits that any proposed methodology for determining a transmission SI and its use in the MX test requires testing and regulatory approval prior to implementation (BCOAPO Argument, p. 2).

Commission Determination

The Commission Panel accepts the System Improvement Charge proposed by Terasen of \$0.16/GJ for TGI and \$0.151/GJ for TGVI.

The Commission Panel rejects Terasen's proposal that in future the Companies include a transmission SI charge in their MX tests. The Commission Panel is not convinced that it is fair to ask new customers to pay a small portion of a transmission capital expenditure, which has not yet been the subject of a Certificate of Public Convenience and Necessity Application ("CPCN") or, in the case of TGVI's Mt. Hayes LNG Storage Facility CPCN Application, the subject of a Commission decision or cost allocation determination.

The Commission Panel notes that the Commission recently approved BC Hydro's system extension test guidelines whereby transmission system improvements would only be considered for new customers attaching with a load of 500 kVa or more.

4.3 Profitability Index Results

Terasen proposes to change the threshold for passing the MX test from a PI of 1.0 to a PI of 0.8 for individual main extensions. For example, if a MX test has a PI of 0.6, a customer will have to pay a contribution to reach the PI threshold of 0.8. Terasen states that this change will send appropriate market signals to customers attaching to the system, and ensure that there is a better balance of interests between new and existing customers.

Terasen proposes that each utility will have an aggregate annual MX target PI of 1.1, and that to achieve this target each utility proposes to carry out a random sampling of extension tests each year to determine if the aggregate PI is higher or lower than this level, and that if the annual aggregate PI was above or below 1.1, the individual threshold PI would be adjusted, on a go forward basis, in order to achieve the aggregate annual target PI of 1.1. Terasen states that the aggregated PI of 1.1 proposed in this Application is conceptually the same as the practice in Ontario, however it provides a 10 percent cushion to allow for unanticipated variations that may occur before the threshold PI for individual main extensions is adjusted (Exhibit B-1, pp. 25-6).

Terasen states that its 10% sample of 2006 TGI and TGVI main extensions resulted in a confidence interval of +/-11.8% for TGI and +/-17.5% for TGVI at a 95% confidence level (Exhibit B-3, BCUC 1.5.8).

Terasen states that, under the current test, each individual main extension must have a PI of 1.0 or above to be considered economic, while those that have a PI of less than one must pay a contribution sufficient such that the PI is equal to 1.0. Terasen states that its analysis suggests that the PI of all extensions when considered in aggregate is much higher than 1.0, and that, by requiring every MX test to have a PI equal to or above 1.0, on average new customers are paying more than their fair share of costs. Terasen states that if the Companies were to aggregate main extensions on an annual basis such that the aggregate PI was above 1.0, a better balance of interests between new and existing customers would occur. Terasen states that the aggregated or system-wide approach for the target PI is consistent with BC Hydro's proposed system extension test in its 2007 Rate Design Application and similar to the practice of gas utilities (such as Enbridge) in Ontario which employ a threshold PI of 0.8 for individual main extensions and must maintain a system-wide PI of 1.0 (Exhibit B-1, pp. 24-5). Terasen states that Enbridge calculates its annual PI based on a rolling 12-month cumulative net present value basis for the population of its main extensions, while Terasen proposes to calculate its PI annually based on a random sample of MX tests (Exhibit B-1, p. 25 and Appendix 1, p. 4).

Terasen states that changing the threshold PI to less than 1.0 for individual MX tests but on aggregate higher than 1.0 will simplify the process and send the appropriate signal to customers and that eliminating the SLIF and the removal of the SLCA will not harm existing customers; but that the changes will ensure that new customers are not simply paying a contribution when the net of the main extension costs and the service line costs result in the customer addition meeting the individual PI threshold (Exhibit B-1, p. 25).

Terasen includes a large sample of main extension projects which indicates an aggregate PI of 2.30 for 112 TGI projects and 1.83 for 55 TGVI MX projects (Exhibit B-1, Appendix 3, Schedule 5). Terasen also provides additional analysis of historical MX projects in comparing forecast and actual MX results for a sample of 26 TGI MX projects from 2004 or later and showing that the average PI of these projects was 1.51 on a forecast basis and 1.41 on an actual basis (Exhibit B-3, BCUC 1.8.1).

Terasen states that, on a review of main extensions installed from January to July 2007, TGI underestimated costs by 8 percent and TGVI underestimated costs by 24 percent (Exhibit B-3, BCUC 1.7.2). When TGVI's forecasted 2007 aggregate PI was recalculated to reflect a 24 percent increase in main direct costs and a 54 percent increase in service line costs, it decreased from 1.83 to 1.34 (Exhibit B-9, BCUC 2.39.2).

Terasen states that the Companies' MX tests include forecasts of customer consumption for the first 20 years, which are based on the 2002 Residential End Use Survey ("2002 REUS") and are the same for both TGI and TGVI, even though the 2002 REUS did not include TGVI data (Exhibit B-3, BCUC 1.12.1) and TGI's residential use rates are higher than TGVI residential use rates (Exhibit B-9, BCUC 2.40.3). Terasen states that its analysis of the first 30 TGI main extensions installed in 2005 demonstrates that first year actual normalized consumption (2005) was 82 percent of forecast; the second year (2006) actual normalized consumption was 103 percent of forecast; and the third year (2007) actual normalized consumption is 95 percent of forecast, but only contains six months of data (Exhibit B-3, BCUC 1.9.2). Terasen ascribes lower than forecast year first-year usage to the lag between the time the MX test is performed and the installation of the service, as well as to the lag between completion of the installation and achievement of normal usage patterns as consumption typically "ramps up" (Exhibit B-3, BCUC 1.9.3).

Terasen states that TGVI is unable to provide analysis of historical main extension performance based on the old main extension test and that records related to the TGVI main extension tests existed only in hardcopy format prior to the integration of TGVI into TGI's order processing system in 2006. When TGVI adopted TGI's main extension test in accordance with Commission Order No. G-126-05, it did not integrate any of its available hardcopy historical main extension data into the systems it currently uses (Exhibit B-3, BCUC 1.9.2).

