

March 8, 2007

Robert J. Pellatt
Commission Secretary
British Columbia Utilities Commission
6th Floor - 900 Howe Street
Vancouver, B.C.
V6Z 2N3



SUN PEAKS 2006/07 Revenue Requirements – Exhibit B-3

Sent Via E-Mail: commission.secretary@bcuc.com

Dear Mr. Pellatt;

Subject: Response to BCUC's Commission Information Request No. 1 regarding Sun Peaks Utilities Co., Ltd. – 2006/07 Revenue Requirements

Please find Sun Peaks Utilities Co., Ltd.'s responses to the questions raised in the Commission's Information Request No. 1. I trust that this information is what you required.

Should you have further questions regarding this or any other utility related matter, please don't hesitate to contact the undersigned at 250-578-5490 or utilities@sunpeaksresort.com.

Sincerely,
Sun Peaks Utilities Co., Ltd.

A handwritten signature in black ink, appearing to read "P.A. Miller", is written over a light blue oval background.

P.A. (Pat) Miller
Manager, Utility Services



**SUN PEAKS UTILITIES CO., LTD.'S
RESPONSE TO
BRITISH COLUMBIA UTILITIES COMMISSION
Commission Information Request No. 1**

**Sun Peaks Utilities Co., Ltd.
2006/07 Revenue Requirements**

Submitted: March 8, 2007

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Sun Peaks Utilities Co., Ltd.

1280 Alpine Road, Sun Peaks, British Columbia, Canada, V0E 5N0
Tel: 250-578-5490 / Fax: 250-578-7223 / E-mail: utilities@sunpeaksresort.com

**Sun Peaks Utilities Co., Ltd. response to
BRITISH COLUMBIA UTILITIES COMMISSION
Commission Information Request No. 1**

**Sun Peaks Utilities Co., Ltd. (“Sun Peaks”, “SPUCL”)
2006/07 Revenue Requirements
Due: February 26, 2007 – Extension granted to March 9, 2007**

1.0 Reference: Exhibit B-1, Application, p. 3

“The propane gas distribution system is owned and operated by SPUCL. Terasen Energy Services (TES, formerly operated by Terasen Utility Services), a division of Kinder Morgan owns the propane gas storage facility located at Sun Peaks as part of a 10 year services agreement with SPUCL that expires April 30, 2007. ...As SPUCL is currently in negotiations with TES to reach a new agreement, there is a degree of uncertainty concerning future costs and accordingly this Application is for a one year period.”

1.1 What is the current status of the negotiations? If Sun Peaks cannot reach a new agreement with TES, does Sun Peaks have an alternative source of propane storage?

- *TES and Sun Peaks negotiated an extension until August 31, 2008 of the existing contract based on the current terms and conditions. See Appendix A for copy of agreement.*

Both companies feel that this will give enough time to negotiate a replacement contract. We expect that should SPUCL not be able to renegotiate an extension to this agreement, that other suppliers would be able to supply propane and similar services to TES.

1.2 Does Sun Peaks anticipate that the new agreement will be similar to the existing agreement (TES retaining ownership of the propane gas storage facility and providing services to SPUCL)? If not, please explain.

- *SPUCL expects to reach an agreement with similar terms found in the current agreement with TES prior to the expiration the current agreement on August 31, 2008 amending agreement.*

2.0 Reference: Sun Peaks Revised Tariff, Revenue Requirements and Water Rate Design (Phase I) For The Fiscal Years 1997/8; 1998/9; and 1999/2000 Decision (“1999 Water Rights Decision”), p. 13

“Sun Peaks has historically, taken depreciation only on recorded assets, not CIAC. In addition, the recorded depreciation has not been a factor in the determination of the Utility’s revenue requirements. Since the mid-1980s the Comptroller has required water utilities whose revenue requirements were not based on depreciation, to include an annual contribution to the replacement reserve trust fund, (RRTF), out of customer rates.

...However, provision must be made for either depreciation or an RRTF contribution to ensure water rates include a provision for the decline in the value of the Utility's capital infrastructure."

2.1 Does SPUCL's Water Division include depreciation/amortization in the Operational and Maintenance expenses schedule used in the operating margin calculation? Please provide the Operational and Maintenance expense schedule used by the Comptroller of Water rights to calculate Sun Peaks (Water Division) operating margin.

- *SPUCL's Water Division does include depreciation/amortization in the expenses schedule used in the operating margin calculation. For the 2006 fiscal year, an amortization expense of \$10,768 was provided for. Please refer to page 2 of the Water Tariff # 4 Decision, Water Utility Operating Projection for the Three Year Fiscal Period to April 30/08.*

3.0 Reference: Exhibit B-1, Application, p. 4 and 1999 Water Rights Decision, p. 28

"The 'Operating Ratio Approach' methodology used in this rate application is similar to that used for SPUCL's Water Division as approved by the Provincial Government's Comptroller of Water Rights for small water utilities."

The 1999 Water Rights Decision also provided regulatory guidance regarding the treatment of any potential excess revenues. If actual revenues exceed the revenue requirement by more than two percent, the utility can make a case for the retention of the excess revenue based on cost; otherwise the excess revenue will be refunded to the utility's customers. Revenue deficits will be the sole responsibility of the utility.

3.1 Does Sun Peaks agree with the Comptroller of Water Rights guidance that if actual revenues exceed the revenue requirement by more than two percent, the utility can make a case for the retention of the excess revenue; otherwise the excess revenue will be refunded to the utility's customers? Does Sun Peaks also agree that revenue deficits will be the sole responsibility of the utility? Is it Sun Peaks' view that the same reasoning should apply to SPUCL?

- *The February 28, 2006 Order No 2053 from the Office of the Deputy Comptroller of Water Rights, Decision with Reasons, page 13, provides that for 2007 and 2008, combined revenues exceeding 5% over the approved Revenue Requirements shall be deposited into the RRTF and any Revenue deficit will be the responsibility of the Utility.*

Because SPUCL does not have a replacement reserve trust fund (RRTF) for the gas utility, SPUCL proposes that should revenues in the gas utility exceed 5% of the approved Revenue Requirement for the fiscal year, the amount of the excess over 5% be refunded back to the customer base in the following year through a reduction in the SPUCL delivery charge. Also, since SPUCL

would retain any excess up to 5%, SPUCL believes it is fair that it should be responsible for any revenue deficits.

4.0 Reference: Exhibit B-1, Application, p. 5

“The 8.79% operating margin is based on the BCUC’s 2006 published rate of return of 8.29% for low risk, high grade utilities plus 0.5%.”

4.1 Please explain why Sun Peaks considers the 0.5% premium on the Return on Common Equity for a Low-Risk Benchmark Utility appropriate.

- *SPUCL does not profess to be an expert on this subject and provided for a 0.5% premium in order to be consistent with what was approved by the Comptroller of Water Rights on February 28, 2006 for its’ Water Tariff No 4.*

5.0 Reference: Exhibit B-1, Application, p. 5 and 1999 Water Rights Decision, p. 7

“It is SPUC’s view that the same reasoning that applies to small Water Utilities should apply to small Gas Utilities. Thus, this Application utilizes the ‘Operating Ratio Approach’ to provide for sufficient revenues to cover operating and maintenance costs plus taxes and provide an acceptable rate of return based upon these costs.”

The 1999 Water Rights Decision stated that revenue requirements for SPUC will be calculated using the operating ratio method until it is exceeded by the revenue requirement as calculated by the return on rate base method.

For Fiscal 2007, please provide the standard regulatory schedules.

- 5.1 Schedule 1 Utility Income and Earned Return
- Schedule 2 Utility Rate Base
- Schedule 3 Calculation of Income Taxes on Utility Income
- Schedule 4 Common Equity
- Schedule 5 Return on Capital

- *The Schedules requested as forecasted for F2007 can be found in Appendix B*

6.0 Reference: Exhibit B-1, Application, p. 10 and Schedule 9-Price Increase Effect on Customers

“Given the revenue requirement calculated, SPUC is proposing to generate the additional revenue required equally from basic charges and delivery charges.”

6.1 Please explain why the additional revenue required should be recovered equally from basic charges and delivery charges.

- *The agreement with TES provides for 100% of basic charges being remitted back to TES leaving SPUC with no monthly fixed revenue that is not dependent on gas usage other than the monthly operating credit received from*

TES for performing daily checks and acting as first responder. By recovering a portion of the additional revenue from basic charge revenue, SPUCL will be able to more closely match revenues with monthly fixed costs that are not dependent on gas consumption by customers. SPUCL is of the opinion that recovering the additional revenue required equally from basic charges and delivery charges is a fair and balanced approach to take.

6.2 For the same customer types listed in Schedule 9, please provide the cost of alternative fuels (bottled propane, fuel oil and electricity).

- *Monthly Average Cost (excluding GST and BC Sales Tax)*

	SPUCL	Bottled Propane	Furnace Oil	Electricity
<i>Av Small Residential</i>	\$47.61	\$51.89	\$36.74	\$24.14
<i>Av Residential</i>	\$163.83	\$209.81	\$180.95	\$104.21
<i>Av Small Commercial</i>	\$404.37	\$499.77	\$464.51	\$294.55
<i>Av Large Commercial</i>	\$7,562.29	\$7,711.14	\$9,013.54	\$5,633.24

See attached Appendix E, Schedule 1 for calculation detail.

7.0 Reference: Exhibit B-1, Application, Schedule 5-Operating & Maintenance Cost Projection

“In fiscal 2007, the gas trainer will be on site twice to train two recently hired staff members.”

7.1 Please explain why training costs have increased from \$3,636 in 2006 to \$7,000 in 2007, but the staffing detail information shows no change in staff (7.2 staff in 2006 and 7.1 staff in 2007).

- *The details included in the staffing details shows only the number of staff not the individual staff members. SPUCL must compete for qualified staff in the open labour market. In 2006, SPUCL had staff members leave the employment of the Utility and these positions were filled in May. This required SPUCL to hire a qualified trainer to come back and train the two new staff members to ensure both compliance with the Gas Safety Act and Work Safe BC requirements to ensure staff are adequately trained on daily operational requirements of the gas plant and emergency response for the gas distribution system.*

“In order to reduce labour costs and enhance worker safety, SPUCL has decided to upgrade all gas meters to remote reading capability. This process is expected to take approx 12 years at approx 50 meters per year.”

7.2 Please explain why the meters with remote reading capability are not treated as tangible capital assets (Section 3061 – Property, Plant and Equipment of the CICA Handbook)?

- *It is SPUCL's view that since the new remote reading meters are replacing meters that were paid for or will be paid for by the customer and are therefore not recorded as a capital asset in its records, it would therefore be appropriate to record the cost of upgrading to remote read capability as an operating cost.*

7.3 What is the expected life of the meters with remote reading capability?

- *SPUCL has been advised by the manufacturer, Sensus, that the expected life of the meters with remote reading capability is expected to be the same as the existing gas meters. Only the batteries within the remote unit itself will require replacement every 3 to 5 years.*

7.4 What is the remaining life of the existing gas meters without remote reading capability?

- *Each meter has a life expediency of 25 to 30 years. The oldest recertified meter within the resort was installed in 2000 (due to a resort wide meter change out program to meet Weights and Measures Canada's requirement to have all meters tested for accuracy in 1996)*

7.5 Do the gas meters without remote reading capability have a salvage value? If yes, provide the salvage value.

- *In order to meet Weights and Measures Canada's requirements, each meter at Sun Peaks must be tested for accuracy every seven years. It is during this process, SPUCL planned to replace or convert the bulk of the meters. If the meter is over 15 years old, the meter would normally be replaced rather than converted. It is expected that older meters would have some salvage value for other propane utilities such as Revelstoke, Big White, Furry Creek, etc.). Under 15 years of age, the meter could be converted or sold to other propane gas utilities at fair market value.*

At this time, SPUCL is working with TES to determine the options and costs of this process. All customers connecting to the gas distribution grid will pay for a meter complete with remote reading capabilities and the installation costs as stated in the Gas Tariff's Standard Fees and Charges.

