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July 31, 2007

British Columbia Utilities Commission
6th Floor, 900 Howe Street
Vancouver, BC
V6Z 2N3

Attention: Mr. R.J. Pellatt, Commission Secretary

Dear Sir:

Re: Terasen Gas Inc. ("TGI") and Terasen Gas (Vancouver Island) Inc. ("TGVI") (collectively the "Terasen Utilities" or the "Companies")

System Extension and Customer Connection Policies Review Application (the "Application")

The British Columbia Utilities Commission ("BCUC" or the "Commission") by Order No. 161-06 and Reasons for Decision approved the TGVI 2006 Negotiated Settlement Update wherein TGVI suggested that a review of its system extension and customer attachment and connection policies ("the Policies") was warranted. TGVI stated that due to changes in the market place since the last System Extension Test ("SET") Guidelines, it intended to file a review of the Policies which would consider other external realities and be broader than a simple Main Extension ("MX") test review.

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.

On June 28, 2007, the Terasen Utilities 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 TGW's 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 the Terasen Utilities to submit the application no later than July 31, 2007.

Currently, TGW uses the MX test and connection policies that were used by TGVI prior to 2006. 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 the current policy while it remains a propane system, and bring forth an application to review its Policies after the successful conversion and implementation of the natural gas system.

The attached Application, therefore, is the System Extension and Customer Connection Policies Review for TGI and TGVI. The Application requests approval for changes to the respective Policies to be effective January 1, 2008. TGI and TGVI believe that these changes will send appropriate market signals to customers, simplify the test across these two utilities and promote fair and equal treatment of customers. Lastly the changes are designed to support the Companies' ability to contribute to the goals and objectives of the BC Energy Plan and promote the responsible use of natural gas as a method to achieve energy efficiency and optimal use of resources within the broader energy market.

Accordingly, with due consideration to the regulatory efficiencies of a written hearing process for all parties involved, TGI and TGVI respectfully submit that the most appropriate review process for this Application is by way of a written process, and request a review process be established that would allow a decision on this Application by the middle of October 2007. In support of this request, the following schedule is proposed by TGI and TGVI for a written hearing process.

Proposed Regulatory Timetable:

Action	Date (2007)
Intervenor Registration	Monday, August 13
BCUC and Intervenor Information Requests	Wednesday, August 15
TGVI-TGI Response Information Requests	Friday, September 7
TGVI-TGI Final Argument Submission	Friday, September 14
Intervenor Argument Submission	Friday, September 21
TGVI-TGI Reply Argument Submission	Friday, September 28

At the completion of the review of this Application and in accordance with receipt of a Commission decision, TGI and TGVI will submit the affected Tariff pages, for each utility, for endorsement.

If you have any questions related to this information, please do not hesitate to contact Jason Wolfe at (604) 592-7516.

Yours very truly,

TERASEN GAS INC.

Original signed by: Douglas Stout

For: Scott A. Thomson

Attachments

cc (e-mail only) Registered Intervenors/Parties to:
- TGI 2006 Annual Review and 2004-2007 Multi-Year PBR Settlement
- TGVI 2006 Settlement Update and TGVI 2006-7 Revenue Requirement and Multi Year Negotiated Settlement

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1 Introduction

This is an application by Terasen Gas Inc. ("TGI") and Terasen Gas (Vancouver Island) Inc. ("TGVI") (collectively the "Terasen Utilities" or the "Companies") for changes to their respective system extension and customer connection and attachment policies to be effective January 1, 2008. The Companies believe that these changes will help to reduce barriers and send the appropriate market signals to customers that are making decisions on using the right fuel, for the right activity at the right time. The changes will simplify the current tests and policies thereby making it easier to understand and to economically connect to the system of each of the Companies. These changes will promote the responsible use of natural gas as a method to achieve energy efficiency and optimal use of resources within the broader energy market, which the Companies believe is consistent with the objectives of the 2007 BC Energy Plan – A Vision for Clean Energy Leadership (the "Energy Plan") released by the Ministry of Energy, Mines and Petroleum Resources in the spring of 2007.

There has been a significant change in the business environment in which the Terasen Utilities operate since the existing customer connection policies were put in place in the mid-1990s. At that time natural gas had a significant cost advantage to other heating fuels, including electricity, and generally customers were economically motivated to choose natural gas as their fuel choice regardless of the connection fees that were in place. In today's environment natural gas' competitive position has eroded and connection costs have more of an influence in the fuel choice being made by developers and home owners. The Terasen Utilities believe that the signals created have resulted in sub-optimal fuel choices and that changes are required.

In British Columbia ("BC") and elsewhere in North America, natural gas and electricity compete as the energy source for space and water heating. BC is fortunate to have a large supply of low-cost hydro electric generation. However, in recent years the supply demand balance become increasingly constrained. The cost of adding new electricity supply and associated infrastructure is significantly higher than historic levels and will impact the rates of all electric customers in the province. The Terasen Utilities believe that this impact can be mitigated through policies that send more appropriate price signals to promote the use of natural gas for the appropriate applications.

The BC Energy Plan 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"[1]. The Companies believe that, clearly, electricity is the right energy choice for lighting, computers, fans, refrigerators televisions and other small household appliances. The Companies also believe electricity is seldom the right energy form for space and water heating, cooking and drying clothes. If BC Hydro is to meet its goals under the BC Energy Plan, it must conserve energy. The Terasen Utilities are of the view that greater use of alternative energy forms, including natural gas, for space and water heating, cooking and clothes drying, will help BC Hydro in achieving these goals.

This Application seeks approval of changes to the standard fees and charges associated with new customer connections and to the Main Extension ("MX") tests used to determine the requirement for customer contributions in aid of construction as follows:

- In the case of new customers connecting to existing mains, the proposed changes to fees and charges include the elimination of the minimum contribution Service Line Installation Fee ("SLIF") and revision of the Service Line Cost Allowance ("SLCA") to reflect current costs and expected consumption levels and to provide incentives, or eliminate disincentives, to install high efficiency gas appliances; and

- In the case of new mains and extensions, the Companies propose to continue the current TGI MX test methodology and to eliminate the SLIF and the SLCA. In addition, the Companies are proposing that the thresholds that must be met under the current MX test be modified. Under the current policy, the MX test is applied to each individual main extension to determine if there is a requirement for a customer contribution. As part of this Application the Companies are proposing that the minimum threshold be applied on an aggregate basis across all main extensions performed in any one year, which consequently will allow a lower threshold for individual extensions. The overall objective of these proposed changes is to send

[1] Energy Plan, page 21

appropriate signals to new customers when connecting to the natural gas system, while ensuring that they pay their fair share of incremental costs and that there are no undue impacts to existing customers.

2 Connection and Attachment Policy Objectives

The traditional regulatory approach to reviewing connection policies is similar to that of cost of service methodology. Specifically, 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.

The Companies believe that as a result of the current economic climate, and specifically the release of the BC 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.

The Energy Plan is "a made in BC solution to the common global challenge of ensuring a secure, reliable supply of affordable energy in an environmentally responsible way"[2]. The document outlines 55 policy actions to help BC achieve this goal. The Terasen Utilities are supportive of the Energy Plan and believe that all energy utilities can and should play an integral role in helping BC meet and exceed the goals as set out in the Energy Plan.