Terasen submits that analyses of main extensions of the Companies indicate that main extension projects produce results on average that are well in excess of the current PI ratio threshold of 1.0, which demonstrates that overall the discounted revenues from the additional customers on new mains far exceeds the discounted costs associated with those new customers. Terasen submits that current customers receive a benefit from the attachment of new customers; however new customers are required to contribute more than their costs to attach to the system (Terasen Argument, para. 11).

Terasen submits that the material filed in respect of this Application demonstrates that the changes sought in the MX test are warranted. Terasen submits that the principle that underpins the MX test is that new main extensions should be economic, that is, the existing customers should not be exposed to an undue cost burden as a result of the expansion of the distribution system to attach new customers. Terasen submits that its existing policies and MX tests require new customers to contribute more than their costs to attach to the system; which causes existing customers to receive a substantial benefit from these new customers, and that the stringency of its existing policies imposes inappropriate barriers for new customers seeking to connect to the gas system, and that its proposed changes to the PI will address this shortcoming of the current MX tests. "A potential unintended consequence of high up front costs to connect to the system is that new customers may choose to not attach to the system. If this occurs then current customers will never receive the benefit from the attachment of the economic customers" (Terasen Argument, para. 12).

Terasen makes two requests in the Application regarding the PI and its use in the MX test going forward: i) each Company requests Commission approval to manage the overall PI of its new MX projects on an annual aggregate basis. Specifically the Companies propose to target an aggregated

PI of 1.1 for MX projects in any given year. The targeted aggregate PI of 1.1 is more conservative than requiring a PI of 1.0 and will therefore be able to accommodate unanticipated variances in either costs or consumption that may occur. The Companies propose to evaluate the aggregated PI of each utility on an annual basis using a random sample of main extension projects from that year (Terasen Argument, para. 13), and ii) the Companies seek approval to reduce the threshold PI for individual main extension projects to proceed without a customer contribution from the current required level of 1.0 to 0.8. Using a threshold PI of 0.8 for individual main extensions is expected to result in an overall aggregate PI of 1.1 or greater. The Companies also propose to adjust the threshold PI for individual main extensions from time to time based on the variations in the aggregated PI result above or below the target level of 1.1 (Terasen Argument, para. 13).

Terasen submits that with the proposed changes to the MX test and evaluation process, existing customers will continue to realize benefits, since the addition of new customers who on aggregate have a PI of 1.1 or greater ensures that existing customers will continue to realize benefits resulting from the addition of new customers, and that with the proposed aggregate PI of 1.1, new customers will be contributing to the system an amount marginally greater than the costs associated with attaching, but not so much that they may be discouraged from attaching (Terasen Argument, para. 13).

BCOAPO submits that Terasen's proposal to continue to use the MX methodology for mains extension customers "makes sense" and supports the regular, annual review of the input factors used in the test. BCOAPO notes that TGI's forecast PI exceeded the actual PI in a sample of post-2003 projects examined by TGI, and expresses concern that uneconomic customers could be attached if the forecast MX results are overly optimistic. It submits that ensuring that forecasts of costs and revenues that are inputs to the MX test are unbiased (i.e., on average correct) would allay this concern (BCOAPO Argument, p. 1).

BCOAPO also recognizes that the proposal to set an annual aggregate threshold for the PI of 1.1 also mitigates this concern, but states that the proposal to evaluate the aggregated PI by choosing a random sample of projects - rather than the population as a whole - introduces the potential for

sampling error, i.e., unintentionally drawing a sample that is not representative of the population. BCOAPO further submits that, since the proposal is to review the sample each year for each utility (adjusting the threshold PI on a go-forward basis so as to achieve the aggregate PI target of 1.1), there is the additional possibility that in any given year (before the sample is reviewed) a number of uneconomic customers could be attached: this would be mitigated, in effect, by setting a higher threshold for future customer attachment projects; conversely, if a group of super-economic attachments (e.g. $PI \gg 1.1$) were added in any given year, the following year less economic (or uneconomic) projects could be (or might have to be) added to lower the aggregate PI back down to 1.1 (BCOAPO Argument, p. 1).

BCOAPO submits that its concerns regarding forecast cost errors and sampling errors would be allayed if all the projects be reviewed annually on an actual (not forecast) MX cost basis with the aggregate target being to maintain the portfolio PI of 1.1, and suggests that if all the projects were reviewed in such a manner, the aggregate PI target could be reduced as long as it met or exceeded 1.0 (BCOAPO Argument, p. 2).

In Reply, Terasen states that “Due to the significant work that is involved in using the entire population of main extensions, the Companies propose to use only a sample of the main extensions completed to review in order to determine if the aggregate PI is above 1.1. The Companies will use actual capital costs of the main extension, not forecast costs, when calculating the aggregate PI. The results of the review would inform the capital cost inputs for the following year, as supported by BCOAPO, as well as lead to recalibrating the threshold PI for individual main extensions going forward. The Companies are in the planning stages to make modifications to the information systems will also enable the Companies to use the entire population of main extensions in a given year to determine the aggregate PI without significant manual involvement. However, at the present time, the Companies believe that a sample population will provide the best compromise between the costs associated with the administrative burden related to the amount of work involved and the accuracy of the result” (Terasen Reply, para. 7).

BCOAPO notes that the proposal to reduce the threshold PI to 0.8 for individual extensions implies that some extensions will necessarily have PIs in excess of 1.1 in order to achieve an aggregate average PI of 1.1. BCOAPO suggests that for projects with PIs of less than 1.0 (but at least 0.8), an alternative worthy of consideration would be to require a customer contribution sufficient to raise the PI to 1.0: this would decrease cross-subsidization by customers served by a project that had a $PI \geq 1.0$, while at the same time eliminate the need for the utility to add to rate base, thereby lowering the impact of the sub-economic extension on all other ratepayers (BCOAPO Argument, p. 2).

In Reply, Terasen submits that the suggestion of BCOAPO should not be accepted by the Commission, as it would result in a higher contribution requirement for new customers than Terasen's proposal. Terasen submits that "the only way to achieve an aggregate PI of 1.1 would be for many or most of the new customers on a main extension which has a PI above 1.1 to receive a payment or credit to connect to the system. This would be administratively impractical and would only serve to add confusion to customers already facing difficulty understanding the current policy". Terasen submits that its proposal to require an individual threshold PI of 0.80 will move the aggregate PI closer to 1.1 than the current level and will still result in new customers in aggregate paying more than the costs they add to the system, which will benefit existing customers but without requiring those new customers to contribute an amount that deters them from connecting to the system or results in them unduly subsidizing existing customers (Terasen Reply, para. 6).