7.6 Please provide the forecasted annual labour costs savings for 2007-2009 as a result of the change to meters with remote reading capability.

- *Until the majority of meters are converted to remote read capability, SPUCL will not benefit from any significant savings in meter read labour costs. Therefore, the annual labour cost savings for 2007-2009 would be minimal. Assuming 50 meters are converted annually, it will take at least 12 years to convert all existing meters.*

- *At present, and depending on the time of year, from 12 to 25 hours are required each month to read meters. If all meters were presently remote read, it would likely take 5 hours monthly.*

7.7 Please describe the worker safety issues that support the change to meters with remote reading capability.

- *In a mountain resort with steep slopes, significant snow falls and many freeze-thaw cycles, meter reading can and has proved to be safety issue to staff.*

Sun Peaks has tried to work with customers in the placement of meters to ensure that the route to these meters is safe. However, due the seasonal nature of the property owners at Sun Peaks, walks and paths are not always kept clear of ice and snow

Over the past five years, there has been an average of one work time loss injury per year due to slips and falls reading meters. In 2000, an employee was seriously injured while reading meters and significant work time loss incurred. It is the safety issues and concerns that is the driving force behind the change over to remote reading meters.

Water meters already have the capability for a remote reading option thus SPUCL will be able to read all utility meters remotely once this meter change out project is completed.

7.8 Please provide a cost/benefit analysis justifying the upgrade of all gas meters to remote reading capability.

- *As stated in 7.7, the driving factor for upgrading to remote meter reading capabilities is the safety of our employees. SPUCL has been very fortunate in that we have maintained a high safety record and currently pay premiums that are 15.4% below our industry average. However, this could change significantly with one fall resulting in a serious injury as happened in 2000.*

As stated in our latest communication from Work Safe BC “a single injury can exceed \$1 million...,” it is prudent that SPUCL continues to strive for a safe work environment in order to control premium costs and ensure the safety of staff members.

“Legal – costs have been under \$100 for the gas division over the past few years. However in 2006, \$3,600 was incurred to settle a dispute over the cost resulting from a contractor breaking a gas line in December 2004 and \$3,400 was incurred as a result of several human resource related issues.”

7.9 Please describe the dispute with the contractor breaking a gas line in December 2004 and the settlement of the dispute.

- *On December 15, 2004, a contractor working on a new water treatment plant expansion for Sun Peaks Resort Corporation dug through a main gas line. Due to the location of the gas line, a significant number of customers were affected and lost gas service. The cost of emergency response and repairs plus the cost to perform relights resulted in a bill to the contractor of \$37,503. The contractor and its insurance company disputed the billing and it was eventually settled with the help of legal advice at \$32,503. This is the Utility's first dispute where significant legal action was required to settle the cost of a repair.*

7.10 Please describe the "several human resource related issues".

- *Over the past number of years, SPUCCL has been fortunate in not having any human resource issues that required legal council. However, such legal advice was required in 2006 and in 2007. In order to protect the privacy and the rights of those involved, SPUCCL prefers only to describe the issues as 'employment related.'*

7.11 Given that legal costs have been under \$100 for the gas division over the past few years, please explain why 2007 forecast legal costs are \$2,600.

- *At the time this forecast was made in September 2006, an estimate for the year of \$2,600 was considered reasonable. Given the benefit of time and the general nature of legal issues costing more than expected, a more reasonable estimate for the 2007 fiscal year would be double this amount. The costs pertain mainly to employment related issues.*

"Beginning with the 2006 fiscal year, Sun Peaks Resort Corp began charging a \$2,000/mo administration fee to cover the time spent by their personnel to provide services including reception, computer support, purchasing/expediting, cheque signing and management oversight. 1/3 of this cost is being allocated to the Gas division."

7.12 Did Sun Peaks Resort Corp provide reception, computer support, purchasing/expediting, cheque signing and management oversight to SPUCCL prior to fiscal 2006?

- *Sun Peaks Resort Corp has provided reception, computer support, purchasing/expediting, cheque signing and management oversight to SPUCCL prior to fiscal 2006. However, as the cost of providing these services can no longer be absorbed by Sun Peaks Resort Corp. SPUCCL agreed to a rate of \$2,000 per month for these services.*

7.13 Please explain why Sun Peaks considers the allocation of 1/3 of the \$2,000/mo administration fee to the Gas division appropriate.

- *SPUCCL's financial accounts have been set up in order to keep separate the revenues and costs for each of the gas, water and sewer divisions. For*

revenues and direct costs such as field labour, cost of goods sold, repair & maintenance, etc, there is no question as to which utility to record the item to. However, for a cost such as the \$2,000 monthly administration fee, it was felt that allocating 1/3 to each division would be reasonable. By using an allocation based on revenues, labour cost and net book value, one might argue that the gas utility should be charged slightly more than 1/3. See attached Appendix E, Schedule 2.

Please provide the forecast fiscal 2007 average operating revenue, payroll and net book value for the three SPUCL utilities (gas, water and sewage). Please provide a calculation of the allocation of the \$2,000/mo. administration fee that results using this allocation base.

An allocation calculation for the monthly \$2,000 admin fee based on 2006 Actual results and 2007 Forecasted results has been prepared with a resulting allocation of 35.0% and 34.2% respectively. See attached Appendix E, Schedule 2.

“Beginning with the 2007 fiscal year, SPUCL has obtained a \$250,000 operating line of credit to provide working capital during the Summer & Fall period. In previous years, Sun Peaks Resort Corp would advance any necessary funds at no interest charge. The annual interest expense is expected to be \$4,500 of which 1/3 would be allocated to the Gas division.”

7.14 Please provide the terms of the line of credit (annual interest rate, repayment terms, security, and average outstanding balance).

- *Although SPUCL did obtain a \$250,000 line of credit with it's' bank, final approval to use the line did not come from its' parent company, Sun Peaks Resort Corp. Accordingly, SPRC is continuing to advance necessary funds at no interest charge during the year when required. SPUCL will not incur the \$4,500 bank interest cost projected.*

7.15 Please show the calculation of the \$4,500 annual interest expense and explain allocation of 1/3 of the interest to the Gas division.

- *SPUCL will not incur the \$1,500 bank interest cost provided for in Schedule 5, Office & Administration costs (see answer to 7.15 above).*

8.0 Reference: Exhibit B-1, Application, Schedule 5-Operating & Maintenance Cost Projection and Pacific Northern Gas 2002 Revenue Requirements Ltd. Decision, pp. 35-39

“During the spring of 2005, Terasen Utility Services prepared a report on the cost of building a natural gas pipeline to Sun Peaks. The total cost of the study was \$20,500 of which \$10,250 was included in the 2005 fiscal year and \$10,250 in the 2006 fiscal year.”

8.1 Please provide a copy of the report to the Commission.

- *See Appendix C for the report by Northwest Pacific Gas Ltd. – April 2005*

8.2 Pages 35-39 of the Pacific Northern Gas Ltd. 2002 Revenue Requirements Decision describe studies undertaken by another utility and the Commission's decision on those studies. Please explain why the cost of the natural gas study should be recoverable from customers.

- *When Sun Peaks Resort was going through the Master Planning process (1992 to 1994), there was significant interest in having the resort connected to a clean fuel such as natural gas. However, there was very little interest from the gas utility (BC Gas at the time) to extend the natural gas service to Sun Peaks. Thus, the master developer formed a relationship with ICG Gas to create a division of the Utility (already providing water and sewer services) to install a propane system at Sun Peaks. The first storage tanks and distribution grid was installed in 1994.*

Over the years, both commercial and residential owners and operators have repeatedly asked if and when natural gas would be an option at Sun Peaks. The Utility approached Terasen Utility Services (now Corix) on the feasibility of expanding the natural gas distribution grid from either Lafarge or Heffley Creek (the two closest points in Kamloops to Sun Peaks).

It was felt that at the time and based on SPUCL's current customer fuel usage and growth projections that the cost of this main extension could be paid from the savings difference between natural gas and propane gas and thus the study was commissioned. However, due to a number of factors and the only route available at the time was from the Lafarge Site, there is currently not enough demand for gas within the resort to pay for the main extension.

This may change over the next few years due to plans by the Heffley Creek Tolko Mill to switch to bio-fuel thus moving away from any gas usage. This could potentially free up close to 1,000,000 gigajoules of natural gas per year. SPUCL is currently in talks with TES to review this option.

8.3 Did Sun Peaks receive Commission approval to defer the \$20,500 cost of the report and amortize the cost over two years?

- *The costs for the investigation were billed by the contractor in two different fiscal periods (F2005 & F2006) and thus the costs were expensed, not amortized.*

At the time of this investigation, the Commission was approached to determine if the costs for this project should be treated as an expense or amortized over a period of several years. At the time, the verbal response given was if the project did not proceed, then the costs should be expensed. If

the project did proceed, then these costs would be included in the overall main extension cost application and would most likely be amortized over the life of the project.

9.0 Reference: Exhibit B-1, Application, Schedule 10, GCRA

9.1 Please show the calculation of the \$4,845 storage account interest charge for May 1 – Sept 30, 2006.

- *The \$4,845 was based on the projected average storage account balance for the May 1 – September 30, 2006 five month period at 7.0%. The actual storage account interest calculation for this 5 month period is \$4,876. See Appendix B, Schedule 6 for the Gas Cost Reconciliation Account (GCRA) Schedule for the May 1, to December 31, 2006 period.*

10.0 Reference: Exhibit B-1, Application, p. 7 and Schedule 10, GCRA

“At present, SPUCL receives no basic charge revenue as 100% of the basic revenue collected from its customers is remitted to TES in accordance with the 10 year gas agreement.”

10.1 Please confirm that SPUCL receives a 50% credit for basic charges paid to TES and that the credit reduces the monthly storage facility charge (Schedule 10).

- *SPUCL does receive a 50% credit for basic charges paid to TES and this does reduce the GCRA storage account balance. However, SPUCL does not receive this 50% credit as a cash receipt.*

10.2 Please explain if this treatment of basic charge revenue is part of the new agreement with TES that is under negotiations. Please explain if the 50% credit for basic charges is also expected to continue.

- *Yes, based on the extended agreement with TES, the 50% credit will continue until August 31, 2008.*

10.3 Please provide the December 31, 2005 and December 31, 2006 GCVA balances.

- *The GCRA account balance is made up of a Storage account component and a Commodity Reference price component. The balances were as follows:*

	<i>Storage</i>	<i>Commodity</i>	<i>Total</i>
<i>December 31, 2005</i>	<i>\$187,391</i>	<i>\$159,391</i>	<i>\$346,782</i>
<i>December 31, 2006</i>	<i>\$158,080</i>	<i>\$54,709</i>	<i>\$212,789</i>
<i>Increase (Decrease)</i>	<i>(\$29,311)</i>	<i>(\$104,682)</i>	<i>(\$133,993)</i>

The detailed GCRA calculation for each fiscal year (to April 30) is filed annually as part of the Gas Annual Report to the BCUC and is attached in

Appendix B, Schedule 6 as a detailed GCRA schedule for the 8 month period May 1 to December 31, 2006.

11.0 Reference: Sun Peaks Fiscal 2006 Annual Report, Schedule 7 – Gas Cost Reconciliation Account

11.1 Please explain why unaccounted for gas as a percentage of total consumption has increased from 2.37% in 2004 to 7.24% in 2006.

- *Customer bills are comprised of 'energy' billing as apposed to the volume of gas delivered. The energy factor that converts the volume measured by the gas meter to the amount of energy billed the customers is comprised of:*
 - *a pressure factor corresponding to customers delivery pressure*
 - *a heat content factor derived from a sampling of the facility's product*
 - *a multiplier that converts the adjusted heat content to gigajoules*

It is these factors and the number of significant digits used in these factors (i.e. 1.1 vs. using 1.1009) that make the amount of unaccounted for gas is one of the most difficult aspects for any gas utility to control. Over the past 8 years, SPUCL's unaccounted for gas has averaged 2,614 Gj per year or 4.33% (a low of 1.24% in 1999 to a high of 7.24% in 2006).