The Terasen Utilities see a number of policy actions for which achievement of their objectives will be dependent on changes in the approach to customer connection and attachment activities for both gas and electric utilities:

[2] Energy Plan, page 2

- Policy Action #2, states "Ensure a coordinated approach to conservation and efficiency is actively pursued in British Columbia"[3]. 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"[4].
- 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…"[5].
- 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"[6].

The Companies believe that the changes requested in this Application are consistent with these Energy Plan policy actions. More specifically the Companies' objectives in this Application are as follows:

1. Signal better value for customers wishing to attach to the system;
2. 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; and
3. Encourage energy conservation through the test and attachment policies; and
4. Encourage the "right fuel" choice. The Company believes 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.

[3] Energy Plan – Energy Conservation and Efficiency Policies, page 1
[4] Energy Plan – Energy Conservation and Efficiency Policies, page 3
[5] Energy Plan – Energy Conservation and Efficiency Policies, page 4
[6] Energy Plan – Energy Conservation and Efficiency Policies, page 6

The Companies are also undertaking other initiatives that combine to align utility activities and customer choices with Energy Plan policies on efficiency and innovation. For example, BCUC Order No. G-65-07 (June 2007) approving amendments to TGI's Tariff to allow thermal energy metering on a pilot project basis is an important initiative to help promote the efficient use and conservation of energy in multi-family dwellings. If the pilot project is successful and can be rolled out across service regions, this metering technology represents another opportunity to send appropriate economic signals to both end-users and the development community.

Further, Demand Side Management ("DSM") programming for both TGVI and TGI beyond the 2007 – 2008 heating season is expected to include a mix of both energy conservation and efficient load building programs. These programs will help to encourage the right energy or fuel to be used for the right application at the right time and to promote the most efficient and effective use of all existing and new energy infrastructure in BC.

TGI and TGVI are also strongly supportive of the Energy Plan directive for utilities in BC to work together cooperatively towards Energy Plan goals. For the Companies, pursuing cost-effective DSM initiatives, developing innovative rate designs (such as the thermal metering initiative) and working cooperatively with other utilities and energy industry participants represent a broad-based multi-faceted approach to achieving Energy Plan objectives.

3 Review and Analysis

3.1 BCUC Utility System Extension Guidelines

In 1995 and 1996 the Commission conducted a generic review of system extension policies for gas and electric utilities in British Columbia. The review was to look broadly at the system extension policies and determine if "opportunities existed to improve the fairness and efficiency of these policies". Following this review, the Commission issued the Utility System Extension Guidelines (the "SET Guidelines") in September 1996. In summary, the SET Guidelines recommended that system extensions be based on an incremental analysis using a discounted cash flow ("DCF") methodology. The analysis was to take into account the incremental costs and benefits associated with a particular system extension over a period long enough to consider the full impact of the extension. The Commission also recommended that, as a general principle, the costs of system extensions be allocated to those customers who cause them.

The Companies believe that the general intent of the SET Guidelines is for utilities to have extension policies in place which provide a fair balancing of the interests of existing customers with the interests of new customers. A principle objective is that revenues from new extensions should at a minimum cover the incremental costs imposed on the system by those extensions such that new customers do not negatively impact existing customers.

Though the SET Guidelines made recommendations as to the methodologies preferred by the Commission for evaluating system extensions there was also room for flexibility in some matters, and the potential for adoption of other methodologies where appropriate. With respect to system improvements, for example, the SET Guidelines allowed for them to be left out of the analysis if the cost and administrative burden of identifying them were too great. The Commission also believed that estimates for actual construction costs should be as accurate as possible without adding substantially to the workload and administration. With respect to incremental maintenance and overhead costs, these were to be added to the test so long as the administrative costs did not exceed the benefit of determining those costs.

The Commission also noted that connection charges should "send an appropriate signal about the net social cost of less efficient energy usage"[7].

3.2 Other Utilities

The Terasen Utilities conducted research with regard to other gas and electric utilities' attachment and connection policies in order to achieve a better understanding of how these policies and programs work, and how effective they might be in the current marketplace. Research was conducted on four different natural gas utilities and two electric utilities.

[7] Utility System Extension Test Guidelines, page 23

All utilities examined have a standard main extension policy and test, although the policy and test of each utility surveyed differs in methodologies. A detailed description of each utility's main extension and service line attachment policy and procedure, together with additional information, is included in Appendix 1. The principal methodology for each utility is summarized below:

- The test of Atco Gas Inc. is based upon a principle of providing non-discriminatory service rather than any concern of subsidization of new customers by current customers. The MX policy is to offer a main extension free of charge if the applicant's premise is within a municipality that has a franchise agreement with the utility. If the customer is not within a municipality and the main extension is less than 50 meters, the extension is provided free. If the extension is more than 50 meters the customer pays the difference between the costs and the revenue expected in the first three years.

- Avista Utilities Washington and Avista Utilities Oregon (collectively the Avista Utilities) utilize a revenue and cost analysis in order to determine if the main extension can be provided free of charge to the new customers. The Avista Utilities will provide a main extension at no cost if the annual revenue is not less than one third of the direct main extension cost. For Avista Washington, the Gas Extension Policy also includes service line attachment costs. For Avista Oregon, they will install up to 40 feet of service line free of charge.

- The Northwest Natural Utilities utilize a simple revenue and cost analysis to determine what contribution, if any, is necessary from the customer. Northwest Natural will install a main free of charge as long as the direct capital costs do not exceed the revenue expected in the first five years. Northwest Natural confirmed that most applications for main extensions and service lines pass, and very rarely does a customer need to make a contribution.

- Enbridge Gas Distribution Inc. ("Enbridge") performs a 40 year discounted cash flow test calculated on each main extension. Individual main extensions must have a profitability index of 0.80 or greater. Enbridge requires an aggregate profitability index 1.0 or greater for main extensions completed within a one year period. Enbridge will install a service line free of charge up to 30 meters from the property line.

- FortisBC charges new customers for the costs of a distribution extension (excluding the cost of transformers, service drops and meters). There is a service connection charge of $200 for single phase, and an additional charge of $3 per ampere above 100 amperes.

- BC Hydro's current SET employs a DCF methodology that considers incremental capital and operating costs, and the expected revenues from an extension. Since it is based on an incremental DCF methodology, BC Hydro's current SET, while quite complex, is consistent in principle with the Commission recommendations in the 1996 SET Guidelines. However, BC Hydro has not kept certain SET input factors, such as the incremental cost of electricity, up to date, so the expected price signals of incremental cash flow analysis have not been consistently conveyed to applicants for system extensions.

  BC Hydro has applied for changes to its SET as part of its 2007 Rate Design Application ("RDA"). The new proposed test is a simplified test that establishes a maximum BC Hydro contribution towards the cost of a system extension of $1,900 per residential customer and $425/kW of demand for General Service customers. These allowances were developed using information from the Fully Allocated Cost of Service ("FACOS") study in the 2007 RDA. For example, the $1,900 was based on a twenty-year present value of allocated residential Distribution demand-related costs (per customer).