Commission Determination

The Commission Panel notes that one of Terasen's stated objectives for system extensions tests and policies is to promote fair and equitable treatment of customers and avoid undue discrimination, and notes that Terasen is effectively broadening the scope of the policy to ensure that the addition of a full year's cohort of customers does not adversely affect the customers in existence at the beginning of that year. The Commission Panel finds such a proposal to be in the public interest and to conform with its Guidelines and approves the proposal to establish a new threshold PI of 0.80 for individual main extensions, and to establish an aggregate PI of 1.10 as the threshold for all main extensions completed on an annual basis.

So far as concerns the ongoing administration of the Companies main extension and service line policies the Commission Panel directs Terasen to update all Geo-codes and MX test input parameters at the beginning of each year. To determine the appropriate Geo-code for each area, both historical costs and a forecast of future costs will be used. Terasen is to provide the Commission with schedules comparing the existing and updated Geo-codes and MX test input parameters. Given that the 2002 REUS does not include TGVI data, the REUS use per appliance should not be used to estimate TGVI consumption, and the Commission Panel directs Terasen i) to update the consumption estimates in the TGVI MX test to reflect TGVI use per appliance; and ii) to reflect in the Companies' MX tests their experience of consumption "ramp-up" in the early months of service.

The Commission Panel directs the Companies to file with the Commission on an annual basis, within 90 days of calendar year end, a Main Extension Report including the following:

- a review of a random sampling of MX test results representing a confidence interval of +/-12 percent at a 95 percent confidence level and the five highest cost main extensions to determine if the aggregate PI thresholds need to be adjusted on a go forward basis in order to achieve the aggregate PI of 1.1. The review is to include a comparison of forecast and actual costs; consumption; and PI for the first five years of main extensions in the sample;
- a concise explanation of the random sampling methodology used ; and
- a comparison of the forecast and actual cost for all service line and main extension installations.

4.4 SLCA and SLIF for New Mains Extensions

Terasen proposes to change the process for determining service line costs as part of a main extension test. When a new main extension is required, Terasen proposes that all the capital costs required to provide service to the customer (main extension, service line and meter) will be input into the MX test and a distinction between service line and main will not be made, therefore eliminating the requirement for the SLCA. Terasen also proposes to eliminate the SLIF for all customers requiring a main extension (Exhibit B-1, p. 26).

Terasen states that under its current policies, an evaluation of a new main extension could result in four outcomes as illustrated below:

Main Extension Scenarios

MX test	Service Line Costs	Customer Contribution
MX test Result < 1.0	Service Line Costs > SLCA	SLIF+ Main contribution + Service line costs > SLCA
	Service Line Costs < SLCA	SLIF + Main Contribution
MX test Result > 1.0	Service Line Costs > SLCA	SLIF + Service line costs > SLCA
	Service Line Costs < SLCA	SLIF

(Exhibit B-1, pp. 22-23)

Terasen states that the requirement of a SLIF does not impact the total contribution required for main extensions that do not meet the minimum hurdle or PI, since the MX test considers the SLIF as a contribution in aid of construction that offsets the total costs of the main extension and service lines in the determination of the requirement of a capital contribution. In the case of a contributory extension, if the SLIF is eliminated, the amount of contribution determined by the MX test would increase by the same amount, and therefore the total customer contribution would be the same in either scenario (Exhibit B-1, p. 23).

Terasen states that the SLIF is an incremental cost to customers to connect to the natural gas system where the MX test would not otherwise require a capital contribution and that if the SLIF were eliminated it would reduce the cost to these customers and still produce positive benefits for existing customers. Terasen states that, in a similar manner, the elimination of the SLCA will not change the requirement for customers to make a capital contribution in order to meet the minimum hurdle or PI in the MX test, but will allow customers where main extension facilities are relatively low cost to offset any savings against high service line costs before being required to make a capital contribution (Exhibit B-1, p. 23).

In Argument Terasen submits that to set the context for this request it is instructive to consider the current treatment of the SLCA in relation to the MX test. The MX test considers the forecast capital costs for the mains, service lines and meters associated with a main extension. The service lines are included in the MX evaluation at their forecast direct cost up to the level of the SLCA. By way of example, Terasen notes that a service line estimated to cost \$900 is included in the MX test at \$900, while a service line estimated to cost \$2,000 is only included in the MX test at the SLCA of \$1,100, and that since the MX test recognizes that the customer contributes the extra \$900 over the current SLCA it is not a cost incurred by the Company in extending service to that customer. The customer contribution for service line costs in excess of the SLCA is required regardless of the relative profitability of the main extension (Terasen Argument, para. 15).

To illustrate what is meant by the SLCA not being applicable in the case of customer attachments associated with new main extensions Terasen extends the example of the service line estimated to cost \$2,000, where it proposes that the full amount of \$2,000 will be included in the main extension evaluation along with the mains and metering costs, and submits that the customer contribution for extending the main and providing service will be the result of the estimated mains and metering costs combined with high service line costs and the forecast revenues to be generated from that MX project. The customer on that new main extension will not make a separate contribution for service line costs in excess of the SLCA. If the overall combination of costs and revenues of the main extension is such that the project does not meet the PI threshold the customer will make a contribution to bring the project up to the PI threshold required by the MX test. Terasen submits that the inclusion of the full service line cost in the analysis ensures that the effect of those costs will be appropriately captured in the PI ratio and customer contributions if required, and that under its proposal, positive contributors to the profitability of the MX project such as low mains costs or high expected revenues can partially or fully offset high service line costs, thereby resulting in the MX project exceeding the PI threshold and eliminating the requirement that the customer specifically contribute to the service line costs. Terasen submits that the effect of this change will be that customers may be required to pay less than they would have under the current process and as such be more likely to attach to the system. Terasen submits that adding economic customers to the system will also benefit existing customers, and that conversely, if potentially economic customers decide not to attach to the system due to high attachment costs, then existing customers will not

receive the benefit they should or could have from the addition of the customers (Terasen Argument, para. 15).