SPUCL has initiated a number investigations and actions to reduce the total of unaccounted for gas.

Further detail on SPUCL's annual unaccounted for gas and our investigations and actions over the past 10 years can be found in Appendix D.

Appendix A

Agreement extending the contract between Sun Peaks Utilities Co., Ltd. and Terasen Energy Services to August 31, 2008.



3700 2nd Avenue
Burnaby, BC
V5C 6S4
Phone: 250.380.5792
Cell: 250.888.0375
Fax: 250.688.6876

February 19, 2007

Pat Miller
Sun Peaks Utilities Co., Ltd.
1280 Alpine Road
Sun Peaks, BC V0E 5N0

Dear Pat,

Enclosed is a signed copy of the Amending Agreement between Sun Peaks Utilities Co., Ltd. and Terasen Energy Services extending the existing Utility Services Agreement until August 31, 2008.

If you have any questions, please contact me at 250.380.5792.

Sincerely,

A handwritten signature in cursive script, appearing to read "Gareth".

for: Gareth Jones
Director, Business Development

THIS AMENDING AGREEMENT made this 21st day of December, 2006.

BETWEEN:

SUN PEAKS UTILITIES CO. LTD.
1280 Alpine Road
Sun Peaks, British Columbia, V0E 1Z1

(hereinafter referred to as "SPUCL")

AND:

TERASEN ENERGY SERVICES INC.
3700 - 2nd Avenue
Burnaby, British Columbia, V5C 6S4

(hereinafter referred to as "Terasen")

WHEREAS:

- A. On December 31, 1997, SPUCL and DESCO Distributed Energy Services Co. Ltd. by a name change known as Terasen Utility Services Inc., entered into an agreement which was further amended by an agreement dated August 16, 2001 wherein SPUCL acquired and DESCO provided services related to storage, supply procurement, utility design, construction, operation and maintenance required for the Sun Peaks propane grid system (collectively the "Utility Services Agreement"); and
- B. The Utility Services Agreement has now been assigned to Terasen.
- C. The parties are now desirous of amending the Agreement on the terms and conditions hereafter set forth.

NOW THEREFORE, THIS AGREEMENT WITNESSETH THAT in consideration of the premises and of the mutual promises, covenants and agreements herein set forth, the parties hereto covenant and agree as follows:

1. In this Amending Agreement, the words and expressions used shall have the same meanings as are respectively assigned to them in the Utility Services Agreement.
2. All references to BCG Services Inc. or BCG shall be deleted and replaced with Terasen Energy Services Inc. or Terasen respectively.
3. Clause 8.1, Term, shall be deleted in its entirety and replaced with the following:

"8.1 Term - The initial term of this Agreement (the "Term") begins on the Commencement Date and expires at 8:00 am Local Time on August 31, 2008."

4. Clause 8.4 shall be amended by deleting the fourth paragraph in its entirety and replacing it with the following:

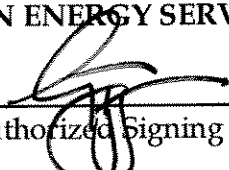
"In the event SPUCL elects not to purchase the Storage Facility and a negotiated service agreement has not been executed and delivered by July 31, 2008 Sections 8.2(a) and (b) will apply"

5. This Amending Agreement shall be read together with the Utility Services Agreement as modified.
6. This Amending Agreement shall be governed by and construed in accordance with the laws of the Province of British Columbia and the parties agree to attorn to the jurisdiction of the courts of British Columbia.
7. Words importing the singular include the plural and vice versa; words importing the masculine gender include the feminine and neuter genders; and words importing persons include individuals, sole proprietors, corporations, partnerships and unincorporated associations.
8. This Amending Agreement may be executed in counterparts with the same effect as if all parties had signed the same document. All counterparts will be construed together and will constitute one agreement.
9. All unamended terms and conditions shall remain in full force and effect.
10. This Amending Agreement shall be effective immediately.

IN WITNESS of this Amending Agreement, the parties hereto have executed this Amending Agreement on the dates written below:

TERASEN ENERGY SERVICES INC.

Per:

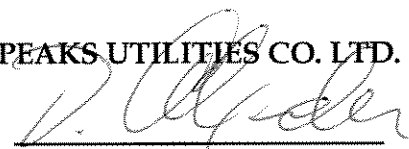

Authorized Signing Officer

Director, Bus Dev
Title

Feb 15/2007
Date

SUN PEAKS UTILITIES CO. LTD.

Per:


Authorized Signing Officer

VP & General Manager
Title

FEB 9, 2007
Date

Appendix B

Standard Regulatory Schedules

- Schedule 1 Utility Income and Earned Return
- Schedule 2 Utility Rate Base
- Schedule 3 Calculation of Income Taxes on Utility Income
- Schedule 4 Common Equity
- Schedule 5 Return on Capital
- Schedule 6 Gas Cost Reconciliation Account (GCRA)

Sun Peaks Utilities Co., Ltd.
Standard Regulatory Schedules
Utility Income and Earned Return
Fiscal 2007

Schedule 1

	Projected May'06 - Sep '06	Projected Oct '06 - Apr '07	Projected Fiscal 2007
1 SALES VOLUME - GJ	16,035	65,138	81,173
2 Present avg rate per GJ *	24.842		
3 Avg rates after interim increase *		22.943	
4 Avg percentage increase in rates		1.7%	
5 Percentage increase on Rev. Req.			
6			
7 UTILITY REVENUE			
8 Gas Sales - present rates	398,340		398,340
9 - interim rates		1,494,460	1,494,460
10 Other Income	84,086	112,220	196,306
11 Fuel Cost Recovery	-	-	-
12 Revenue Adjustment	-	-	-
13 Revenue Requirement		18,760	18,760
14 REVENUE REQUIREMENT	<u>482,426</u>	<u>1,606,680</u>	<u>2,107,866</u>
15			
16 EXPENSES			
17 Cost of Gas	357,639	1,291,799	1,649,438
18 Cost of gas service installations	65,000	85,000	150,000
19 Labour costs			71,972
20 Employee Benefits			-
21 Professional Fees			5,200
22 General Admin. and Office			20,025
23 Other Operating and Maintenance			43,826
24 Contract Work, Distribution System Maint			27,500
25 Taxes other than income tax			4,850
26 Depreciation			5,546
27 Amortization of Deferred Charges			7,415
28 Amortization of Customer Contributions			-
29 Terasen delivery charges, net			82,121
30			<u>2,067,893</u>
31			
32 Utility Income before Taxes			39,973
33 Income Tax (incl. FIT)			16,376
34			
35 EARNED RETURN			<u>23,597</u>
36			
37 UTILITY RATE BASE			<u>152,394</u>
38			
39 RETURN ON RATE BASE			<u>15.5%</u>

* The average rate per gj after the rate increase is lower because a smaller proportion of gas sales revenue comes from monthly basic charges during the high volume winter months.

Sun Peaks Utilities Co., Ltd.
Standard Regulatory Schedules
Utility Rate Base
Fiscal 2007

Schedule 2

		Projected Fiscal 2007
1	Gross plant in service	
2	Beginning of Year	1,432,215
3	Additions	150,000
4	Gross plant in service - End of Year	1,582,215
5		
6	Accumulated Depreciation - End of Year	77,179
7		
8	Net Plant in Service - End of Year	1,505,036
9		
10	Net Plant in Service - Beg. of Year	1367997
11		
12	Net Plant in Service - Mid-Year	1,436,517
13		
14	Plant in service # of months	
15	Reduction in value of plant	
16		
17	Gross Contributions	
18	Beginning of Year	- 1,216,019
19	Additions	- 150,000
20	Gross Contributions - End of year	- 1,366,019
21		
22	Accum. Amort. Of Contributions	
23		-
24	Net Contributions End of year	- 1,366,019
25		
26	Net Contributions Beg of year	- 1,216,019
27		
28	Contributions - mid year	- 1,291,019
29		
30	Deferred Charges - mid year	
31	Working capital allowance	39,648
32	Future Income Tax	- 16,376
33	Other Adjustments	-
34		
35	TOTAL RATE BASE	152,394

Sun Peaks Utilities Co., Ltd.
Standard Regulatory Schedules
Calculation of Income Taxes on Utility Income
Fiscal 2007

Schedule 3

		Projected Fiscal 2007
1	Utility Income before Taxes	39,973
2	Deduct: interest on debt	-
3		
4	Before Tax Accounting Income	39,973
5		
6	Add:	
7	Depreciation	5,546
8	Amortization of Deferred Charges	7,415
9	Club Dues	-
10	Charitable Donations	-
11	Political Donations	-
12	Life Insurance Premium	-
13	Large Corporation Tax	-
14	Non-deductible expense	-
15		12,961
16		
17		
18	Deduct:	
19	Capital Cost Allowance	6,452
20	Cumulative Eligible Cap Deduction	-
21	Capitalized Overhead	-
22		-
23		6,452
24		
25		
26	Net Income for Tax Purposes	46,482
27		
28	Tax @ 33%	33% 15,339
29	Federal Tax Abatement @ 10%	-10% - 4,648
30	Manuf & Process Ded @ 2%	2% -
31	Provincial Tax @ 13.5%	14% 6,275
32	Corporate Surtax @ 4%	4% -
33	Plug Income Tax Payable	- 590
34		
35	INCOME TAXES PAYABLE	16,376
36		
37	Future Income Tax	-
38	Total Income Tax Expense	16,376

Sun Peaks Utilities Co., Ltd.
Standard Regulatory Schedules
Common Equity
Fiscal 2007

Schedule 4

		Projected Fiscal 2007
1	Share Capital *	1
2	Retained Earnings (Deficit) *	- 63,158
3	Common Equity - Beg. of Year	- 63,157
4		
5	Earned Return	23,597
6	Less: Dividends	-
7	Interest	-
8	Common Equity (Deficit) - End of Year	- 39,560
9		
10	Mid- Year Common Equity (Deficit)	- 51,359

* Sun Peaks Utilities Co Ltd operates 3 main utilities, Gas, Water and Sewer. Accordingly, 1/3 of share capital and deficit as at May 1/06 have been allocated to the Gas utility.

Sun Peaks Utilities Co., Ltd.
 Standard Regulatory Schedules
 Return on Capital
 Fiscal 2007

Projected Fiscal 2007	Capitalization	Adj	Capitalization Amount	Percentage %	% Average Embedded Cost	Cost Component %	Earned Return
1 Short Term Debt (calculated)	\$ 203,752	\$ -	\$ 203,752	134	0.00	-	\$ -
2 Long Term Debt	-	-	-	-	0.00	-	-
3 Deemed Long Term Debt	-	-	-	-	0.00	-	-
4 Preference Shares Common Equity	-	-	-	-	0.00	-	-
5 (Deficit), mid year	Sch 4	-	51,359	-	-45.95	15.48	23,597
6							
7 TOTAL RATE BASE	Sch 2		152,394	100		15.48	23,597