3.3 Marketplace Review

Market conditions that drive consumer fuel choice have significantly changed since the current customer connection and system extension policies of the Terasen Utilities were put in place. Some of these changes include:

- Commodity Pricing – In recent years, the price differential between gas and electricity has narrowed. This change in costs has eroded much of the traditional operating cost advantage of natural gas. The nature of market-based pricing of natural gas relative to the Heritage-related electricity rates 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.

- Technological change – There are a number of technological changes that have taken place in the past few years that directly affect the market share of natural gas. For example, a requirement that new buildings use high efficiency furnaces will cost customers more than mid efficient appliances. Further, due to the venting requirements of high efficiency furnaces, a high efficient water heater is also required thus further increasing costs. While the Company supports the use of high efficient appliances, this additional cost is creating additional barriers to connect to natural gas. The Company therefore needs to ensure that customers do not pay higher connection fees as a result of pursuing energy efficiency measures.

- Housing Market - Developers continue to be the decision makers for energy choice and their decisions are often driven by profit for the developer rather than the long term operating costs and benefits for the ultimate customer. Due to the robust housing market, rapid price increases in new housing stock and the reduced price advantage of natural gas, potential buyers are not making the energy choice a priority in their buying decision. They simply want to purchase an affordable property. As such it is in the best economic interest of a developer to install electricity for space and water heating rather than gas, as the developer cannot normally charge more for a new home with gas heating.

- The market shift to multi-family dwellings is also further cause for concern with respect to increasing electricity demand. Multi-family and condominium apartments are increasingly 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. Many developments employ electric baseboard heating and often electric fireplaces. It is the belief of the Company that in order for BC Hydro to achieve its conservation and electricity self sufficiency goals of the Energy Plan it should not be attaching space or water heating load.

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 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.

The Company commissioned Willis Energy to review and analyze the competitive position in British Columbia of natural gas relative to other energy forms. The report (attached as Appendix 2) describes the competitive pricing pressures that natural gas faces compared to electricity. The report also provides suggestions for potential growth areas and how incentives can help provide the appropriate market signals for customers to make optimal energy decisions.

4 Customer Connection Fees and Charges

4.1 Current Charges

The current customer connection fees and charges have been in place since January 1, 1997 following the review TGI's (then BC Gas Utility Ltd.) application for approval of the Service Line Cost Allowance Proposal. In the Decision dated October 7, 1996 issued concurrently with Order G-104-96, the Commission approved TGI's submission to set a Service Line Cost Allowance at $1,100 and also directed TGI to TGI 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 Service Line Installation Fee (SLIF) of $215 representing the minimum customer contribution per service line, and
- A Service Line Cost Allowance ("SLCA") of $1,100 representing the cap on service line costs over which the customer must make a contribution.

In TGI's October 1996 submission, the proposed SLCA of $1,100 was intended to represent the maximum capital expenditure that TGI would invest to install a service line to connect a new customer to the gas distribution system. The principal objective of the SLCA was to limit the costs the utility would otherwise incur for new customers with extraordinary connection costs. All new customers requesting service must pay the SLIF and any service line costs in excess of the SLCA. In effect, therefore, TGI's maximum investment in service line installation costs is limited to $1,100 less $215 = $885 per new customer service.

TGVI adopted TGI's customer connection policies beginning January 1, 2006 following Commission Order G-126-05. That Order 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 new customer charge of $85.

4.2 New Customer Application Fee

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. The current $85 application fee has been in place since prior to 1996. Since that time, the processes have been streamlined and costs to enroll customers into the system have remained relatively stable or have declined. At this time no changes to this fee is proposed.

4.3 Service Line Cost Allowance

4.3.1 Review of October 1996 Application

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. As described in Section 5 of this Application, the MX test is a 20 year discounted cash flow analysis that is used to determine a Profitability Index ("PI") which compares the present value of the revenues and fees paid by customers served by the system extension (excluding the cost of gas which flows through to all customers at the marginal cost of the gas supply) to the present value of the estimated costs to TGI to build and operate the extension and service lines. The breakeven point (i.e. where the net present value equals zero) is represented by a PI equal to 1.0.

The 1996 results are summarized in Table 4.1. 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 (Appendix 3, Schedule 1). 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:

Table 4.1

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

Based on the cost data related to 1996 service line installations, the proposed allowance of $1,100 would have required 13% of new customers to pay contributions. The Company 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.

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 Service Line Installation Fee ("SLIF") of $215 as the minimum contribution by customers toward the cost of service line connection.

The SLCA and SLIF are currently applied both to new customer services that are connecting to an existing main and those connecting to a new main extension. Since the determination of the SLCA was calculated using the MX test on a proxy customer and included an average cost for a main, the following observations can also be made:

- 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 $1,100 less $215 = $885 per new customer installation. The intent of the SLCA calculation was to determine the maximum investment that the Company 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.

- The MX test used to determine the SLCA included the average cost of a main on a per customer service basis. In the case of customer connecting to existing main, by determining the maximum allowance based on setting the PI to one, 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.

- 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 profitability index significantly greater than one.

4.4 Analysis of 2006 Data

Terasen Gas Inc.

The companies have reviewed TGI's 2006 actual cost data to determine the maximum allowance, or SLCA, based on the same methodology used in the 1996 application. This was done again by applying the current MX test to a single proxy customer based on current inputs and 2006 normalized annual consumption of a residential customer of 96.9 GJs.

As provided in Schedule 2 of Appendix 3, in 2006 TGI's average direct cost of new main installation per customer service was $620. When input into the current MX test, this resulted in a target service line cost of $1,170 to provide a PI of 1.0. Schedule 3 in Appendix 3 provides a summary of all 2006 service line costs for Rate 1 and Rate 2 Customers and shows that the average cost per service line prior to the consideration of any contributions 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. The maximum allowance based on this set of data would therefore be in excess of $3,500.

As in the 1996 test, this calculation of the maximum allowance was based on average normalized consumption across TGI's residential customer base. Since 1996, however, TGI has experienced a decline in average annual use 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 scenarios were also run assuming annual consumption of 90 and 80 GJs. As shown below, these sensitivities resulted in a maximum allowance of $2,925 and $1,535 respectively.

Table 4.2 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	>$3500	$2,925	$1,535
% of Customers > Maximum	0%	8%	19%

<u>Terasen Gas (Vancouver Island) Inc.</u>

The 2006 TGVI data was also evaluated to determine the maximum allowance by applying the same methodology based on TGVI's inputs and average costs. The MX test was applied to a proxy customer based on 2006 average cost of new main per customer service of $1,086 (Schedule 2 Appendix 3) and the 2006 normalized average consumption for a residential customer of 60.2 GJs. The target service line cost was determined to be $1,072 which when compared to the 2006 service line costs summarized in Schedule 4 in Appendix 3 resulted in a maximum allowance of $1,473 per customer.

In TGVI's case however, the utility is experiencing increasing average annual use per customer as new customers generally have higher consumption than the average of the existing customer base. Two sensitivity scenarios were therefore evaluated. The first scenario was based on the assumption that the consumption of new customers is 10% greater than the current average across the customer base. In the second case, the objective was to determine the consumption level that would support a maximum allowance of $1,535 to match the allowance determined in the case of TGI in the sensitivity scenario where new customer consumption averages 80 GJs per annum.