Terasen requests the elimination of the SLIF from the Companies' tariffs and submits that if that request is approved there are no further issues with respect to treatment of the SLIF in the MX test, but that if the request to eliminate the SLIF is not approved then Terasen makes a similar request regarding the treatment of the SLIF for service lines in new MX projects as that made for the SLCA, submitting that the logic and justification for this contingent request are the same as those discussed for no longer considering the SLCA in new MX projects; namely that the costs incurred to attach the customer to the system including mains, meters and service lines, are considered as part of the MX test, and that if the MX test is above the PI threshold no contribution is required and vice versa.

Terasen submits that it is counterintuitive to charge a customer the SLIF as part of the main extension as it sends the inappropriate signal to economic customers wishing to attach to the system, and that customers that do not meet the threshold will be required to pay a contribution regardless of whether there is a SLIF or not. Therefore there is no risk to current customers that new customers on new main extensions are not paying for the costs associated with attaching to the system (Terasen Argument, para. 18).

BCOAPO supports the proposal to eliminate the SLIF and also to eliminate the application of the SLCA to new MX projects, and submits that while these proposals will increase rate base and therefore revenue requirement, the evidence indicates that the impacts on rates will be very small (BCOAPO Argument, p. 2).

Commission Determination

The Commission Panel has made its determination on the SLIF elsewhere in these Reasons. The Commission Panel considers that the inclusion of the SLCA in the MX test can have unintended consequences which can be overcome by removing the SLCA from the MX test and including in that test not only the forecast cost of extending the main, but also the forecast cost of the service line and the meter. The Commission Panel finds that Terasen's proposal complies with its Guidelines and accordingly finds it to be in the public interest and approves Terasen's proposal to remove both the SLCA and the SLIF from the MX test.

5.0 ENERGY EFFICIENCY

5.1 General

Terasen requests that the Commission approve the proposed allowances in the Main Extension Test and the Service Line Cost Allowance to encourage gas fired space and water heating, high efficient space and water heating, and high efficient space and water heating in Leadership in Energy and Environmental Design (“LEED™”) Building (Exhibit B-1, p. 30).

Terasen expresses its belief that it should encourage efficiency on its system; encourage conservation of energy; and assist consumers of energy meet the societal goals outlined by the 2007 Energy Plan, and states that its system extension and connection policies can influence customers’ choice of energy and help meet the goals of the 2007 Energy Plan. However, it notes that at present, neither the current SLCA nor the current MX test makes a distinction between high efficiency appliances and standard efficiency appliances in that in both the MX test and the SLCA, consumption of gas is used to arrive at revenue for the MX test and as an input to affect the SLCA, while neither the MX test nor the SLCA use different volume inputs to recognize the use of high efficient appliances (Exhibit B-1, p. 26).

Terasen observes that “Perversely, if volumes were adjusted to reflect the use of high efficiency appliances instead of an average value, the MX test would result in a less profitable extension, and/or the SLCA would be lower”. Terasen states that incorporating an allowance for high efficiency and conservation within both the MX test and the SLCA will result in appropriate market signals and encouragement of conservation of energy (Exhibit B-1, p. 26).

In addition Terasen states that such changes will be positive for both new and current customers, since current customers will benefit because the system and extension tests and policies will not discourage attachment to the system for customers who consider conservation and efficiency; new customers will benefit because they will not be penalized due to the selection of gas for heating or for more efficient appliance and building design. Terasen also observes that existing customers who

upgrade to more efficient appliances or upgrade their buildings reduce their annual consumption and arguably impose a cost on all customers; however in the interests of both energy efficiency and environmental performance this type of behaviour is encouraged. Terasen states that the changes are beneficial to all energy consumers in the province and help to achieve the goals of the 2007 Energy Plan (Exhibit B-1, p. 29).

5.2 Changes to the MX test

Terasen proposes to give additional credit for using space and water heating appliances and for making energy efficient choices within the MX test as follows:

- **Space and Water Heating**

Terasen proposes that customers who have both gas fired space and water heating as part of their appliance portfolio, will receive a credit of 5 percent of the volume otherwise used for said appliance. For example, if a furnace and water heater on aggregate use 80 GJ/year, the Company would use the value of 84 GJ/year for consumption in the MX test.

- **High Efficiency**

Terasen proposes that customers who have both high efficiency gas-fired space heating (namely an Energy Star rated furnace or boiler) and water heating (tankless water heaters or water heaters with an efficiency rating of 78 percent or greater) will receive a credit of 10 percent of the volume otherwise used for both appliances. For example, if a furnace and water heater on aggregate use 80 GJ/year, Terasen would use the value of 88 GJ/year for consumption in the MX test

- **Leadership in Energy and Environmental Design (“LEED™”) Building Efficiency**

Terasen proposes that customers who have both high efficiency gas fired space and water heating appliances and who attain a minimum of LEED™ General Certification will receive a credit of 15 percent of the volume otherwise used for both appliances. For example, if a furnace and water heater on aggregate use 80 GJ/year, Terasen would use the value of 92 GJ/year for consumption in the MX test.

(Exhibit B-1, p. 29)

The Application contains a consultant's report which sets out the annual consumption of various efficiencies of space heating and water heating appliances from which the percentage differences between high efficiency appliances and standard and mid efficiency appliances may be derived, as follows:

	Efficiency %	Lower Mainland GJ/year	Interior GJ/year	Vancouver Island GJ/year
Space heating				
Standard efficiency	65%	94.7	78.8	64.4
Mid efficiency	80%	76.9	64.0	52.4
High efficiency	90%	68.4	56.9	46.5
Water heating				
Standard efficiency	59%	24.5	20.1	20.1
Mid efficiency	62%	23.4	19.2	19.2
High efficiency	85%	17.0	14.0	14.0
Total space and water				
Standard efficiency		119.2	98.9	84.5
Mid efficiency		100.3	83.2	71.6
High efficiency		85.4	70.9	60.5
% Difference				
High to standard		39.5	39.5	39.7
High to mid		22.6	17.3	18.3

(Source: Exhibit B-1, Appendix D of Appendix 2)

5.3 Changes to the SLCA

Terasen states that the SLCA is based on establishing the maximum service line allowance such that new natural gas customers are not expected to impact existing natural gas customers from a cost perspective, but that it does not recognize the societal benefits that could be obtained by promoting the use of natural gas over the use of electricity for space water heating loads. Terasen also states that the methodology used to develop the SLCA does not recognize the benefits of adopting energy efficient appliances and other measures that improve the use of energy, since, all else being equal, decreasing annual use per customer due to the adoption of energy efficiency measures would decrease the maximum allowance and require customers to make higher contributions. In order to

encourage the right behaviour, Terasen proposes that the application of the SLCA should allow adjustments to be made in order to ensure the appropriate price signals are sent in support of fuel choice and efficiency measures from a new customer perspective (Exhibit B-1, p. 17).