**Sun Peaks Utilities Co Ltd
Terassen Utilities - Gas Cost Reconciliation Account (GCRA) May 1/06 - Dec 31/06**

	Propane		Storage Facility Account		Commodity Reference Account		Total GCRA Balance
	Consumption/Delivery	Unit Price	Beginning Balance	Current	Beginning Balance	Current	
Apr 30/06 Balance Forward			164,218.07	957.20	164,218.07	83,860.65	248,078.72
May 06			165,175.27	4.35	165,175.27	84,485.69	249,660.96
Interest Charge @ 6.75% from May 25 to May 31 on (\$9,700 - \$5,782.50)	31 days					623.04	84,485.69
Interest Charge @ 6.75% from May 25 to May 31 on (\$9,700 - \$5,782.50)	6 days						84,485.69
May Storage Facility Recovery	4,016.7 GJ	\$ 1.1905	165,179.62	(4,781.9)	160,397.74		84,485.69
May Commodity Reference Recovery	4,016.7 GJ	\$ 16.7415	160,397.74	9,700.00	170,097.74	(67,245.58)	177,637.85
May Storage Facility Charge (due May 25, 2006)			170,097.74	9,700.00	170,097.74		187,337.85
May 50% of Monthly Basic Charge			170,097.74	-5,752.50	164,345.24		181,585.35
MP Energy - MP36890 delivery May 1/06	31,500	\$ 0.33288	164,345.24		164,345.24	10,485.72	192,071.07
MP Energy - MP37078 delivery May 10/06	67,201	\$ 0.32713	164,345.24		164,345.24	21,983.46	214,054.53
MP Energy - MP37435 delivery May 23/06	67,040	\$ 0.32713	164,345.24		164,345.24	21,930.80	235,985.33
	165,741					54,399.98	71,640.09
Interest Charge @ 7.00% from Jun 25 to Jun 30	30 days		164,345.24	950.35	165,295.59	486.08	72,126.17
Interest Charge @ 7.00% from Jun 25 to Jun 30 on (\$9,700 - \$5,752.50)	5 days		165,295.59	3.79	165,299.38		72,126.17
Jun Storage Facility Recovery	2,750.3 GJ	\$ 1.1905	165,299.38	(3,274.2)	162,025.15		72,126.17
Jun Commodity Reference Recovery	2,750.3 GJ	\$ 16.7415	162,025.15	9,700.00	171,725.15	(46,044.15)	188,107.17
Jun Storage Facility Charge (due Jun 25, 2006)			171,725.15	9,700.00	171,725.15		197,807.17
Jun 50% of Monthly Basic Charge			171,725.15	-5,790.00	165,935.15		192,017.17
MP Energy - MP37778 delivery June 7	66,985	\$ 0.33213	165,935.15		165,935.15	22,247.73	214,264.90
MP Energy - MP37778 delivery June 20	66,912	\$ 0.33737	165,935.15		165,935.15	22,574.10	236,839.00
	133,897					44,821.83	70,903.85
Interest Charge @ 7.00% from Jul 25 to Jul 31	31 days		165,935.15	982.74	166,917.89	428.80	71,332.65
Interest Charge @ 7.00% from Jul 25 to Jul 31 on (\$9,700 - \$5,790.00)	6 days		166,917.89	4.50	166,922.39		71,332.65
Jul Storage Facility Recovery	2,371.5 GJ	\$ 1.1905	166,922.39	(2,823.27)	164,099.12		71,332.65
Jul Commodity Reference Recovery	2,371.5 GJ	\$ 16.7415	164,099.12	9,700.00	173,799.12	(39,702.47)	195,729.30
Jul Storage Facility Charge (due Jul 25, 2006)			173,799.12	9,700.00	173,799.12		205,429.30
Jul 50% of Monthly Basic Charge			173,799.12	-5,782.50	168,016.62		199,646.80
MP Energy - MP38345 delivery Jul 4th	67,003	\$ 0.35537	168,016.62		168,016.62	23,810.86	223,457.66
MP Energy - MP38636 delivery Jul 27th	66,719	\$ 0.35937	168,016.62		168,016.62	23,976.81	247,434.47
	133,722					47,787.67	79,417.85
Interest Charge @ 7.00% from Aug 25 to Aug 31	31 days		168,016.62	992.39	169,009.01	424.09	79,841.94
Interest Charge @ 7.00% from Aug 25 to Aug 31 on (\$9,700 - \$5,782.50)	6 days		169,009.01	4.51	169,013.52		79,841.94
Aug Storage Facility Recovery	2,618.4 GJ	\$ 1.1905	169,013.52	(3,117.2)	165,896.31		79,841.94
Aug Commodity Reference Recovery	2,618.4 GJ	\$ 16.7415	165,896.31	9,700.00	175,596.31	(43,835.94)	201,902.31
Aug Storage Facility Charge (due Aug 25, 2006)			175,596.31	9,700.00	175,596.31		211,602.31
Aug 50% of Monthly Basic Charge			175,596.31	-5,782.50	169,813.81		205,819.81
MP Energy - MP38979 delivery August 16th	67,032	\$ 0.35133	169,813.81		169,813.81	23,550.35	229,370.16
	67,032					23,550.35	59,556.35
Interest Charge @ 7.00% from Sep 25 to Sep 30	30 days		169,813.81	972.41	170,786.22	459.36	60,015.71
Interest Charge @ 7.00% from Sep 25 to Sep 30 on (\$9,700 - \$5,782.50)	5 days		170,786.22	3.76	170,789.98		60,015.71
Sep Storage Facility Recovery	3,049.3 GJ	\$ 1.1905	170,789.98	(3,630.19)	167,159.79		60,015.71
Sep Commodity Reference Recovery	3,049.3 GJ	\$ 16.7415	167,159.79	9,700.00	176,859.79	(51,049.86)	8,965.85
Sep Storage Facility Charge (due Sep 25, 2006)			176,859.79	9,700.00	176,859.79		176,125.64
Sep 50% of Monthly Basic Charge			176,859.79	-5,760.00	171,099.79		185,825.64
MP Energy - MP38979 delivery Sept 1	67,021	\$ 0.33975	171,099.79		171,099.79	22,770.38	202,836.02
Adj 3 customers re-classified from Large**			171,099.79	1,462.50	172,562.29		204,298.52
MP Energy - MP39805 delivery Sept 18	66,778	\$ 0.31060	172,562.29		172,562.29	20,741.25	225,039.77
MP Energy - MP39805 delivery Sept 29	66,998	\$ 0.30297	172,562.29		172,562.29	20,298.38	245,338.15
	200,797					63,810.01	72,775.86

**Sun Peaks Utilities Co Ltd
Terassen Utilities - Gas Cost Reconciliation Account (GCRA) May 1/06 - Dec 31/06**

	Propane		Storage Facility Account			Commodity Reference Account			Total GCRA Balance
	Consumption/Delivery	Unit Price	Beginning Balance	Current	Ending Balance	Beginning Balance	Current	Ending Balance	
Oct 06									
Interest Charge @ 7.00%	31 days		172,562.29	1,015.38	173,577.67	72,775.86	356.81	73,132.67	246,710.34
Interest Charge @ 7.00% from Oct 25 to Oct 31 on (\$9,700 - \$5,760)	6 days		173,577.67	4.53	173,582.20	73,132.67		73,132.67	246,714.87
Oct Storage Facility Recovery		4,643.8 GJ \$ 1.1905	173,582.20	(5,528.4)	168,053.76	73,132.67		73,132.67	241,186.43
Oct Commodity Reference Recovery		4,643.8 GJ \$ 16.7415	168,053.76		168,053.76	73,132.67	(77,744.18)	(4,611.50)	163,442.25
Oct Storage Facility Charge (due Oct 25, 2006)			168,053.76	9,700.00	177,753.76	(4,611.50)		(4,611.50)	173,142.25
Oct 50% of Monthly Basic Charge			177,753.76	-5,760.00	171,993.76	(4,611.50)		(4,611.50)	167,382.25
MP Energy - MP40483 delivery Oct 12		\$ 0.37206	171,993.76		171,993.76	(4,611.50)	24,938.81	20,327.31	192,321.06
MP Energy - MP40483 delivery Oct 24		\$ 0.37135	171,993.76		171,993.76	20,327.31	24,950.26	45,277.57	217,271.32
MP Energy - MP40749 delivery Oct 30		\$ 0.37135	171,993.76		171,993.76	45,277.57	24,880.45	70,158.02	242,151.77
		201,217					74,769.52		
Nov 06									
Interest Charge @ 7.00%	30 days		171,993.76	998.69	172,992.45	70,158.02	420.76	70,578.78	243,571.22
Interest Charge @ 7.00% from Nov 25 to Nov 30 on (\$9,700 - \$5,760)	5 days		172,992.45	3.78	172,996.23	70,578.78		70,578.78	243,575.00
Nov Storage Facility Recovery		8,814.7 GJ \$ 1.1905	172,996.23	(10,493.9)	162,502.32	70,578.78		70,578.78	233,081.10
Nov Commodity Reference Recovery		8,814.7 GJ \$ 16.7415	162,502.32		162,502.32	70,578.78	(147,571.30)	(76,992.53)	85,509.80
Nov Storage Facility Charge (due Nov 25, 2006)			162,502.32	9,700.00	172,202.32	(76,992.53)		(76,992.53)	93,209.80
Nov 50% of Monthly Basic Charge			172,202.32	-5,857.50	166,344.82	(76,992.53)		(76,992.53)	89,352.30
MP Energy - MP41158 delivery Nov 10		\$ 0.37135	166,344.82		166,344.82	(76,992.53)	24,880.08	(52,112.45)	114,232.38
MP Energy - MP41158 delivery Nov 13		\$ 0.37135	166,344.82		166,344.82	(52,112.45)	24,699.23	(27,413.22)	138,931.61
MP Energy - MP41158 delivery Nov 16		\$ 0.37135	166,344.82		166,344.82	(2,459.24)	24,953.98	(2,459.24)	163,885.59
MP Energy - MP41806 delivery Nov 23		\$ 0.37135	166,344.82		166,344.82	2,459.24	24,513.56	22,054.32	188,399.15
MP Energy - MP41806 delivery Nov 27		\$ 0.37135	166,344.82		166,344.82	22,054.32	11,906.22	33,960.54	200,305.37
MP Energy - MP41815 delivery Nov 27		\$ 0.31677	166,344.82		166,344.82	33,960.54	11,059.71	45,020.25	211,365.08
MP Energy - MP41815 delivery Nov 28		\$ 0.31677	166,344.82		166,344.82	45,020.25	21,223.91	66,244.16	232,588.99
		400,698					143,236.69		
Dec 06									
Interest Charge @ 7.00%	31 days		166,344.82	1,028.50	167,373.32	66,244.16	419.61	66,663.77	234,037.10
Interest Charge @ 7.00% from Dec 25 to Dec 31 on (\$9,700 - \$5,857.50)	6 days		167,373.32	4.42	167,377.74	66,663.77		66,663.77	234,041.52
Dec Storage Facility Recovery		10,798.0 GJ \$ 1.1905	167,377.74	(12,855.0)	154,522.73	66,663.77		66,663.77	221,186.50
Dec Commodity Reference Recovery		10,798.0 GJ \$ 16.1000	154,522.73		154,522.73	66,663.77	(173,847.80)	(107,184.03)	47,338.70
Dec Storage Facility Charge (due Dec 25, 2006)			154,522.73	9,700.00	164,222.73	(107,184.03)		(107,184.03)	57,038.70
Dec 50% of Monthly Basic Charge			164,222.73	-6,142.50	158,080.23	(107,184.03)		(107,184.03)	50,896.20
MP Energy - MP42056 delivery Dec 3		\$ 0.37135	158,080.23		158,080.23	(107,184.03)	24,871.54	(82,312.49)	75,767.74
MP Energy - MP42056 delivery Dec 7		\$ 0.37028	158,080.23		158,080.23	(82,312.49)	24,943.91	(57,368.58)	100,711.65
MP Energy - MP42628 delivery Dec 15		\$ 0.37028	158,080.23		158,080.23	(57,368.58)	24,812.46	(32,556.12)	125,524.11
MP Energy - MP42863 delivery Dec 18		\$ 0.32670	158,080.23		158,080.23	(32,556.12)	5,988.08	(26,568.04)	131,512.19
MP Energy - MP42863 delivery Dec 22		\$ 0.31566	158,080.23		158,080.23	(26,568.04)	21,698.78	(4,869.26)	153,210.97
MP Energy - MP42863 delivery Dec 26		\$ 0.31566	158,080.23		158,080.23	(4,869.26)	20,206.34	15,337.08	173,417.31
MP Energy - MP42863 delivery Dec 30		\$ 0.31886	158,080.23		158,080.23	15,337.08	21,358.52	36,695.60	194,775.83
MP Energy - MP42863 delivery Dec 18		\$ 0.37028	158,080.23		158,080.23	36,695.60	18,013.75	54,709.35	212,789.58
		468,067					161,893.38		
Total propane delivered for period									Av Cost per L
1,771,171 L									\$ 0.34682
Total propane billed for period									
39,062.7 GJ									

Sun Peaks Utilities Co Ltd
Terassen Utilities - Gas Cost Reconciliation Account (GCRA) May 1/06 - Dec 31/06

Propane		Storage Facility Account		Commodity Reference Account		Total GCRA Balance
Consumption/ Delivery	Unit Price	Beginning Balance	Current	Beginning Balance	Current	Ending Balance
		Beginning balance	7,931.30	Begin balance		83,860.65
		Interest Charges	(46,504.14)	Interest Charges	3,620.55	
		Storage facility recovery @ \$1,1905 /gj	77,600.00	Com'm'dy recovery	(647,041.28)	
		Storage facility charge @ \$9,700 /mo	(45,165.00)	Com'm'dy charges	614,269.43	
		50% credit based on monthly basic charges billed out	(6,137.84)	Change for period	(29,151.30)	
		Change for period				83,860.65
		Ending balance Dec 31 /06	158,080.23			54,709.35
						248,078.72

May 1/06 - Dec 31/06 GCRA Summary

** In September 2006, 3 customers were re-classified from Large Commercial to Small Commercial and given a credit back to August 2005.