Table 4.3: TGVI: 2006 Customer Service Lines

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%

4.4.1 Observations and Conclusions

The maximum allowance provided in Tables 4.2 and 4.3 represents the maximum investment that TGI or TGVI can make toward the cost of the service line and maintain an average PI of 1.0. If customers are required to make a minimum contribution regardless of the cost of the connection, such as the SLIF, then the maximum allowance should be increased in order to maintain the level TGI or TGVI can invest in the customer service line.

As shown by the results in Tables 4.2 and 4.3, the calculation of the maximum allowance is sensitive to the factors used in the proxy MX test. TGI and TGVI will be reviewing these factors on a regular basis to determine if adjustments need to be made to ensure new customers are not paying more to connect to the system than necessary while not unduly impacting existing customers.

The SLCA currently applies to both residential and small commercial customers. However the MX test methodology used to determine the target service line costs was based costs and revenues associated with a residential customer only. As the small commercial customer generally has higher consumption levels, if the same methodology was applied it could result in a higher service line allowance for these customers. However, the commercial customers represent only a small percentage of total customer additions in each year, therefore the impact of a “weighted” SLCA may be relatively small.

The methodology used to determine the maximum allowance, also assumes that the customer is contributing to the cost of mains through its rates. In the case of new customers connecting to an existing main, the net result is that these customers, on average, offset the full cost of new service line connections and also provide a benefit to existing customers by contributing to the cost of existing mains. In effect the PI is greater than 1.0.

The application of a maximum allowance that takes into account the average cost of mains may be appropriate in the case of a new customer connecting to an existing main. However, in the case of a new main extension test, the expected costs of both the new main and the service line costs are included in the calculation to determine the requirement for a capital contribution. The impact of the SLCA in a main extension is further discussed in Section 5.

Although TGVI and TGI currently have different rate structures and 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. The results shown in Tables 4.2 and 4.3 for TGI and TGVI respectively demonstrates that a maximum allowance of $1,535 dollars would recognize the costs differences and changes in consumption patterns being experienced at each utility.

The appropriate application of the SLCA will reduce the administrative costs associated with determining new customer connections. For example, as shown in Tables 4.2 and 4.3, if the SLCA was set at $1,535, the percentage of new connections that would be in excess of that amount is 19% for TGI and 36% for TGVI.

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. It does not, however, 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. In addition, 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. Perversely, 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 behavior, the application of the SLCA should allow adjustments to be made in order to ensure the appropriate price signals are in place to support fuel choice and efficiency measures from a new customer perspective. This is further discussed in Section 6 of this application.

4.5 Connection Fees and Charges Recommendations

In general it is recommended that customer charges and fees should be updated to reflect current costs and conditions. In addition, consideration should be given to providing further incentives to ensure that customers are not penalized or discouraged by the adoption of energy efficiency measures. More specifically, the Companies propose the following changes:

2. For new customer connections to existing mains it is recommended that:

- The minimum contribution (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;
- Additional allowances should be made to the SLCA to recognize the benefits of energy efficiency measures.

3. For TGI and TGVI customers connecting to new main extensions it is recommended that:

- Both the SLIF and the SLCA be eliminated. All service line and main costs are captured in the MX test used for new extensions in order to determine a customer contribution and therefore elimination of the SLCA and the SLIF will not change the requirement for customer contribution where the profitability index does not meet the required hurdle rate.

5 Main Extension Test

Both 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 the commodity cost or midstream charge. The cash outflows are the estimated costs for TGI/TGVI to build and operate the system including capital costs for materials and installation of the main, service line and meter, on-going operating and maintenance costs and upstream system improvement costs.

The MX test is used to determine a Profitability Index (“PI”) that represents a ratio of the PV of expected revenues to the PV of expected costs. 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 existing customers.

5.1 MX Test Analysis Results

5.1.1 2007 MX Test Forecast Outcomes

Under the current policy, each individual main extension must have a PI of 1.0 or greater before it can proceed. In aggregate, therefore, it is expected that the PI would be significantly greater than 1.0. If a goal of an MX test is to not negatively impact existing customers, then the current policy goes one step further by ensuring that in aggregate new customers pay more than the costs to connect them to the system. To validate this hypothesis, the Companies analyzed main extensions undertaken in 2007. The results are provided in Schedule 5 of Appendix 3 and are summarized below.

For the analysis the Terasen Utilities reviewed all the main extensions that were started between January 1, 2007 and April 2007 for TGI and TGVI. After removing any tests that did not have complete data, 112 TGI tests and 55 TGVI tests were reviewed. For the purpose of the review, forecast costs, consumption and attachments were used. The MX test results for this sample resulted in PIs that ranged from 0.05 to 30.16 for the individual MX tests prior to consideration of any contribution in aid of construction.

The aggregate PI for all the completed tests was then determined for the sample period. The aggregate PI was defined as the total revenue for all the main extensions compared to the total costs for all main extensions in the period based on forecast values. Using this population of data, the aggregate PI for TGI was 2.3 and the aggregate PI for TGVI was 1.83. The aggregate of both TGI and TGVI was 2.14. However, if all negative PI’s were adjusted to equal a PI of 1 to account for contributions from customers, the aggregate PI would have been marginally higher than 2.14. If the Companies were to take an approach similar to Enbridge, individual main extensions could have a PI of less than 1.0, and on an aggregate basis, the PI would be more than 1.0 but would likely be less than 2.14.

5.2 Main Extension Test Input Parameters

The current 20 year discounted cash flow main extension test for both TGI and TGVI includes the following parameters:

Table 5.1

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

With the exception of System Improvement ("SI") charges, which are discussed below, the input factors listed above are reviewed and updated on a regular basis. In most cases the factors are reviewed annually and updated as appropriate. Updates to some factors, such as income tax rates and property taxes are dependent on changes being implemented by levels of government and occur more sporadically.

5.2.1 SI Charge

The TGI SI charge methodology was developed in 1994 and was intended to allocate the costs for system improvements on the distribution system that result from increases in capacity from the addition of new customers. The analysis reviews 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. The SI charge has been increased by inflation from its original calculation and is currently $0.35/GJ. TGVI has traditionally used a transmission SI based methodology. Prior to 2006, the TGVI SI charge as part of the then current 15 year discounted revenue requirement MX test was $0.50/GJ. As part of the TGVI Negotiated Settlement as approved by Commission Order No. 161-06 and Reasons for Decision, the Commission determined that the SI charge should remain at $0.50/GJ.

A SI analysis for both TGVI and TGI was re-run using distribution five year growth and peak day forecasts for each utility consistent with the original TGI methodology. The resulting distribution SI for TGI is $0.16/GJ, and $0.151/GJ for TGVI. The Companies believe that a consistent approach across both TGI and TGVI would be preferential as it would remove unnecessary complexity from the MX test. A distribution derived SI charge is consistent with this philosophy.

Other than the specific changes sought in respect to System Improvements in this application, the Companies intend to continue the same process of regular review and updating of the main extension test factors.