In order to do so, Terasen proposes consumption allowance credits based upon the current average residential consumption values in the MX test for space and water heating of 60 GJ/year for forced air space heating and 20 GJ/year for water heating, and the application of the percentage credits proposed in its MX test determine an increase in GJs and the maximum amount to increase the SLCA. This is summarized in the following table:

Energy Efficiency Credits	GJ Incentive	Increase in SLCA
Space and Water Heating	4 GJ	\$ 65
High Efficient Space and Water Heating	8 GJ	\$130
LEED Building and High Efficient Space and Water Heating	12 GJ	\$195

(Exhibit B-1, p. 29)

Terasen states that an increase in the SLCA will not necessarily translate into an increase in rates. The SLCA is the maximum amount of capital that the Companies will install to serve a customer and the customer pays a contribution only when the costs to serve them are higher than the SLCA. Terasen states that increasing the SLCA for efficiency will only impact rate base in those instances where the cost to serve the customer is higher than the SLCA prior to the increase due to efficiency, and states that such a scenario “will not be high in frequency” (Exhibit B-4, BC Hydro 1.9.1).

Terasen submits that this Application is consistent with the objectives of the 2007 Energy Plan which states that “it is important for British Columbians to understand the appropriate uses of different forms of energy and utilize the right fuel, for the right activity at the right time”, and that its proposed changes to the system extension and connection policies sought in this Application help send the appropriate signal to customers regarding the end uses of both gas and electricity (Terasen Argument, para. 38).

Terasen submits that electricity is required by all customers while the use of natural gas for space and water heating is a choice, and expresses its view that its current policies are inappropriate and serve to discourage customers from choosing natural gas for new heating applications in order to reduce overall connection costs. Terasen believes that it is important to send potential customers the appropriate price signals to encourage energy efficiency and encourage customers to use gas for heating applications and submits that the use of gas in heating applications is utilizing the right fuel, for the right activity, and therefore helps to achieve objectives of the 2007 Energy Plan (Terasen Argument, para. 40).

Terasen quotes from Policy Action #4 of the 2007 Energy Plan: “Explore with B.C. utilities new rate structures that encourage energy efficiency and conservation” and “explore, develop and propose to the Commission additional innovative rate designs that encourage efficiency [and include] tariffs focused on promoting energy efficient new construction” and submits that its proposed energy efficiency credits applied to new customers who choose gas for heating/water heating, high efficient heating/water heating and LEED building design with high efficient heating/water heating will help to achieve the objectives set out in Policy Action #4 (Terasen Argument, para. 41).

Terasen submits that one key objective of the 2007 BC Energy Plan is the reduction of overall greenhouse gases and the use of natural gas for heating applications will result in lower greenhouse gas emissions than the use of electricity. Terasen also submits that electricity is not the right fuel for heating as the use of electricity is less efficient than the use of gas when the marginal source of electricity is gas fired generation and that if gas is used for all new space and water heating, BC Hydro will be as a result (i) more likely to achieve the Province’s goal of electrical self sufficiency by 2016, and do so with zero net greenhouse gas emissions, and (ii) be in a better position to use its portfolio to displace inefficient gas fired generation in the region through electricity trade resulting in lower greenhouse gas emissions in the western North America region than if incremental electricity was used directly for heating applications. Terasen submits that providing incentives for customers to use both gas for heating applications therefore helps in achieving the goals of greenhouse gas reductions (Terasen Argument, para. 42).

Terasen submits the proposed credit for high efficient space and water heating appliances encourages efficiency without requiring customers to pay a potentially higher contribution in aid of construction and notes that, without this credit, there would be little encouragement for customers to attach using heating appliances that consume less energy than their standard efficiency counterparts because, if the lower volume of high efficiency appliances was used in the economic test, customers would be less likely to pass the test. Terasen observes that its existing customers are encouraged to reduce their consumption by adopting higher efficiency appliances through demand side management (“DSM”), and argues that providing an incentive for new customers to reduce demand prior to connecting to the system ensures consistent treatment of both existing and new customers. Terasen submits that the proposed credit is therefore not only consistent with the Energy Plan objectives but is crucial in sending the appropriate price signal to customers (Terasen Argument, para. 43).

BCOAPO sets out its concerns that the proposed energy efficiency credits to be used as inputs to both the SLCA and the MX calculations reduce transparency, in addition to increasing the possibility of new customers being subsidized by existing customers. BCOAPO submits that it supports incentives for conservation with the proviso that such incentives should be explicitly set out in a conservation or DSM program for new customers, and not be factored into the SLCA or MX test calculations (BCOAPO Argument, p. 2).

BCOAPO submits that the Companies’ proposals make a lot more sense IF (emphasis in original) the presumption is that the objective is to encourage the use of gas as a preferred fuel for space and water heating, cooking, and clothes drying, while at the same time encouraging conservation and efficiency measures. BCOAPO cites its final argument in BC Hydro’s 2007 Rate Design Application where it submitted “Terasen’s proposal [a \$2000 charge on any residential connection to BC Hydro’s system if electricity is intended to be used for space or water heating] is based on the assumption that the use of natural gas rather than electricity for heating load is self-evidently more consistent with conservation and GHG policy – overlooking the fact that, according to the new BC Energy Plan, incremental electricity generation will be 90 percent “clean,” and therefore presumably less carbon-intensive than burning natural gas for space and water-heating. There has been no

determination by the Commission that Terasen's foundational assumption is correct, and the record of this proceeding does not provide any basis for any determination either way on the matter".

BCOAPO submits that similarly in this Application, there has been no determination by the Commission that the use of natural gas is more consistent with the 2007 Energy Policy and the record of this proceeding does not provide any basis for this determination. Until such determination is made, BCOAPO submits that the Commission not base its decision on the presumption that gas is the preferred fuel and determine this Application on its merits and fairness to both new and existing customers (BCOAPO Argument, pp. 2-3).