Storage Facility Account Interest, May 1/06 - Sep 30/06		
May 06	Interest Charge @ 6.75% 31 days	957.20
	Interest Charge @ 6.75% from May 25 to May 31 on (\$9,700 - \$5,782.50)	4.35
Jun 06	Interest Charge @ 7.00% 30 days	950.35
	Interest Charge @ 7.00% from Jul 25 to Jul 31 on (\$9,700 - \$5,790.00)	3.79
Jul 06	Interest Charge @ 7.00% 31 days	982.74
	Interest Charge @ 7.00% from Jul 25 to Jul 31 on (\$9,700 - \$5,790.00)	4.50
Aug 06	Interest Charge @ 7.00% 31 days	992.39
	Interest Charge @ 7.00% from Aug 25 to Aug 31 on (\$9,700 - \$5,782.50)	4.51
Sep 06	Interest Charge @ 7.00% 30 days	972.41
	Interest Charge @ 7.00% from Sep 25 to Sep 30 on (\$9,700 - \$5,782.50)	3.76
		4,876.00

Appendix C

Proposal from Northwest Pacific Gas Ltd. – April 2005

(to consider options to extend natural gas service to Sun Peaks' customers)



TERASEN UTILITY SERVICES

SUN PEAKS PIPELINE FEASIBILITY REPORT

CH4 Consulting

By: Northwest Pacific Gas Ltd.
April 2005



Sun Peaks Natural Gas Pipeline Feasibility Report

Date: April 7, 2005

Introduction

- 1.0 Executive Summary
- 2.0 Background
- 3.0 Scope of Work
- 4.0 Methodology of Work
- 5.0 Technical Discussion
- 6.0 Disclaimers
- 7.0 Closure
- 8.0 Attachments



INTRODUCTION

This Sun Peaks pipeline feasibility report details our engineering cost estimate to design, construct, commission and convert to a natural gas pipeline from Terasen Gas Inc.'s LaFarge Gate Station to Sun Peaks Resort. Northwest Pacific Gas Ltd. completed this report on behalf of Terasen Utility Services on April 7, 2005.

This report was prepared for the exclusive use of Terasen Utility Services and their authorized agents.



1.0 EXECUTIVE SUMMARY

Northwest Pacific Gas Ltd. has determined that the Sun Peaks 37.5 km natural gas pipeline is feasible for an approximate cost of \$12.06 million (Cdn) at present value (2005 dollars), exclusive of any First nations issue costs. We recommend a 88.9mm OD yellow jacketed steel pipeline, buried at 1.0m to 1.2m, located on 8m wide ROW, installed to Class 3, piggable, tested for MOP = 960 psig (to match Terasen Gas TP MOP and to ensure easy pressure upgrades with resultant increased capacity with minimal costs (both initial & upgrade) to both inlet and outlet regulator and meter (custody transfer) stations.

We estimate the elapsed project time to be 15 – 18 months duration.

Alternative pipeline materials (HDPE), pipeline installation (plow), and lower pressure (larger diameter pipe) weren't feasible due to:

- Unapproved materials
- Wider ROW more \$ and without potential for future upgrades, due to pressure increase
- Non compliant pipe depth
- Unsuitable terrain (w/slope, soil hardness) for plow equipment

The existing Terasen Gas Inc. LaFarge gate station was designed with 2 regulator runs allocated for the Sun Peaks pipeline. With Terasen Gas's permission, transmission pressure could be delivered through these 2 reg runs (minus regs) to a custody transfer meter set to supply contracted Sun Peaks natural gas. This would save approximately \$100k to construct a complete independent gate/meter station adjacent to LaFarge gate. However, complete autonomous control over your facilities would result. A second gate station would be required at the Sun Peaks delivery point (close proximity to propane plant) into their existing distribution grid.



The conversion of the existing Sun Peaks propane distribution grid to natural gas would be completed in 3 phases over a 2 week (14 workdays) period or sooner if more staff assigned.

The abandonment cost of the existing Propane Plant isn't included. A decision to remove the propane plant or to convert it to a peak shave plant to lower gas supply peak day demand charges will be a future economic decision by the pipeline owner operators.



2.0 BACKGROUND

Terasen Utility Services is proposing the construction of a natural gas pipeline to supply energy to the Sun Peaks Resort. This natural gas would displace the current propane fuel, which is presently delivered by truck and stored in bulk storage tanks on site. A propane distribution grid delivers energy to meet Sun Peaks' customer demands.

The new natural gas pipeline would begin at Terasen Gas Inc.'s LaFarge Gate Station and traverse approximately 37.5 kms cross-country to the Sun Peaks Resort. Gas supply would be contracted with and delivered by Terasen Gas Inc. to custody transfer point (LaFarge Gate Station).

The existing Sun Peaks Resort propane gas distribution system would be converted to natural gas and the existing propane storage facility would be abandoned and removed. Alternatively, this propane plant could be converted to a propane/air peak shave plant by adding air mix to reduce heat content equivalent to methane.



3.0 SCOPE OF WORK

Northwest Pacific Gas' project scope was to basically calculate and document an engineering cost estimate to construct and commission a Sun Peaks pipeline within a tolerance of +10% to -15% based on present value 2005 dollars. However, the actual project costs will be determined by future material costs and contractor bids which may exceed the above specified tolerance band. Cost estimates for the following major pipeline components are documented on detailed spreadsheets:

- Project management
- Route selection
- Engineering design
- Environmental plan
- ROW acquisition
- Steel pipe and valves
- Gate and meter stations
- Construction
- Commissioning
- Distribution grid conversion (propane to natural gas)
- Bid specification
- Tender evaluation
- Limited hydraulic analysis of existing Terasen Gas Inc. pipeline (TP delivery point) and this proposed Sun Peaks pipeline
- Geotechnical analysis of predetermined locations

Cost estimate for the following major components were out of scope:

- Negotiations for First Nations issues
- Natural gas purchase contracts
- Short and long term gas market loads
- Propane plant abandonment and removal
- Propane plant conversion to propane air peak shave plant



4.0 METHODOLOGY OF WORK

On Thursday, March 24, 2005, Northwest Pacific Gas retained a Highland helicopter to conduct an aerial reconnaissance of proposed Sun Peaks pipeline to identify major obstacles, to select best route, to identify terrain types, and to identify major property parcels. Two Northwest Pacific Gas consultants (Barry Davidson and David Kan) and Helge Ferchert of Terasen Utility Services were onboard the Highland helicopter to conduct this aerial visual inspection and to document proposed route with photos.

In addition, a basic hydraulic analysis was performed based on Sun Peaks forecast 20 year loads from present to 2025 to determine required pipe size (88.9mm OD steel, 4.8mm W.T.).

Recent pipeline design, construction and commissioning costs coupled with an experienced Pipeline Project Engineer's knowledge produced detailed cost estimates.

The BC Gas Squamish propane distribution grid conversion (1991) to natural gas was used as a reference to determine a relevant conversion process and current estimated cost.



5.0 TECHNICAL DISCUSSION

• **Project Management**

A Project Management Team (PMT) shall be established to execute all phases of the pipeline project.

The manpower component for PMT is:

- Project Manager
- Project Engineers
- Project Scheduler
- Project Coordinators

The Project Manager and Project Co-ordinators assigned to this PMT shall be responsible for:

- Establishing the Project Execution Plan.
- Establishing and maintaining project, engineering, and procurement of project material, procurement of outside services, ROW acquisition, and construction schedules.
- Final ROW selection.
- Monitoring the work performed by Environmental Consultants.
- Monitoring the work performed by Archeological Consultants.
- Preparation of Construction Tender Document
- Evaluate and make recommendation for the Construction Tender award.

A Design Engineering Team (DET) shall be established to provide all design requirements of this pipeline project.

The manpower component for the Design Engineering Team:

- Engineering Manager



- Design Engineers
- Procurement Agents
- Construction Manager

The DET Engineering Manager assigned to the PMT shall be responsible for:

- Establishing the Design Bases Memorandum (DBM).
 - Detail engineering design, and drafting.
 - Filing of all required Provincial permitting (Oil & Gas Commission)
 - Monitoring the work performed by Geological Consultants.
 - Procurement of all project material.
 - Construction supervision.
 - Preparation of all As-built drawings.
- **Route Selection**
 - The pipeline alignment starts from Terasen Gas' LaFarge Cement Station and heads in the northwest direction for approximately 4 km through farmland.
 - The route then turns northeast and follows the north side of the McGregor Creek for approximately 9 km. This portion traverses through gentle to moderate slopes and finally crosses the McGregor Creek.
 - Maintaining the northeast direction, the pipeline alignment passes through the east side of Pinantan Lake. The densely populated areas between Paul Lake and Pinantan Lake should be avoided.
 - Just past Pinantan Lake, some bedrock outcrops appear in the proximity of the proposed alignment. The pipeline route continues the northeast direction for approximately 10 km towards Eileen Lake. This portion of the alignment is mostly treed areas and slightly swampy with several logging roads available for access.
 - Just before this alignment approaches Louis Creek it turns northwest for approximately 7 km cutting through White Croft.



- The remaining 7.5 km alignment then cuts across Christian Creek and Louis Creek before picking up the road leading towards the Sun Peaks Village.
- The horizontal chainage of this alignment is approximately 37.5 Km in total.

Typical Topographic Features Along the Alignment (distances are approximately)

- 10 km of rolling gentle to steep hills with 1 km of bed rock outcrops.
- 3 km of swampy areas.
- 10 km of alignment requires logging.
- 6 km of farmland.
- 8.5 km of drivable road for roadside construction (to the Sun Peaks Village).

Private, Crown and Agricultural Land Reserve (ALR) Designations.

- The majority of this alignment (up to 65%) seems to belong to the Crown.
- The majority of this alignment (up to 80%) seems to belong to ALR designation.

Elevation Differences (above sea level):

- At LaFarge Cement Station = 365.74 meters
- At Sun Peaks Village = 1219.14 meters
- Elevation differences (negative static head for hydraulics design) = 853.4 meters

- **Engineering Design**

The engineering design activities shall include the following as a minimum:



- Establishing the system maximum operating pressure criteria (MOP).
- Finalize the CSA Class Location designation and design standards.
- Finalize the required line pipe outside diameter.
- Line pipe wall thickness selection.
- Line pipe material grade selection.
- Line pipe road crossing design criteria.
- Line pipe coating selection and specification for cathodic protection.
- Line pipe abrasion and concrete coatings selection and specifications.
- Field pipe bend (cold) or induction pipe bend design and specification.
- Establish piping layout to include the provision of future pigging.
- Preparation of welding specifications.
- Pipeline alignment main line block valves and blow down criteria.
- Valves and piping material selection for above ground piping (Category 2 to -45 Deg. C)
- All civil engineering design for stations and buildings.
- Preparation of the Design Bases Memorandum.
- Input to and drafting of all pipe line alignment sheets.