5.3 SLCA and SLIF Impact

Section 4 of this Application discusses the development and the application of the SLCA and the SLIF as they apply to the MX test. Currently these factors are applied to both infill customers and customers connecting to new main extensions. As the total expected costs of the new main and service lines are included in the main extension test, the Companies propose that the SLCA and the SLIF both be removed from the MX test.

Under the current policies, an evaluation of a new main extension could result in four outcomes as illustrated in Table 5.2.

Table 5.2 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

The requirement of a SLIF does not impact the total contribution required for main extensions that do not meet the minimum hurdle or profitability index. The MX test considers the SLIF as a contribution in aid of construction ("CIAOC") 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.

However, 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. Elimination of the SLIF would reduce the cost to these customers and still produce positive benefits for existing customers. Elimination of this cost sends the right price signal to these customers.

Similarly, 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 profitability index in the MX test. However, removal of the SLCA 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.

An example of a system extension where the MX test was positive but where the customer was still required to make a capital contribution is illustrated in Figure 5.1. In this case, the MX test provided a significantly positive result with a PI of 2.39. If the SLIF and the SLCA was eliminated, the customer's costs would have been limited to the administration fee, however the PI would have only decreased to 2.26 and therefore the customer would have continued to be economic.

Figure 5.1

TGI Project # 4110012917

- Rate Schedule 2 customer
- Market segment – Small Apartment
- MX Test PI = 2.39
- Service line cost = $1,563.00

- Cost to Customer
  - New Customer Administration Fee - $85.00
  - MX Test - $0.00
  - Service Line
    - $1,563.00 minus $1100.00 (SLCA) = $463.00
    - SLIF - $215.00
  - Total Cost to customer - **$763.00**

5.4 Observations and Conclusions

Under the current test, each individual main extension must have a PI of 1.0 or above to be considered economic. Those that have a PI of less than one must pay a contribution sufficient such that the PI = 1. As discussed above, the PI of all extensions when considered in aggregate is much higher than 1.0. By requiring every MX test to have a PI equal to or above 1, on average new customers are paying more than their fair share of costs. If the Companies were to aggregate main extensions on an annual basis such that the aggregate PI was above 1, a better balance of interests between new and existing customers would occur.

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 directly parallel to the practice of gas utilities in Ontario (see Enbridge Gas discussion in Appendix 1). BC Hydro has proposed a maximum allowance of $1,900 per residential customer that it will contribute towards the capital cost of a system extension. The $1,900 allowance is to be applied on system-wide basis without reference to specific incremental costs and revenues of that extension. It is reasonable to expect that customers on some extensions will benefit from this aggregated approach while customers on other extensions will not. The Ontario gas utilities employ a threshold PI of 0.8 for individual main extensions and must maintain a system-wide PI of 1.0.

Changing the threshold PI to less than 1.0 but on aggregate higher than 1.0 will simplify the process and send the appropriate signal to customers. In addition, the elimination of the SLIF and the removal of the SLCA will not harm existing customers; rather 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.

5.5 MX Test Recommendations

The Terasen Utilities propose to continue using the 20 year DCF MX test, using the same methodology as the current TGI and TGVI test. The Companies propose to evaluate of MX tests on an aggregated basis as well as on an individual basis. The Companies believe that this is consistent with cost-causation principles and will not cause current customers to be harmed.

To 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, the Company proposes to change the threshold for passing the MX test from a PI of 1.0 to a PI of 0.80 for individual main extensions. For example, if a MX test had a PI of 0.6, the customer would have to pay a contribution to reach the PI threshold of 0.80.

On a system wide basis the Companies proposes that each utility will have an aggregate annual main extension PI of 1.1. A random sampling of tests would be reviewed each year to determine if the aggregate PI is higher or lower than this level. 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 PI of 1.1. The aggregated PI of 1.1 proposed in this

Application is conceptually the same as the practice in Ontario, however it provides a 10% cushion to allow for unanticipated variations that may occur before the threshold PI for individual main extensions is adjusted. This approach is similar to that used by the major Ontario gas utilities as illustrated by the description of Enbridge's policies in Appendix 1.

The Companies propose to use the same distribution methodology for calculating the SI charge for both TGVI and TGI. TGVI would therefore use a distribution related SI charge calculated in the same manner as TGI.

The Companies propose to change the process for determining service line costs as part of a main extension test. When a new main extension is required, capital costs required to provide service to the customer 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 in these cases. The Companies also propose to eliminate the SLIF for all customers requiring a main extension as noted previously.

6 Energy Usage and Efficiency Allowance

The Companies believe that they should be encouraging efficiency on the system, encouraging conservation of energy and helping consumers of energy meet the societal goals outlined by the Energy Plan. The Companies believe that it is possible through the system extension and connection policies to influence customers' choice of energy and help meet the goals of the Energy Plan. However, at present, neither the SLCA nor the MX test make a distinction between high efficiency appliances and standard efficiency appliances. In both the MX test and the SLCA, consumption of gas is used to arrive at either revenues for the MX test or as an input to affect the SLCA. Currently, neither the MX test nor the SLCA use different volume inputs to account for the use of high efficient appliances. 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. The Companies believe that changes to incorporate 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.

The Company proposes to give additional credit for using space and water heating appliances and for making energy efficient choices within the SLCA and MX test as per the following:

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

  The Companies believe that this small change will help send the appropriate signal to the market place of the right fuel at the right time and the right place. Further the Companies believe that this change will result in avoided future electricity requirements therefore helping to meet the Energy Plan goals.

- High Efficiency – Customers who have both high efficiency gas fired space and water heating would receive a credit of 10% of the volume otherwise used for both appliances. For example, if a furnace and water heater on aggregate use 80 GJ/year, the Company would use the value of 88 GJ/year for consumption in the MX test[8].

  Increasing the volume amount for high efficient appliances, within the MX test, increases the likelihood that the MX test will be positive. Increasing volume used to derive the SLCA will result in a higher SLCA. Using larger consumption values for high efficient appliances should therefore send more appropriate market signals to customers wanting to use natural gas for space and water heating and help provide a context to educate consumers on the importance of high efficiency appliance use, and again is therefore consistent with the Energy Plan.

[8] For space heating, the Companies consider an Energy Star rated furnace or boiler as being high efficiency. For water heating, the Companies consider tankless water heaters or water heaters with an efficiency rating of 78% or greater as being high efficiency.

- Leadership in Energy and Environmental Design ("LEED™") Building Efficiency – 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% of the volume otherwise used for both appliances. For example, if a furnace and water heater on aggregate use 80GJ./year, the Company would use the value of 92 GJ/year for consumption in the MX test.

  Meeting LEED™ building requirements adds to the capital cost to construct a building. Increasing the volume amount for space and water heated appliances in LEED™ buildings, within the MX test, increases the likelihood that the MX test will be positive. Increasing the volume used to derive the SLCA will result in a higher SLCA. While the costs incurred to meet LEED™ building design are unlikely to be offset by a lower connection fee, the Companies believe it is important to send the appropriate market signals with respect to conservation and efficiency. Using slightly larger consumption values for high efficient appliances and LEED™ building design therefore sends appropriate market signals to customers wanting to use natural gas for space and water heating and is therefore consistent with the Energy Plan.