BC Hydro submits that it opposes the non cost-based credits proposed by Terasen to encourage the use of natural gas for space and water heating and submits that it is unclear in the 2007 Energy Plan whether encouraging the use of natural gas for space and water heating is consistent with government policy. BC Hydro cites its argument with respect to its 2007 Rate Design Application (RDA) where it submitted that: Ambiguity in the 2007 Energy Plan with respect to fuel switching arises from two policy actions that undermine one of the underlying premises of Terasen's position. The policy actions are: (1) energy self-sufficiency for BC Hydro, plus "insurance", based on critical water conditions; and (2) all generation supply in British Columbia to have "zero net" greenhouse gas ("GHG") emissions. The premise underlying Terasen's evidence is that the marginal supply in the Western Interconnection, and therefore British Columbia, is natural gas-powered combined-cycle turbine technology. To the extent that the referenced policy actions are achieved, it is readily apparent that Terasen's premise will simply not be true in British Columbia, and that as the 2007 Energy Plan is implemented BC Hydro is far more likely to be a net exporter of "green" electricity than an importer of GHG-intensive electricity, regardless of its domestic load obligations.

BC Hydro submits Terasen's premise that the marginal supply of electricity for space and water heating in British Columbia will be natural gas powered generation would only be true if the policy actions regarding energy self-sufficiency and zero net GHG emissions are not achieved and points out that when it asked Terasen to confirm that the use of natural gas for space and water heating would result in higher greenhouse gas emissions than the use of zero net emission electricity,

Terasen had replied that the goal of zero net emission electricity may not be achievable or that the Province or end use customers may not be supportive of the costs of achieving zero net emission electricity. BC Hydro submits “With respect, it is disingenuous for Terasen to rely on selected aspects of the 2007 Energy Plan to support its extension policy proposals while simultaneously dismissing as unachievable or too expensive other aspects of the 2007 Energy Plan that are clearly contrary to its proposals”. BC Hydro submits that there can be no doubt that the use of natural gas for space or water heating would produce more GHG emissions than the use of net zero emission electricity, in which case the use of natural gas for space or water heating could be contrary to government policy and therefore submits that implementing incentives to encourage the use of natural gas for space or water heating would be at best premature and potentially contrary to government policy, and that the energy usage and efficiency allowances proposed by Terasen should be rejected (BC Hydro Argument, p. 2).

In Reply Terasen submits that the energy efficiency incentives should be part of both Companies’ system extension and connection policies and also as part of conservation and demand side management programs and that the energy efficient credits it has proposed comply with the 1996 System Extension Guidelines, which state “In addition, the Commission recommends that the Utilities come forward with options for connection fees that send an appropriate signal about the net social costs of less efficient energy use”. Terasen submits that the suggestions made by BC Hydro that the incentives are premature should not be accepted (Terasen Reply, para. 22, 24).

On the subject of the 2007 Energy Plan, Terasen submits that it is relevant and that the proposals for energy efficiency credits and encouragement to use natural gas for space and water heating address the policies in the Energy Plan and should be approved.

With respect to greenhouse gas emissions, Terasen cites the Commission’s October 26, 2007 Reasons for Decision on BC Hydro’s 2007 Rate Design Application (Order No. G-130-07) where at page 191, it states “The Commission Panel agrees with Terasen that the use of natural gas (as opposed to electricity) for space and water heating in B.C. will make additional energy available to displace coal or gas-fired generation at the margin in the Pacific Northwest” and submits that BC

Hydro has missed the central point of Terasen's submission respecting energy efficiency and GHG emission reductions. Terasen notes that British Columbia is not isolated from the remainder of the grid in western North America; but is interconnected, and that a significant portion of both current and new electrical generation in western North America is from the "inefficient" combustion of one form of energy - coal or natural gas - to create another form of energy – electricity. Terasen submits that as long as coal or gas fired electrical generation continues to be the marginal source of electrical generation in western North America, the use of gas for space and water heating will "make additional energy available to displace coal or gas-fired generation at the margin in the Pacific Northwest", and that, given that production of electricity by coal and gas fired generation is less efficient than using gas for space and water heating, GHG emissions will be reduced if customers use gas rather than electricity for space and water heating. Terasen submits that its proposals set out in the Application are consistent with government policy (Terasen Reply, para. 27).

Terasen submits that BC Hydro's submission is also premised on the assumption that the objective of electrical self sufficiency by 2016 is achieved, since it (BC Hydro) will be relying on both demand reductions (through conservation and energy efficiency measures) and new "intermittent" supply resources provided by independent power producers as well as the development of new large firm capacity additions (such as Site C) to meet this aggressive objective. Terasen submits that there is significant uncertainty on how this objective will be achieved and at what cost, and that if BC Hydro is to meet all future space heating and water heating loads, the corollary of its submissions that space heating for natural gas should not be encouraged, is to significantly increase its future demand requirements and thereby create new challenges to meet the province's electrical self sufficiency and net zero emissions objectives (Terasen Reply, para. 28).

Terasen cites the 2007 Energy Plan which states at page 29: "The Plan is aimed at enhancing the development of conventional [oil and gas] resources and stimulating activity in relatively undeveloped areas..."; at page 12 "While BC is a province rich in energy resources such as hydro electricity, natural gas and coal, the use of these resources needs to be balanced through effective use, preserving our environmental standards while upholding our quality of life for generations to come...."; and at page 21 "It is important for British Columbians to understand the appropriate used

(sic) of different forms of energy and utilize the right fuel, for the right activity, at the right time”. Terasen submits that increasing natural gas production will increase GHG emissions regionally, all things being equal, and that it behooves all consumers of natural gas to use gas in the most efficient manner as possible if the Province and the region as a whole are to achieve lower GHG emissions and increase natural gas and oil production. Terasen submits that fewer GHG emissions will result from the use of gas for space and water heating than by shipping the gas outside the province to be used in gas-fired electric generation. Terasen submits that the use of gas for space and water heating not only meets objectives of the Energy Plan regarding GHG reductions, and balances the use of gas with environmental standards, but also aids in growth of natural gas production in BC (Terasen Reply, para. 29).