The manpower component for Engineering Design:

- Design Engineers
 - Design Drafters
 - Material Expeditor
- **Environmental Plan**

Environmental Consultants shall work very closely with the following project team:

- Project Management
- Engineering
- Geotechnical Consultants



- Archaeological Consultants
- ROW Agents

The Scope of Work for Environmental Consultants shall include the following as a minimum:

- Understanding the proposed construction methods.
- Identifying all wet and dry pipeline alignment crossing creeks, river and swampy areas.
- Identifying the fishery window for all required in-stream work.
- Establish the Environmental Protection Plan (EPP).
- Establish the Environmental Compensation Plan (ECP).
- Establish the ROW Restoration Plan (RRP).
- Filing of all required environmental permit applications.
- Liaison with all Provincial and Federal Agencies for project environmental permits application (DFO, MWLAP and etc.)

The manpower component for EPP, ECP and RRP

- Environmental Consultants
 - Biologist
 - Archeological Consultants
 - Mapping/Drafting personal
- **ROW Acquisition**

A detail pipeline ROW alignment selection is required during the initial phase of this pipeline project. This can be achieved by:

- The acquisitions of detail trim maps, aerial photographs and etc. along the pipeline alignment under review.
- The detail reconnaissance of the proposed route.
- Identifying and avoiding any areas considered as “show stoppers”.
- Create line list for property owners along the proposed route.
- Title search for all property owners along the proposed route.
- Preliminary detail engineering and legal survey.

- Drafting of pipeline alignment sheets based on the selected route.

Once the final pipeline alignment has been selected ROW acquisition process should start immediately. ROW acquisition consultants shall be retained for:

- Filing application through the Crown inclusive of Agricultural Land Commission (ALC).
- Liaison and negotiate with private land owners (and/or the First Nation).
- Final ROW legal survey and registration with the Land Title Office.

An eight (8) metre wide ROW shall be considered as a minimum. The ROW selection process is a joint effort between the project management team, environmental consultants, engineering, archeological consultants and geological consultants. These costs are all included under the associated tasks accordingly.

The manpower component for ROW Selection and Acquisition:

- ROW Agents
 - Survey
 - Mapping/Drafting
 - Legal Costs
- **Steel Pipe and Valves**

***Note:** Steel Pipe is Recommended for this project with an over view of HDPE pipe being taken into consideration later on in this report. Based on the "Limited Hydraulic Analysis" the following design criteria have been established.

Below ground steel line pipe specifications:

Standard CSA 662 and CSA Z 245. 1, latest editions



Class Location	3
MOP	6618 kPa
Pipe Grade	Grade 290 (42,000 psi) S.M.Y.S., Double Random Length (DRL)
Pipe O.D.	88.9 mm
Pipe Wall	4.8 mm
Coating	YJ1 for normal construction Rock Jacket in lieu of sand padding for difficult access areas.

Above ground steel line pipe specification (stations & mainline block valves):

Standard	CSA Z662 and CSA Z245. 1, latest editions
Class Location	3
MOP	6618 kPa
Pipe Grade	Grade 290 (42,000 psi) S.M.Y.S., Single Random Length (SRL) Tested to Cat. 2 (- 45 Degree C)
Pipe O.D.	88.9 mm
Pipe Wall	4.8 mm
Coating	Painted

All above and belowground fittings & valves:

Standard	CSA Z245.11 and CSA Z245.15, respectively
Grade	Gr. 290 and ASTM A105, minimum.

In accordance with CSA Z662, latest edition there will be a requirement of 2 main line block valve stations complete with blow down assemblies for a Class 3 Location designation.

- **Gate and Meter Stations**

Two custody transfer stations are required, the first one at the inlet to the Sun Peaks TP line to measure daily gas purchase (custody transfer) from Terasen Gas Inc. to provide gas contract compliance and billing.



The existing Terasen Gas Inc.'s LaFarge gate station was designed and installed with 2 parallel regulator runs for delivery to Sun Peaks.

With Terasen Gas' permission, 2 pipe pups rated at MOP 960 could be added to deliver TP gas through these parallel runs (without regulation). The custody transfer meter station would be a separate downstream facility. The cost estimate for this scenario is \$285,000.

A second gate/meter station is required at the Sun Peaks end to regulate the inlet gas pressure to 420 kPa for distribution to Sun Peaks customers. Over pressure protection (OPP) would be provided per code and set at +10% or 460 kPa. Measurement is recommended to provide a daily system balance and to identify all unaccounted for (UAF) gas. This station would consist of the following major components:

- Station bypass
- Filter
- Meter set with bypass
- Heater
- Dual main and monitor regulator runs
- Instrumentation and controls
- Fenced compound with steel building

The station piping would be compliant with the pipeline and sized for the forecast 20-year load. The station regulators would be sized for the 5-year forecast load with easy trim upgrades to increase capacity. This gate/meter station cost estimate is \$450,000.

If Terasen Gas Inc. didn't authorize use of their LaFarge gate station for TP gas delivery then a short tie-in to their TP line at the inlet would be required. The cost estimate would be \$385,000 due to tie-in and short ROW to custody transfer meter station.

- **Construction**

Main line construction discussion as follows:



Plowing Method is not recommended for the following reasons:

- Majority of the pipeline ROW falls into Crown land, which is under the Agricultural Land Reserve (ALR) Act. Agricultural Land Commission (ALC) requires stripping of topsoil in several lifts. This requires conventional excavating machines to accomplish.
- The normal design depth of pipeline cover shall be 1.0 to 1.2-metre cover. Plowing machines has difficulties achieving this depth.
- Plowing when encounter with difficult pipe trench soil material such as gravels, boulders and bedrock will render the plowing machine useless.
- Not an economical method of pipeline construction except for soil condition such as peat or soft and cohesive soil conditions.

Open trench excavation is a more appropriate construction method:

- Can easily fulfill topsoil-stripping operation.
- Easy access for track mounted excavating equipment for various type of terrain.
- High production rate in trenching operations.

Creek and river crossing methods:

- Isolation method.
- Horizontal direction drill method (HDD).
- Flume and pump method.
- Flume and trench method.
- Flume and dam method.

Other construction considerations:

- 100% non-destruction testing (NDT by radiographic machine)
- Pressure testing shall be by liquid medium to CSA standards.
- Testing may have to be performed in several test sections due to the hydrostatic head and prescribed S.M.Y.S. of line pipe material.



- Running cleaning, gauging and dewatering pigs will be required.
- Proper procedures and requirement for dewatering and line pipe drying at the end of the pressure test.

- **Commissioning**

After the pipeline section has been pressure tested successfully inclusive of all station components a commissioning method and procedure shall be in place. The following activities shall be considered as a minimum:

- Liaison with Terasen Gas for gasification.
- Tie-in, purging and gasification procedures being approved by Engineering Team.
- Any hot tie-ins have to be coordinated with Terasen Gas hot-in crew.
- Cold tie-ins can be performed by 3rd party outside contractors.

- **HDPE Investigation for consideration**

A.

1. 2" sdr 6.3 polyethylene rated for 302 psi 1.621" i.d 2.375" o.d comes on 3,837ft reels Sell price is 1.25/ft.
2. 3" sdr 6.3 polyethylene rated for 302 psi 2.389" i.d 3.5" o.d comes on 1,640ft reels Sell price is 2.74/ft

This piping is put together with a standard 1-4 fusion machine
Rental c/w generator 730.00 per week or 2700.00 per month

Clint Joiner of HDPE Sales & Service states, "These prices quoted on the pipe, are fob kamloop's area and the product is made to Spec CSA Z66299 for Natural gas use"

B.

Further to our "Sun Peaks - Load & Hydraulics" spread sheet found in tab 8 (Attachments) section and as requested by Terasen Utilities Ltd. please find the following information for pipeline hydraulics utilizing PE pipe due to the Hydraulics there would require two gas lines a 2" & 3".

* Note one word of caution is the SDR for PE pipe as specified below may be lower than that of the HDPE. As such the HDPE pipe may result in an even smaller "internal hydraulic radius" causing an even higher pressure drop across the pipeline system.



Criteria:

Lafarge outlet to Sun Peaks Pipeline = 275 psig.

SDR for NPS 3 (88.9mm) PE pipe = 11.

SDR for NPS 2 (60.3mm) PE pipe = 11.

Results for a single NPS 3 PE pipe:

Delivery pressure to Sun Peaks Village town site= 120 psig.

* Note: Less than ideal for IP/DP regulators cut, pressure drop loss of 57 psig more than the steel pipe case.

Results for one (1) NPS 2 PE pipe and one (1) NPS 3 PE pipes:

Delivery pressure to Sun Peaks Village = 191 psig.

Also a TP/TP cut regulation station would have to be installed at Lafarge outlet to the Sun Peaks Pipeline at additional cost, and a wider right of way would be required due to the twin pipelines and the issue of two lines for "call before you dig issues" as well as additional maintenance on going.

Our research produced the following information for consideration at this time of HDPE pipe for this project, CSA Z662-03 Section 12.4.2 referencing to only polyethylene piping and not "high density PE" pipe. Further Section 12.4.7 makes references to maximum operating pressure shall not exceed 860 kPa(124.7 psig). Section 12.4.2.1 pertaining to "Design Pressure" makes reference to CSA B-137.4-99 also does not cover "high density PE" pipe material.

In short "high density PE" pipe is not in our opinion an approved product in the view of the overall CSA Codes and Standards to-date for high-pressure natural gas application. Terasen Gas assigned two Engineers too look into the inclusion of this "high density PE" material for DP pressure (60 psig or less) use without a conclusion thus far.

We have also consulted with Gary Johnson (Engineering Governance with Terasen Gas Inc.) with the same comment as shown above. It is our opinion high-density PE pipe shall not be used without CSA approval for high-pressure natural gas application.

• **Distribution Grid Conversion (propane to natural gas)**

It is obvious and recognized that the Sun Peaks System cannot be converted in one or two days. There are too many customers on the one-way feed system to complete the entire town site conversion in a few days. Therefore, an executive decision needs to be made as to the two potential procedures.

Option A A complete shutdown of the distribution grid, allowing for a complete purge and conversion to Natural Gas with a systematic approach allowing for individual conversion



of appliances, installation of meter sets and regulators and the turning on of appliances at each customer.

- Option B** Would be a variation to "A" which would require satellite tankers in the commercial area or in other determined areas. With isolation of the propane system to enable an organized staged conversion of the distribution grid.

The satellite system may be either propane or natural gas. The physical scheduling of the conversion would be different but the total time required should be identical. A natural gas (LNG) satellite system has been used successfully many times in the past by Terasen Gas for a number of days at a time, both in the Lower Mainland as well as in the Squamish Propane Conversion of 1991 and previous propane conversions in Victoria and Anmore, B.C., as well as numerous occasions to support the PNG Prince Rupert system due to pipeline failures. It is standard practice for Terasen Inc. employees and they are quite experienced carrying out this activity. Likewise, propane has been used in a similar satellite processes. Thus either feedstock is technically feasible.

• **ASSUMPTIONS**

1. For the purpose of a cost estimate we will assume LNG being vaporized as a satellite system to be utilized. If upon further analysis the use of propane as a satellite system is less expensive than that system should be used.
2. The integrity of the Sun Peaks propane system is assumed to be good, all valves are in proper operating condition, all services are designed for natural gas and are up to standard and will not require alteration.,
3. Number of customers (services) existing roughly as of April 2005:

- Residential 558
- Small Commercial 9
- Large Commercial 12



4. Conversion Rate

- Residential 40 customers/day
- Commercial 2 customers/day

5. Work Time

- 20 Technicians 8 hours per day (note: the more Technicians, the shorter the conversion time)
- Overtime 2 hours per day for problem customer or other appliance or access related issues
- Commercial crew of 4 technicians with a view of converting 2 commercial business a day (Survey required to establish the amount/types of appliances to be converted to confirm Work required)
- A crew should consist of two Technicians
- One crew should be established for afternoons 1300 – 2000 hours

6. Supervision

- 2 Managers/Supervisors each one supporting 10-12 Technicians
- Construction crew for Gasfitter and purge, etc.