The following table outlines the proposed consumption methodology within the MX test:

Table 6.1

Appliance	**TGI/VI Consumption**
Pool	As per Residential End User Study
Hot tub	
Range	
Fireplace Heating	
Fireplace non-heating	
Dryer	
BBQ	
Patio Heater	
Furnace/Boiler	
Water Heater	
Furnace and Water Heating	105% X Furnace and Water Heater Value
High Efficient Space and Water Heating	110% X Furnace and Water Heater Value
High Efficient Furnace and Water Heating and LEED Building	115% X Furnace and Water Heater Value

The Companies also propose to recognize the above goals in the application of the SLCA. As the SLCA is intended to simplify the process and application of connection charges, the Company proposes to use consumption allowance credits based upon the current average residential consumption values in the MX test for space and water heating of 60GJ/year for forced air space heating and 20GJ/year for water heating. Using these values, and applying the percentage credit as noted in Table 6.1 an increase in GJ's for determining the maximum allowance used to derive the SLCA, as described in section 4 can be determined. This is summarized in the following table:

Table 6.2

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

The Companies believe that these changes will be positive for both new and current customers. 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 benefit because they will not be penalized due to the selection of gas for heating or for more efficient appliance and building design. It should be noted that existing customers who upgrade to more efficient appliances or upgrade their buildings reduce there annual consumption and arguably impose a cost on all customers, however in the interests of both energy efficiency and environmental performance this type of behavior is encouraged. The Companies believe that the changes are beneficial to all energy consumers in the province and help to achieve the goals of the Energy Plan.

7 Summary and Approvals

The Companies believe that the changes proposed in this Application will help send the appropriate market signals to developers and customers and offset some of the barriers deterring customers from connecting to natural gas. The changes will also simplify the current test and process and make them easier for customers to understand. The Companies also believe that the changes proposed will help BC meet targets as set out in the Energy Plan.

The Companies respectfully seek approval for the following changes to their system 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 of $215.
  - To implement a Service Line Cost Allowance of $1,535.
  - To cease using the Service Line Cost Allowance for new main extension applications.
  - 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 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.
  - 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.

Appendix 1

Atco Gas

Main Extension Policy

The Atco Gas main extension policy is based largely on a principle of non-discriminatory access to service, rather than on any overriding concern for the potential subsidization of new customers by existing customers. Atco Gas' *Terms and Conditions for Distribution Service Connections* states that if an applicant's premise is within a municipality with a franchise agreement with Atco, then Atco will extend the pipeline system at no charge. This is based on the condition that the municipality must have extended or will extend the water and sewer services to the applicant as well.

If the customer is not within a municipality, and the main extension (excluding the service line) does not exceed 50 metres in length, and an easement is provided, then Atco Gas will provide the extension at no charge.

If the extension is greater than 50 metres, the applicant must pay the difference between the total estimated costs, and the total revenue that Atco Gas expects to receive from the customer for the first three years.

Service Line Extension Policy

As per the *Terms and Conditions for Distribution Service Connections Schedule C Non Discretionary Charges*, there is a $100 Basic Charge to apply for service connection, and specific pipe installation charges based on service line diameter and season.

Avista Utilities - Washington

Gas Extension Policy

Schedule 151A of Avista Utilities – Washington ("Avista Washington") tariff *Naming Rates for Natural Gas Service and Containing Rules and Regulations Governing Service* states that for a residential customer, an extension is no cost if the annual revenue is not less than one-third of the extension cost, (which includes the cost of mains, service lines and pressure regulating equipment).

If the annual revenue is more than one-sixth, but less than one-third of the extension cost, an extension will still be supplied only if the applicant agrees to pay an annual amount for gas service for a period of five years that is not less than one-third the extension cost.

Avista Utilities - Oregon

Main Extension Policy

Avista Utilities – Oregon's ("Avista Oregon") *Tariff Schedules Applicable to the Gas Service of Avista Utilities Rule 15* states that if the estimated cost does not exceed three times the estimated annual gross revenue as determined by Avista, then the main extension is free. There is also a condition that the requested area must be of permanence to warrant the expenditure by Avista Oregon.

If the estimated cost does exceed three times the estimated annual gross revenue, then the applicant may choose to advance in cash the difference between the total cost and three times the estimated annual gross revenue.

If upon completion, it is determined that the actual cost is less than the estimated cost, then the money is refunded without interest.

Service Line Extension Policy

Avista Oregon's *Tariff Schedules Applicable to the Gas Service of Avista Utilities Rule 16* states that the service line is free if the extension is less than 40 feet.

Any extension in excess of 40 feet requires an advance from the customer. If the applicant's building is located at a large distance from the main or is coming off of a high pressure main, then Avista may waive the additional charge.

Northwest Natural Gas Company ("NW Natural") – Washington and Oregon

Main Extension Policy

As per Northwest Natural's *Schedule E - Distribution of Facilities Extensions for Applicant-Requested Services and* Mains, an applicant for a main receives a construction allowance equal to five times the delivery margin for the applicable rate schedule, which is then multiplied by the annual estimated energy usage (five year net revenue test).

The construction allowance is equal to 5.0 times the delivery margin for the applicable rate schedule, times the annual estimated energy usage attributable to the applicants installation characteristics. The estimated energy usage is determined from structure characteristics, demographics, heating degree days, and type and number of appliances installed.

The estimated cost to construct the main extension offsets the applicant's construction allowance. If the allowance is greater than the cost of construction, then the main extension is free. If the cost to construct the main extension is greater than the allowance, the applicant must pay a construction contribution equal to the difference between the cost to construct and the construction allowance, plus the estimated tax effects on the construction contribution amount at 22.859%.

Northwest Natural, at their discretion, may perform a 30 DCF test. If the DCF is performed and it results in a reduction in the required construction contribution, the applicant has the choice of paying the reduced contribution and waiving the right to any future refunds, or paying a higher contribution, which would then be subject to a refund.

A representative from Northwest Natural confirmed that very few main and service line attachments do not pass and require customer contributions. Builders also have the opportunity to provide a trench to the property to save costs, and thus ensure everyone passes the test.

The service line extension policy is the same as the main extension policy.

Enbridge Gas

Main Extension Policy

Enbridge's 2007 Test Year Rate Case *Economic Feasibility Procedure and Policy* handles system expansion on a project-by-project basis requiring an individual project profitability index of 0.80 or greater and the overall investment portfolio (the costs and revenues associated with all new distribution customers who are forecast to be attached to new and existing mains in the fiscal year) at a profitability index greater than 1.0 with a safety margin.

Each project has an impact on the rolling 12 month cumulative net present value profitability index, which must be maintained at a net present value of zero or greater, and a targeted profitability index ratio of 1.0 or greater. For negative net present values, a contribution in aid of construction must be provided to bring the net present value to a viable level.

For residential customers, "Budget Average Unit Costs" are used for pricing mains for subdivision customers unless more information is available to obtain field estimates.

Revenue is calculated based on a revenue horizon of 40 years from the in-service date of the initial mains.

Service Line Extension Policy

Enbridge Gas will install a service line free of charge up to 30 meters from the property line.