Commission Determination

The Commission Panel continues to agree with Terasen that the use of natural gas (as opposed to electricity) for space and water heating in BC will make additional energy available to displace coal or gas-fired generation at the margin in the Pacific Northwest, but notes that the sentence that followed the above finding in its Reasons for Decision on BC Hydro’s 2007 Rate Design Application (Order No. G-130-07) reads as follows at page 192:

“The Commission Panel does not, however, consider that it is the role of the Commission to determine governmental policy in respect of fuel choice for residential space and water heating. The Commission Panel is of the view that BC Hydro and Terasen must resolve with the Provincial Government any “ambiguity” they perceive in the 2007 Energy Plan. Accordingly, the Commission Panel makes no determinations in this regard.”

The Commission Panel is persuaded by BCOAPO’s submission that the record of this proceeding does not provide any basis for the determination that the use of natural gas is more consistent with the 2007 Energy Plan and reiterates its statement made above at page 192 of Order No. G-130-07.

The Commission Panel considers that the public interest can be served by an environment in which customers in the province have the right to choose their fuel source; in which the cost consequences of their choice are transparent; and where rate design does not hinder that choice. So far as concerns proposed changes to Terasen's MX test, the Commission Panel agrees with Terasen that a situation whereby potential customers who propose to use high efficiency appliances might fail an MX test and be required to make a contribution based on their forecast consumption, whereas they would pass the test based on their forecast consumption using less efficient appliances, would indeed be perverse. Accordingly, the Commission Panel finds that Terasen's proposals:

- i. that customers who have both high efficiency gas-fired space heating (namely an Energy Star rated furnace or boiler) and water heating (tankless water heaters or water heaters with an efficiency rating of 78 percent or greater) will receive a credit of 10 percent of the volume otherwise used for both appliances; and
- ii. that customers who have both high efficiency gas fired space and water heating appliances and who attain a minimum of LEED™ General Certification will receive a credit of 15 percent of the volume otherwise used for both,

are in the public interest, and approves them. However; the Commission Panel finds that Terasen's proposal, whereby customers with both gas fired space and water heating appliances will receive a credit of 5 percent of the volume otherwise used for said appliances, applies to standard efficiency appliances which make no contribution to energy efficiency and cannot be said to be in the public interest, and accordingly denies it.

The evidence before the Commission Panel is that the amount of the SLCA was determined having regard to adjusted average residential consumption, which reflects the end use and efficiency of the entire spectrum of gas appliances, including those used for non-space or water heating purposes.

The Commission Panel notes that there is no pass/fail test associated with the SLCA as there is with the MX test, and accordingly the Commission Panel does not find that Terasen's proposal to increase the SLCA by \$65, \$130 and \$190 for customers proposing space and water heating; high efficiency space and water heating; and LEED™ building efficiency with efficiency space and water

heating, respectively, to be in the public interest. The Commission Panel finds that the proposed increases in the allowance are more in the nature of DSM programs. Terasen is encouraged to apply for the approval for such programs in another forum, where their impact and efficiency as DSM programs can be tested.

6.0 OTHER MATTERS

6.1 New Customer Application Fee

Terasen proposes no change to the \$85 new customer Application Fee, stating that the Application Fee for new customers is intended to recover the administration costs associated with initiating service to a new customer and does not cover any of the capital costs and has been in place at \$85 since prior to 1996. Terasen states that since then the processes have been streamlined and costs to enroll customers into the system have remained relatively stable or have declined and that customer enrolment for the Companies' customers is performed by CustomerWorks LP, as part of a bundled suite of services which include billing, meter reading, customer contact (call centre operations) and credit and collections. As the agreement and contract with CustomerWorks LP is for a bundled service, Terasen is unable to determine the specific cost to enroll an individual customer, but states that since enrolment costs are only a portion of the per customer total suite of costs charged to the Companies, (for 2007, \$55.36 for TGI, and \$43.07 per customer for TGVI) enrolment costs are less than they were in 1996 (Exhibit B-3, BCUC 1.18.1-3).

Data provided by Terasen indicates that the total application fees collected in 2007 is estimated at \$940,000 for TGI and \$255,000 for TGVI (Exhibit B-9, BCUC 2.46.1), and that application fees charged by other gas utilities range from zero to \$150 (Exhibit B-3, BCUC 1.18.1-3).

Terasen states that the removal of the SLIF constitutes the removal of the majority of the \$300 total bill typically associated with a new customer connection, and that in the majority of instances the SLIF is paid by a builder or developer while the \$85 Application Fee is typically paid by the customer upon activation of the account. Terasen believes that by reducing the barrier to the builder of connecting to the gas system the likelihood of gas appliances being installed is enhanced, and that when a dwelling has been equipped with gas appliances the likelihood of the account being activated is very high so Terasen does not consider the \$85 Application Fee to be onerous. Terasen states that it intends to make a further assessment of the value of reducing the \$85 fee in the future, but that, since the current PBR Settlement Agreement includes revenue from the \$85 fee, Terasen is of the

view that the level of this fee should not be changed before the Settlement Agreements expire at the end of 2009 (Exhibit B-9, BCUC 2.45.1).

The Intervenors do not comment on the Application Fee.

Commission Determination

The Commission Panel finds little on the record before it to justify either the existence or quantum of Terasen's \$85.00 Application Fee and accordingly directs both TGI and TGVI to address both matters at their next RRA following the expiry of their Settlement Agreements at the end of 2009.

DATED at the City of Vancouver, in the Province of British Columbia, this 6th day of December 2007.

Original signed by:

A.J. Pullman

Panel Chair and Commissioner

SIXTH FLOOR, 900 HOWE STREET, BOX 250
VANCOUVER, B.C. V6Z 2N3 CANADA
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**BRITISH COLUMBIA
UTILITIES COMMISSION**

**ORDER
NUMBER G-152-07**

TELEPHONE: (604) 660-4700
BC TOLL FREE: 1-800-663-1385
FACSIMILE: (604) 660-1102

**IN THE MATTER OF
The Utilities Commission Act, R.S.B.C. 1996, Chapter 473**

and

**An Application by Terasen Gas Inc. ("TGI")
and Terasen Gas Vancouver Island ("TGVI")
jointly "the Companies,"
for Approval to Amend Their System Extension and Connection Policies**

BEFORE: A.J. Pullman, Commissioner December 6, 2007

O R D E R

WHEREAS:

- A. In the Reasons for Decision attached to Order No. G-126-05, the Commission accepted TGVI's proposals to adopt the TGI Main Extension ("MX") test (with appropriate revisions to the inputs) and TGI customer connection policies commencing January 1, 2006; and
- B. On April 30, 2006, TGVI filed its "Review of the Main Extension Test," updating the MX test inputs; and
- C. During the proceedings to review the TGVI 2006 Negotiated Settlement Update, TGVI explained that TGVI and TGI would be reviewing their MX tests as part of a comprehensive review of their system extension and customer connection policies in 2007; and
- D. By Order No. G-160-06 and Reasons for Decision, the Commission approved the TGI 2006 Annual Review and Mid-Term Settlement Review wherein the Commission agreed that TGI should conduct a review of its system extension and customer connection policies including the MX test in 2007 in conjunction with TGVI for submission by the end of the second quarter of 2007; and
- E. By letter dated June 28, 2007, TGI, TGVI and Terasen Gas (Whistler) Inc. ("TGW"), ("Terasen Utilities") filed an application for Commission approval to delay the submission of their system extension and customer connection policies application, stating that preparing a single consolidated report encompassing all three utilities would result in the most efficient review process for the Terasen Utilities, stakeholders and the Commission; and
- F. By Letter No. L-61-07, the Commission agreed that submission of a consolidated application was desirable and directed the Terasen Utilities to submit the application no later than July 31, 2007; and
- G. On July 31, 2007, pursuant to the Utilities Commission Act, the Companies jointly filed an application ("the Application") to amend the Terms and Conditions of each utility's Tariff with respect to charges for system extensions and customer attachment and connections for TGI and TGVI. The Application requested approval for changes to the respective Tariffs to be effective January 1, 2008; and

BRITISH COLUMBIA
UTILITIES COMMISSION

ORDER
NUMBER G-152-07

2


- H. In its covering letter attached to the Application, the Companies advised the Commission that after further consideration and in light of the introduction of natural gas to the Whistler area during the latter half of 2008, TGW is of the view that it would be reasonable to retain its current policy while it remains a propane system, and bring forth an application to review its policies after the conversion of its system to natural gas; and
- I. On August 11, 2007, the Commission issued Order No. G-90-07 establishing that the proceeding to examine the Companies' proposed amendments to their System Extension and Customer Connection Policies would be through a written process, and established a regulatory timetable; and
- J. The written hearing commenced on August 17, 2007, with Intervenor registration by British Columbia Hydro and Power Authority ("BC Hydro"), the BC Old Age Pensioners Organization *et al.* ("BCOAPO") and the Ministry of Energy, Mines and Petroleum Resources ("MEMPR"); and
- K. The written hearing process comprised two rounds of Information Requests submitted by the Commission, BC Hydro, BCOAPO, and MEMPR; Final Arguments; and Reply Argument; and
- L. The Commission has considered the evidence and submissions of the Companies, BC Hydro, BCOAPO, and MEMPR, and issues its Decision.

NOW THEREFORE the Commission, for the reasons stated in the Decision issued concurrently with this Order, determines as follows:

- 1. TGI and TGVI are directed to file with the Commission revised Tariffs incorporating each of the approved and accepted amendments as described in the Decision, as expeditiously as practicable.
- 2. TGI and TGVI are to comply with all other directives described in the Decision.
- 3. TGW's request to delay submission of its proposed System Extension and Customer Connection Policies until its conversion from propane to natural gas has been completed is accepted

DATED at the City of Vancouver, in the Province of British Columbia, this 6th day of December 2007.

BY ORDER


A.J. Pullman
Commissioner

IN THE MATTER OF
the Utilities Commission Act, R.S.B.C. 1996, Chapter 473

and

Terasen Gas (Vancouver Island) Inc.
British Columbia Hydro and Power Authority
Long Term Service Agreements

EXHIBIT LIST

Exhibit No.

Description

COMMISSION DOCUMENTS

- A-1 Letter No. L-79-07 dated October 2, 2007 requesting comments on the type of process to be used for the review of this Application
- A-2 Letter dated October 11, 2007 and Order No. G-123-07 establishing a written public hearing
- A-3 Letter dated October 12, 2007 issuing Information Request No. 1 to Terasen

APPLICANT DOCUMENTS

- B-1 Letter dated September 28, 2007 requesting approval of the following suite of long-term service agreements: Transportation Service Agreement between TGVI and BC Hydro; the Peaking Agreement between TGVI and BC Hydro; and the Capacity Assignment Agreement between TGVI, BC Hydro and Terasen Gas Inc.
- B-2 Letter dated October 5, 2007 responding to Exhibit A-1 regarding the type of process to be used for the review of this Application
- B-3 Letter dated October 22, 2007 filing response to the Commission's Information Request No. 1
- B-4 Letter dated October 22, 2007 filing response to BCOAPO's Information Request No. 1
- B-5 Letter dated November 29, 2007 filing comments in support of the application

**** EVIDENTIARY RECORD CLOSED –
EXHIBIT REMOVED FROM RECORD ****

Exhibit No.	Description
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INTERVENOR DOCUMENTS

- | | |
|------|---|
| C1-1 | BRITISH COLUMBIA OLD AGE PENSIONERS' ORGANIZATION (BCOAPO) – Email dated October 11, 2007 from Jim Quail and on behalf of James Wightman of Econalysis Consulting requesting Intervenor Status |
| C1-2 | Letter dated October 15, 2007 filing Information Request No. 1 to Terasen |
| C1-3 | Removed from Exhibit List - Amended and Re-Posted as Argument - Letter dated October 26, 2007 comments regarding Application and Information Requests |
| C2-1 | BRITISH COLUMBIA HYDRO & POWER AUTHORITY (BC HYDRO) – Online web registration received October 12, 2007 filing request for Intervenor status |
| C2-2 | Letter dated October 1, 2007 comments in support of Application |
| C2-3 | Letter dated October 4, 2007 responding to Exhibit A-1 regarding the type of process to be used for the review of this Application |
| C3-1 | VANCOUVER ISLAND GAS JOINT VENTURE (VIGJV) – Letter dated October 15, 2007 from Karl E. Gustafson of Lang Michener, legal counsel, filing request for Intervenor status |

INTERESTED PARTY DOCUMENTS

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| D-1 | MINISTRY OF ENERGY MINES & PETROLEUM RESOURCES (MEMPR) – Letter dated October 15, 2007 from Duane Chapman, Senior Regulatory Advisor, filing request for Interested Party status |
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