7. Days Required (based on 20 Technicians for residential and 4 Technicians for small commercial, the days required are proportionate to the staffing levels)

- Residential $558 \div 40 = 14$ days
- Small Commercial $9 \div 2 = 5$ days
(Keeping in mind that the survey may detect a large number of appliances to be converted)
- Large Commercial 12 days
(Keeping in mind that the survey may detect a large number of



appliances to be converted, the hotels could have 50-100 fireplaces each?)

- Consideration of Large Commercial Conversion work being awarded and contracted to Industrial Gas fitting Contractor
- Recommend 6-day workweek to minimize 3rd party tampering by shortening the conversion time.

8. Construction Crew

One 2-man construction crew with fully equipped vehicle to assist with conversion, perhaps to expose mains for crimping, purging, etc. and restoration.

9. Cost Estimate

The cost to convert the distribution system from propane vapor to natural gas was estimated by identifying the primary steps in the conversion process:

- Distribution piping
- Construction and conversion crew composition requirements
- Satellite system

The initial phase of the project would be to conduct a door-to-door appliance survey. This survey will allow us to determine the materials required and the extent of work required at each service address, the manpower requirements and the development of an accurate conversion schedule.

Once the conversion starts, each morning a section of the town site will be isolated by using valves and/or crimping of the polyethylene system. As the system isolation is being done the customer's meters will be shut off and isolated. Once the isolation is complete the propane will be replaced with natural gas by opening a valve/crimp at the head end and flaring the propane at the tail end. While the



purging and flaring is being done all the customers in the section will be converted.

This will consist of several things depending on the various appliances and size of piping. All the customers will have a regulator installed at the meter (we recommend 14 kPa delivery system) reducing the distribution pressure to H.L. pressure. Standard residential conversion of a furnace, hot water tank and fireplace will require at least two 14 kPa – 1 kPa regulators as well as appliance regulator and drilling out of the orifices on each of the appliances. Other conversions could consist of replacement of appliance gas valves. This information data will be collected through the door-to-door appliance survey.

Notification to customers through Sun Peaks Utilities bill inserts and **sample letter below.**

“Dear Customer”

Sun Peaks Utilities is pleased to announce that natural gas service will soon be coming to Sun Peaks.

To prepare for the conversion of propane appliances, a Sun Peaks representative will be calling at your home or business over the next several weeks to determine the work involved for converting your particular appliance(s).

While it is possible that some work may be done ahead of time, actual conversion will be phased in after natural gas is available.

We will do everything we can to make the switch to natural gas as convenient as possible and to keep you informed of progress.

Yours truly,
Pat Miller
Sun Peaks Utilities

- PROJECT - Leak Survey of the Sun Peaks Piping System



A contractor should be identified to survey (with the assistance of maps provided and by the use of a pipe locator, and with a F.I. gas detector (calibrated to 1-ppm methane to air sensitivity) the existing distribution grid.

Recommendations

1. Repair all underground leaks before increasing system to 60 PSI.
2. Repair meter leaks coded B (smell of gas) if the leak is upstream of the regulator before pressure is increased.
3. Re-survey for leakage after the system is increased to 60 PSI.
4. Repair all meter leaks as soon as practical.
5. Install marker posts on right of ways and casements.
6. Upgrade information on records and maps with main and service information.
7. Continue annual gas leak survey program.

The following activities will be required to accomplish the Sun Peaks conversion from propane to natural gas:

TASKS	ESTIMATED BUDGET
Set-up/organization	\$ 60,000
Appliance survey	25,000
Grid preparation	40,000
Survey analysis/material orders	14,000
Training	25,000
Residential conversions	225,000
Commercial conversions	40,000
Leak survey/clean up	14,000
Materials	80,000
General & supplies	8,000
Engineering (10%)	54,000
Contingency (10%)	54,000
Overhead (10%)	54,000
Accommodation/living out	50,000
LNG Tanker \$5,000 per day for 10 days	<u>50,000</u>



\$793,000

*Satellite Propane/LNG (to be determined)

- **Bid specification**

Project Management Team (PMT) is responsible for preparing legal tendering document with the support and input from the overall project task force.

In general the following tender document format shall be followed:

- Invitation to Tender
- Instruction to Tenderers
- Agreement
- General Conditions
- Supplemental Conditions
- Project Description (Scope of Work)
- Completed Tender Form (Rate of Schedules)
- Construction Specifications
- Project Drawings
- Special Conditions & Specifications (EPP, RRP and etc.)
- Statutory Declarations
- Tender Forms

Tendering Contractor Pre-Qualification Process

It is recommended to pre-qualify tendering contractors. This process is relatively common to better manage the tender evaluation process.

- **Tender evaluation**

Commercial Terms and Technical Terms shall be reviewed and evaluated separately by the Project Management Team and the Engineering Design Team.



Commercial Term is to ensure the following have been provided:

- All information provided is in compliance with the tendering document.
- Bid Bond & Surety Bond have been included.
- Bonding ability.
- Any error and omission statement has been included.
- Contractor task force affiliation (Union or non-union).
- WCB records and ratings (merits or demerits).

Technical Term is to ensure the following have been provided:

- Similar past working experience.
- References.
- Proposed construction method.
- Proposed construction schedule.
- Proposed construction equipment, age and ownership.
- Proposed manpower loading.

Further to the above a sensitivity analysis shall be performed for construction contingency purposes.

- **Limited hydraulic analysis of existing Terasen Gas Inc. pipeline (TP delivery point)**

A preliminary hydraulic analysis has been performed for the purpose of identifying and selecting an appropriate line pipe diameter.

Historic usage and projected consumption data were provided by Sun Peaks Utilities Ltd. The January 2005 historic usage has been projected for the January 2006 consumption assuming a 4% increases (see attached table).



The subject hydraulic analysis is therefore considering the following 2 cases:

- 2006 peak load, and
- 2025-peak load with a constant 4% increase annually.

This hydraulic analysis has the following assumptions:

- Terasen Gas' LaFarge Gate Station is capable of discharging a minimum of 440 psig into the proposed Sun Peaks Pipeline.
- This minimum discharge pressure remains the same for the next 20 years.
- Sun Peaks Pipeline will acquire this long-term load demand from Terasen Gas.
- A total 853.40 meters of negative static head exists in the Sun Peaks Pipeline system.

As shown by the results of this limited hydraulic analysis (see attached table) an 88.9mm (3.50 inch) O.D. line pipe should be considered. This recommendation is based on the following factors:

- It is feasible for accommodating the future load due to long-term growth.
- It has the flexibility for the future Sun Peaks Station Design capacity.

- **Geotechnical Analysis for Predetermined Location**

Geotechnical investigation program shall be in place and completed during the detail-engineering phase prior to the issuing of installation tenders. The following areas shall be included as a minimum:

- Potential creek crossing sites
- Bed rock outcrops areas
- Swampy areas



- Road crossings
- Main line block valves areas
- Pressure regulating station at the Sun Peaks Village

The geotechnical investigation program will be required and is beneficial for the following reasons:

- Identify and avoid areas where pipeline construction will become difficult and less economical.
- Identify any “show stoppers” along the proposed pipeline alignment.
- Provide tendering installation contractors better understanding of the ground condition. This will result a more realistic bid pricing structure.

The magnitude of the proposed geotechnical investigation program:

Approximately 30 geotechnical test holes in conjunction with excavating 15 test pits (to appropriate depths) may be required. The estimated cost for this program as following:

The manpower component for the Geological Analysis:

- Geotechnical Consultants
- Hydrological Consultants
- Down hole drilling Contractor
- Excavating test pits Contractor
- Soil sample testing Contractor



6.0 DISCLAIMERS

This report was prepared for the exclusive use of Terasen Utility Services and their authorized agents. Any 3rd party use is their sole responsibility. Northwest Pacific Gas accepts no responsibility for any damages suffered by 3rd party as a result of their actions and/or decisions based on this report contents.

The documented report cost estimates are subject to the extreme volatility of the contractor bid process and materials, such as steel which is presently escalating at a unprecedented and unpredictable rate.

Therefore, a high probability exists that actual costs could exceed the specified tolerance band (+10%-15%) of this report. Northwest Pacific Gas is confident that our documented cost estimates are current and valid for a period of 3-6 months (Sept/01/05). Northwest Pacific Gas accepts no responsibility for your actual project costs that exceed our cost estimates beyond Sept 1, 2005.



7.0 CLOSURE

We are confident that this report meets and/or exceeds your scope requirements. Please call us for clarification and/or presentation to your client.

Sincerely

Barry E. Davidson
President
Northwest Pacific Gas Ltd.



8.0 ATTACHMENTS

Sample Forms:

- Survey Form
- Gas Conversion Worksheet

Sample Spreadsheets:

- Limited Hydraulic Analysis
- Pipeline Cost Estimate
- Gas Consumption Projection
- Line Pipe Wall Thickness Calculation
- Pipeline Highway Crossing Calculation

Maps:

- LaFarge Pipeline Extension to Sun Peaks
- LaFarge Cement Gate Station Inlet TP Line

Photos:

- Highland Helicopter Terrain Reconnaissance



**SUN PEAKS CONVERSION PROJECT
SURVEY FORM**

Customer Name/Number

Service Address

Meter Number

Pipe Size

Approximate Distance from
Meter to Appliance(s)

APPLIANCES

Name	Age	Type	Qty.	Model #	Rated Input	# of Burners	Valve Model #

Certify air test on customers houseline 25 psig for 15 minutes

Comments:

Signature Fitter #



GAS CONVERSION WORKSHEET

Customer Name (Given/Family)		Telephone No.	Customer Work Order No.	
Street Number & Name, Town/City				
REGULATORS				
Location		Make	Pressure	Type
				Work Completed <input type="checkbox"/> Yes <input type="checkbox"/> No
				<input type="checkbox"/> Yes <input type="checkbox"/> No
				<input type="checkbox"/> Yes <input type="checkbox"/> No
				<input type="checkbox"/> Yes <input type="checkbox"/> No
				<input type="checkbox"/> Yes <input type="checkbox"/> No
APPLIANCES				
Make	Model No.	Input	Burners	Reg/Valve Required
				Orifice Size
				Clocked Input
				Work Completed <input type="checkbox"/> Yes <input type="checkbox"/> No
				<input type="checkbox"/> Yes <input type="checkbox"/> No
				<input type="checkbox"/> Yes <input type="checkbox"/> No
				<input type="checkbox"/> Yes <input type="checkbox"/> No
				<input type="checkbox"/> Yes <input type="checkbox"/> No
Materials		Remarks		Start Time
				Finish Time
				Date (y,m,d)
Installer's Name				
Signature				
Foreman's Name				
Signature				

Sun Peaks Pipeline Feasibility Report

Load Data

Year	Flow (GJ)	Flow (Kcu.m/hr.)	Year	Flow (GJ)	Flow (Kcu.m/hr.)	Notes
2006	12944	0.455	2025	28362	0.997	(2025 load per 4% growth/year from 2006)

Limited Hydraulic Analysis

Assumptions:

Terasen Gas Lafarge Station Outlet Pressure = 440 psig (maintain the same for next 20 years)

Elevation @ Sun Peaks = 4000 feet (1219.14m) above sea level

Elevation @ Lafarge = 1200 feet (365.74m) above sea level

Total Static Head = 2800 feet (853.4 m)

2008 Case			2025 Case			Notes
Inlet (psig)	OD Req'd (in)	Outlet (psig)	Inlet (psig)	OD Req'd (in)	Outlet (psig)	(pipe ID is based on Std. W.T.)
275	3.5	240	275	3.5	177	(assume for IP outlet from Lafarge Station)
300	2.375	150	300	3.5	209	(assume for TP outlet from Lafarge Station)
400	2.375	288	400	3.5	324	(assume for TP outlet from Lafarge Station)

Notes:

1) Inlet = Sun Peaks Pipeline inlet system pressure from Lafarge Station.

2) Outlet = Sun Peaks Pipeline outlet system pressure at Sun Peaks Village.