FortisBC Inc. ("FortisBC")

Main Extension Policy

As outlined FortisBC *Electric Tariff B.C.U.C. No. 1 For Service in the West Kootenay and Okanagan Areas Schedule 74 – Extensions*, FortisBC will contribute a transformer (which includes transformers, cutouts, lightning arrestors and associated equipment, and labour to install), drop service (which includes that portion of an overhead service connection extending not more than 30 meters onto the applicant's property and not requiring any intermediate support on the applicant's property), and metering equipment, toward new services operating at distribution voltage (35 kV or less). When the applicant requests an underground service, the FortisBC contribution will be limited to an amount for an equivalent overhead transformer, drop service, and metering equipment. The customer must then pay the Customer Portion of Costs "CPC" - Extension Cost plus the Operation and Maintenance Surcharge, (applicable for system extensions costing more than $2,000 per customer).

Extension Cost – FortisBC estimates the cost of constructing an extension including the cost of labour, material and construction equipment. Extension costs include the cost of connecting the extension to the FortisBC distribution system, inspection costs, survey costs, permit costs and do not include the cost of the transformer, drop service and metering equipment. According to the tariff, applicants are charged an incremental operation and maintenance surcharge on a one-time basis for extensions costing more than $2,000 per customer.

Special Contracts

An applicant may also be required to make a contribution in addition to the CPC where additional investment is made to provide service at a phase and voltage not presently available or for a large non-residential customer where new or upgraded substation and transmission facilities may be required.

Service Line Extension Policy

According to *Section 2.4 Connection of Service of the FortisBC Electric Tariff*, FortisBC will connect an overhead drop service to the customer's premises after receipt of an application; payment of connection and installation charges. For extensions requiring more than a drop service, connection will be made under the provisions of the applicable extension schedule.

Schedule 82 - Charges for Installation of New/Upgraded Services of the FortisBC electric tariff outlines that the connection charge for single phase is $200, and there is an incremental charge of $3.00 per ampere above 100 amperes for single phase.

BC Hydro

BC Hydro's current system extension test ("SET") was developed in response to the BCUC System Extension Guidelines and was implemented at the beginning of 1998. The BC Hydro SET uses an incremental analysis approach and employs discounted cash flow principles. BC Hydro's current SET model is thorough in the range of costs and revenues it considers in the economic analysis of system extensions. While the BC Hydro SET model potentially maintains similar economic rigor to the model used by TGI, in the administration of the SET certain key input factors have not been updated since the introduction of the model in 1998.

BC Hydro's proposed approach to system extensions in the 2007 Rate Design Application ("RDA") moves away from a detailed incremental approach using a discounted cash flow model. BC Hydro has proposed a model that employs simplified maximum contribution that it will make towards a system extension. The maximum system extension contribution will be $1,900 per customer for residential customers and $425/kW of peak demand for commercial and general service customers. These allowances were developed using information from the Fully Allocated Cost of Service ("FACOS") study in the 2007 RDA. For example, the $1,900 was based on a twenty-year present value of allocated residential Distribution demand-related costs (per customer).

For the residential class the $1,900 per customer allowance is independent of the annual customer loads. The same allowance of $1,900 per customer will apply to larger volume residential accounts as to smaller volume accounts. Another aspect of the proposed system extension approach is that it does not give direct consideration to incremental upstream costs.

The chief benefit of BC Hydro's proposed system extension model is in its simplicity and ease of administration. The calculation of customer contributions will be very straightforward and easy to explain to developers and customers.

Appendix 2

Energy Market Competitive Assessment

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July 2007

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1 INTRODUCTION

The purpose of this Study is to identify and quantify the potential for increased natural gas sales and the competitive risks that could reduce natural gas sales. The study is divided into opportunities and threats. Opportunities are categorized as customer choices which would lead to an increase in natural gas sales and threats are categorized as customer choices which would lead to a decrease in natural gas sales.

It is important to note that a threat, defined as a risk of decreased natural gas sales may not necessarily be a business threat to Terasen Gas. In fact, it may be a business opportunity in that it may provide Terasen Gas with an opportunity to sell another type of service. Similarly, an opportunity defined as a potential for increased natural gas sales, may not be a good business opportunity due to the profile of the gas use connected with the sale.

For both the opportunities and threats, gas sale increases and decreases are estimated in annual volumes over a five-year time window. For example, an estimated impact of 1.0 PJ means that over a five-year period annual gas sales would be increased or decreased by 1.0 PJ.

In the retrofit case, a 1.0 PJ impact amount means the expected equipment retrofits that would occur over a five-year period which would result in a change in gas sales of 1.0 PJ annually. In the new construction case the impact amount is also an annual sales volume but it is based on the number of facilities that are expected to be built over the next five years. For example, if it is forecast that 1,000 buildings of a particular type will be built over the next five years and that the gas load in these buildings due to a particular opportunity is expected to be five percent higher than current forecast, then the increase in annual sales volume would be five percent multiplied by the estimated gas use in the 1,000 buildings multiplied by five.

The purpose of this study is to assist Terasen Gas to rank the competitive threats and opportunities to their markets. The values estimated are based on observed trends and not detailed market studies. The model developed in conducting this study, is available for analyzing different future market scenarios.

2 SUMMARY

There is a significant competitive threat to natural gas sales in British Columbia due to an electricity pricing and practices advantage. The prices that BC consumers pay for electricity is based mainly on the cost of "Heritage" power while the price of natural gas is mainly due to a value for gas based on a North American market derived value. "Heritage" power is the electricity generated by hydroelectric projects that were built 25 to 70 years ago. This discrepancy between the cost of "heritage" power and the current market price for energy was not a major factor until recently.

For approximately 15 years from 1985 to 2000, the price of electricity was relatively stable at six cents/kWh for residential customers and the price of natural gas was about four dollars per GJ. Electricity and natural gas as energy forms have relative advantages and disadvantages over each other; however, a key advantage to natural gas over this period was that natural gas was significantly less expensive. On a direct energy comparison four dollars per GJ is equal to 1.4 cents/kWh, therefore even though electric appliances, furnaces and boilers may be more efficient than their gas counterparts; for many energy applications such as space heating, natural gas dominated the market largely because of overall cost advantages.

Currently however, the price of electricity for residential customers has only gone up slightly to 6.2 cents/kWh, or $17.43/GJ, but natural gas at the retail level is 4.5 cents/kWh or $12.50/GJ. Taking efficiency into consideration, and the differences in capital costs, natural gas is no longer the obvious low-cost alternative.

The fact that natural gas is an energy source that can address the energy capacity needs of the Lower Mainland and Vancouver Island is important with respect to provincial energy planning. The major part of British Columbia's energy requirements are in the Lower Mainland and the southern part of Vancouver Island. However, the major sources of energy are in the interior and the north part of the province. The British Columbia Transmission Corporation (BCTC) is presently studying alternatives to meeting the need for increased transmission capacity into the Lower Mainland. If natural gas' share of the Lower Mainland and Vancouver Island space and water heating market were increased, the requirement for electricity capacity into the Lower Mainland would be reduced.

2.1 Residential Opportunities and Threats

Opportunities were assessed in terms of what promotional programs and in some cases financial incentives could accomplish in terms of increasing natural gas sales. For example, one of the most significant threats is loss of water heater market share. Gas water heaters however, could also be an opportunity for increased sales if a promotional program was combined with a joint BC Hydro/Terasen Gas incentive. It is suggested that a BC Hydro incentive could be justified in terms of reducing the electric utility's need to meet capacity in Lower Mainland and Vancouver Island.

The table below provides an estimate of the increase in gas sales due to different identified residential opportunities.

Table 1 - Estimate of Increase in Residential Annual Sales Due to Opportunities (PJ/yr)

Opportunity	Lower Mainland (LM)	Interior	Vancouver Island (VI)	Opportunities Total
Gas Water Heaters-Tanks	0.6	0.5	0.9	*2.0*
MURB Space Heating	1.5	0.2	0.1	*1.9*
Gas Water Heaters-Instantaneous	0.3	0.3	0.6	*1.2*
Outdoor Uses	0.2	0.1	0.2	*0.5*
Market Share Increase In Clothes Dryers	0.2	0.1	0.1	*0.3*
Jacuzzi-Hot Tubs	0.2	0.1	< 0.1	*0.3*
Driveway-Parking Lot Heating	0.1	0.1	< 0.1	*0.2*
Gas Fired District Heating	0.1	< 0.1	< 0.1	*0.1*
Total	**3.1**	**1.4**	**2.0**	***6.5***

Natural gas has a number of advantages which provide opportunities for increasing gas sales. The water heating "Opportunities" are generally recognized as lifestyle advantages to natural gas. Due to the capacity of natural gas water heaters, customers have the benefit of hot water when they need it. The other Opportunities are seen as opportunities in that they represent a large energy load where marketing programs should be able to increase natural gas' market share.

The following table provides explanations of the Impact Opportunities. SFD represents Single Family Dwellings. Section 8.1 provides more detail.

Table 2 – Residential Opportunity Impact Explanation Summary

Opportunity	Retrofit Explanations	New Construction
Gas Water Heaters – Tank and Instantaneous	Increase gas share of domestic water heaters in SFDs in all regions by 5 percentage points	Increase gas market share in SFDs for all regions to 80%.
MURB Space Heating	No impact on existing housing stock	Increase space heating gas market share from approximately 5% to 50% for Low Rise, High Rise buildings in all regions.
Outdoor Uses	Increase existing gas outdoor use in SFD stock by 20%.for all regions	Increase expected gas use in new construction SFDs for all regions by a factor of 2.
Gas Clothes Dryers	Increase existing market share in SFD stock by 5 percentage points.	Obtain 20% of market share in SFDs for new construction in all regions.
Jacuzzi – Hot Tubs	An increase in units in existing housing stock by 2,000 in Lower Mainland, 1,000 in the interior and 500 on VI.	An increase in units in New Construction by 1,000 in the Lower Mainland, 500 in the interior and 300 on VI.
Driveway Parking Lot Heating	An increase in units in existing housing stock by 1,000 in Lower Mainland, 500 in the interior and 200 on VI.	An increase in units in New Construction by 1,000 in the Lower Mainland, 500 in the interior and 200 on VI.
District Heating	No impact on existing housing stock.	Increase by 10 percentage points the gas hydronic market share in new high-rise construction for all regions.

For the Opportunities, it is suggested that the sum of all of the Opportunities is in the order of seven percent. This means that promotional programs to address the opportunities could result in sales being seven percent. greater with respect to the residential sector than the value estimated in the TGI and TGVI Resource Plans for 2016.

It is suggested that the key market for Terasen Gas is the single family residential market. In this market segment, natural gas still holds a dominant position, Given a more level playing field in terms of price, natural gas should still be able to maintain its position. The Multi-Unit Residential Buildings (MURBs) are a much tougher competitive environment for gas and it is less clear as to the marketing strategy that would be successful in terms of significantly reducing the threats and increasing the opportunities.

As indicated previously, since the price advantage of natural gas has been significantly reduced, there are a number of threats to the residential gas market. The table below indicates the magnitude of these threats.

Table 3 – Estimate of Decrease in Residential Annual Sales Due to Threats (PJ/yr)

Threats	Lower Mainland	Interior	Vancouver Island	Threats Total
Increase in Market Share Air to Air Heat Pumps	4.3	1.2	1.0	*6.5*
Reduction in Market Share for Gas Water Heaters versus Electric Water Heaters	3.3	1.2	1.0	*5.5*
Improved Electric Space Heating Control	1.9	0.4	0.6	*2.9*
Geothermal	0.4	0.1	0.2	*0.7*
Wood Pellets	0.3	0.2	0.1	*0.6*
Reduction in Market Share for Gas Fireplaces versus Electric Fireplaces	0.2	< 0.1	< 0.1	*0.3*
Total	**10.5**	**3.1**	**2.8**	***16.5***

It is not strictly logical to combine all the Threats because some of them will overlap each other. However, it is suggested that the sum of all of the Threats is in the order of 17% of Terasen's residential gas market. This means that the Threats could result in Terasen sales being 17% less than the value estimated in the TGI and TGVI Resource Plans for year 2016.

The table below provides explanations with respect to the threat impact values.

Table 4 – Residential Threat Impact Explanation Summary

Threat	Retrofit Explanations	New Construction
Air to Air Heat Pumps	Five percent of existing gas heating market (high-rise excluded) will be converted to heat pumps within 10-year period for all regions	Reduce natural gas space heating market share in new construction (high-rise excluded) by 10% in all regions.
Electric Water Heaters versus Gas Water Heaters	The existing gas market share in all regions will be reduced by 10% (example existing market share in SFDs in Lower Mainland is reduced from 83% to 73%)	Forecast market dominance of gas water heaters is reversed and electric water heaters dominate new construction (example in the Lower Mainland gas water heaters are forecast to capture 74% of the new construction market-this threat analysis assumes that gas' share will be reduced to 19%).
Improved Electric Space Heating Control	No impact on existing housing stock	- No impact on housing types other than SFDs - Assumes reduction in market share of gas space heating in Lower Mainland for SFDs from 57% to 37%. - Reduction in gas SFD market in interior from 55% to 40%[1]. - Reduction in Vancouver Island market by 11%.
Geothermal	No impact on existing housing stock	- Impact on SFDs and High Rises not on other housing types. - Threat assumes 5% reduction in gas heat market share for all regions.
Wood Pellets	0.5 % reduction in SFD space heating for Lower Mainland and Vancouver Island, 1% for Interior. No impact for other housing types.	For new construction 0.5% reduction in expected space heating load for SFD in Lower Mainland, 1.0 % on Vancouver Island and 2.0% in the interior
Electric Fireplaces vs. Gas Fireplaces	No impact on existing housing stock.	- No impact on new SFDs - Assumes forecast for gas fireplaces in MURBs is reduced by 50%.

Sections eight and nine provide further explanation to the estimated Opportunities and Threat values.

2.2 Commercial Opportunities and Threats

[1] Market share is based on 2006 BC Hydro 2006 Residential Use Study. Reported market share of is derived from regional breakdown of forced-air only gas units.