For: Sun Peaks P/L

Sheet 1 of 1

Subject: Line Pipe Wall Thickness Sizing and Selection for NPS 3
MOP at 960 psi for general P/L design, Roads, Railways and Stations.

Date: Apr. 4, 05
Revision: 0

Based on: CSA Z662, Latest Edition - Class 1 thru 3 Locations

W.O.#

WALL THICKNESS CALCULATIONS

Roads, Railroads and Stations

Pipe O.D.(mm)
Nominal Pipe O.D.(in)

88.9 88.9 88.9 88.9
3.500 3.500 3.500 3.500

88.9 88.9 88.9 88.9
3.500 3.500 3.500 3.500

Pipe Material
S.M.Y.S. of Pipe(kPa)

Z245.1 Z245.1 Z245.1 Z245.1
241000 241000 290000 290000

Z245.1 Z245.1 Z245.1 Z245.1
241000 241000 290000 290000

Design Pressure(kPa)

6618 6618 6618 6618

6618 6618 6618 6618

Class Location

1 2 3 1 2 3

1 2 3 1 2 3

Design Factor

0.8 0.8 0.8 0.8

0.8 0.8 0.8 0.8

Location Factor

1 0.9 0.7 1 0.9 0.7

0.75 0.625 0.625 0.75

Weld Joint Factor

1 1 1 1

1 1 1 1

Temp. Derating Factor

1 1 1 1

1 1 1 1

Corrosion Allowance(in)

0 0 0 0

0 0 0 0

Min. Wall Thickness(mm)

1.53 1.70 2.18 2.18

2.03 2.44 2.44 1.69

Selected wall Thickness(mm) *

3.96 3.96 3.96 4.78

3.96 3.96 3.96 4.78

Min. Wall Thickness(in)

0.060 0.067 0.086 0.050

0.080 0.096 0.096 0.067

Selected wall Thickness(in) *

0.156 0.156 0.156 0.188

0.156 0.156 0.156 0.188

D/t Ratio

22.4 22.4 22.4 18.6

22.4 22.4 22.4 18.6

Hoop Stress(kPa) **

74240 74240 74240 61604

74240 74240 74240 61604

Hoop Stress in % of Yield **

30.81 30.81 30.81 21.24

30.81 30.81 30.81 21.24

Weight (kg/m)

8.37 8.37 8.37 9.99

8.37 8.37 8.37 9.99

* Selected wall thickness may be thicker than minimum wall required due to weldability or D/t ratio.
** Based on the selected wall thickness.

- TERASEN GAS -

PIPELINE COST ESTIMATE

ENGINEERING SERVICES

PROJECT	Sun Peaks Pipeline Project Costs Estimate	LENGTH (m)	37,500
YEAR	2005	DIA. (mm)	88.9
FROM	Terasen Gas Lafarge Station	W.T. (mm)	4.80
TO	Sun Peaks Village	S.M.Y.S. (grd)	290
ESTIMATOR	D. Kan	M.A.O.P. (kPa)	6.618

CONTRACT - PRIME		QTY	UNIT	\$/UNIT	EXTENSION
	1 basic line price(all inclusive)	37,500	m	175.00	6,562,500
Extras	2 repair coating		m	0.00	0
	3 rockshield installation	18,750	m	3.00	56,250
	4 Excav/Disposal Trench material		each	0.00	0
	5 supply, haul and install blacktop		each	0.00	0
	6 select backfill (haul & place)	5,000	cu. m	31.50	157,500
	7 rebeveling		each	0.00	0
	8 cut out welds		each	0.00	0
	9 Blacktop cutting/removal/disposal		each	0.00	0
	10 bolt-on weights		each	0.00	0
	11 sand bags		each	0.00	0
	12 ditch plugs	10	each	1750.00	17,500
	13 marker posts		each	0.00	0
	14 test leads		each	0.00	0
	15 anode installation		each	0.00	0
	16 crossing - road open cut		each	0.00	0
	17 - road boring		each	0.00	0
	18 - highway	3	each	8000.00	24,000
	19 - railway open cut		m	0.00	0
	20 - railway bored		each	0.00	0
	21 - creek	10	each	12000.00	120,000
	22 - river	3	each	24000.00	72,000
	23 - bridge		each	0.00	0
	24 watercourse relocation (culverts, etc.)		each	0.00	0
	25 rip rap / gabions		m^3	0.00	0
	26 erosion control (berms, drains, etc)		each	0.00	0
	27 grade rock - blast		m^3	0.00	0
	28 - air hammer		m^3	0.00	0
	29 ditch rock - blast	500	m^3	450.00	225,000
	30 - air hammer		m^3	0.00	0
	31 extra depth - 0.3m		m	0.00	0
	32 extra depth - 0.6m		m	0.00	0
	33 extra depth - 0.9m		m	0.00	0
	34 extra depth		m	0.00	0
	35 corduroy - row		m	0.00	0
	36 frost cutting		m	0.00	0
	37 Pr. Test'n/dewatering (Included)		each	0.00	0
	38 top soil stripping (inclusive)		m	0.00	0
	39 pipeline drying (inclusive)		each	0.00	0
	40 tie-ins - assembly		each	0.00	0
	41 - installation		each	0.00	0
	42 block valve - assembly	2	each	9500.00	19,000
	43 - installation		each	0.00	0
	44 Mob/demob	1	each	80000.00	80,000
	45 miscellaneous	5	%	0.00	366,688
SUB-TOTAL PRIME CONTRACT					\$7,700,438

SUB-CONTRACT	QTY	UNIT	\$/UNIT	EXTENSION
--------------	-----	------	---------	-----------

46	clearing/grubbing/grading	10,000	m	40.00	400,000
47	survey	1	each	180000.00	180,000
48	radiography	1	each	250000.00	250,000
49	inspect. consultar - 3rd party	50	Mdays	650.00	32,500
50	- field		Mdays	0.00	0
51	engineer consulta - design	60	Mdays	550.00	33,000
52	- geotech/hydrolog	120	Mdays	900.00	108,000
53	- enviromental	320	Mdays	750.00	240,000
54	- archeological	15	Mdays	650.00	9,750
55	project management consultants	120	Mdays	650.00	78,000
56	cathodic protection		m	0.00	0
57	other		each	0.00	0
58	miscellaneous	5	%		66,563
SUB-TOTAL SUB-CONTRACT					\$1,397,813
TOTAL CONTRACT					\$9,098,250
MATERIAL		QTY	UNIT	\$/UNIT	EXTENSION
59	line pipe c/w coating & freight	37,500	m	26.00	975,000
60	tape / sleeves	3,200	joint	5.00	16,000
61	fittings	5	each	180.00	900
62	rockshield	18,750	m	4.00	75,000
63	block valve & operator (stop-offs)	2	each	950.00	1,900
64	blowdown valve	4	each	120.00	480
65	misc. fittings & valves	2	each	850.00	1,700
66	select backfill		m^3	0.00	0
67	weights		each	0.00	0
68	concrete slabs		each	0.00	0
69	other - rock jacket		each	0.00	0
70	miscellaneous	5	%		53,549
TOTAL MATERIAL					\$1,124,529
TIE-IN COSTS		QTY	UNIT	\$/UNIT	EXTENSION
71	engineering / design	10	each	350.00	3,500
72	construction - OPEIU		each	0.00	0
73	construction - IBEW(hot tie-ins)	5	day	3500.00	17,500
TOTAL COMPANY LABOUR					\$21,000
LAND		QTY	UNIT	\$/UNIT	EXTENSION
74	agent	1	each	55000.00	55,000
75	forestry (stumpage)	2,500	m^3	25.00	62,500
76	RoW - crown	75	Acr	900.00	67,500
77	- private	1	Acr	20000.00	20,000
78	damages & compensation	5	Acr	5500.00	27,500
79	revegetation	30,000	m^2	1.50	45,000
80	miscellaneous	5	%		13,875
TOTAL LAND					\$291,375
PROPANE CONVERSION		QTY	UNIT	\$/UNIT	EXTENSION
81	Per Proposal		each		793,000
82			each		0
83			each		0
84			each		0
85			each		0
86					0
TOTAL OTHER					\$793,000
STATIONS		QTY	UNIT	\$/UNIT	EXTENSION

87	Regulating, piping, filters, heaters	1	each	450000.00	450,000
88	Metering with filters & piping	2	each	50000.00	100,000
89	Mainline tap	1	each	100000.00	100,000
90	Buildings with foundations & fencing	2	each	25000.00	50,000
91	miscellaneous	5	%	0.00	35,000
TOTAL STATIONS					\$735,000
TOTAL PROJECT DIRECT					\$12,063,154
OVERHEAD		QTY	UNIT		EXTENSION
92	company labour	0	%	0.00	0
93	materials	0	%	0.00	0
94	contract	0	%	0.00	0
95	stations	0	%	0.00	0
96	general & administration	0	%	0.00	0
97	afudc	0	%	0.00	0
TOTAL OVERHEADS & AFUDC					\$0
CONTINGENCY		QTY	UNIT		EXTENSION
98	company labour	0	%	0.00	0
99	materials	0	%	0.00	0
100	contract	0	%	0.00	0
101	stations	0	%	0.00	0
102	general & administration	0	%	0.00	0
TOTAL CONTINGENCY					\$0
GRAND TOTAL PROJECT					\$12,063,154

COMMENTS :



Sun Peaks Utilities Co Ltd
Gas Consumption Projection
May '05 - April '06

Historical Usage			Increase		Projected Consumption			Projected in Liters		
Month	Year	Usage gj			Month	Year	Usage gj	Cumulative gj	Usage L	Cumulative L
May	2004	3,810.5	2%		May	2005	3,887	3,887	153,136	153,136
June	2004	3,448.5	2%		June	2005	3,517	7,404	138,588	291,725
July	2004	2,676.6	2%		July	2005	2,730	10,134	107,567	399,292
August	2004	3,091.3	2%		August	2005	3,153	13,287	124,233	523,525
September	2004	3,987.6	2%		September	2005	4,067	17,355	160,254	683,779
October	2004	4,915.0	3%		October	2005	5,062	22,417	199,461	883,239
November	2004	7,565.4	4%		November	2005	7,858	30,285	310,000	1,193,239
December	2004	9,805.5	4%		December	2005	10,198	40,483	401,790	1,595,029
January	2005	12,446.2	4%		January	2006	12,944	53,427	509,995	2,105,025
February	2004	7,335.4	5%		February	2006	7,702	61,129	303,465	2,408,490
March	2004	9,245.3	5%		March	2006	9,708	70,837	382,478	2,790,968
April	2004	5,144.3	5%		April	2006	5,402	76,238	212,820	3,003,788
		<u>73,471.6</u>	<u>3.8%</u>				<u>76,238</u>		<u>3,003,788</u>	

Assume Hotel IJ goes ahead. Completion Feb'06.

Note, consumption over the past 9 months has changed very little from the corresponding period a year ago:

9 Mos ended Jan 31/05	51,746.6
9 Mos ended Jan 31/04	<u>51,661.7</u>
Increase	<u>84.9</u>
% increase	<u>0.16%</u>

Summary

Highway crossing, flexible pavement

Diameter, D	= 3.500 in.	Class location	= 3
Wall thickness, tw	= 0.188 in.	F	= 0.50
Depth, H	= 4.00 ft	E	= 1.00
MAOP	= 960 psi	T	= 1.000
SMYS	= 42000 psi	FS1	= 1.80
		FS2	= 1.80
		FS3	= 1.80

Design checks:

Calculated Stress	Allowable Stress	Result
SHi (Barlow) = 8936 psi	F*E*T*SMYS = 21000 psi	PASS
Seff = 9551 psi	SMYS/FS1 = 23333 psi	PASS
SLh = 1394 psi	SHG/FS2 = 6667 psi	PASS
SHh = 839 psi	SFL/FS3 = 11667 psi	PASS

Input

Diameter, D	= 3.500 in.	Depth, H	= 4.00 ft
MAOP	= 960 psi	Bored diameter, Bd	= 9.5 in.
SMYS	= 42000 psi	Soil type	= A
Class location	= 3	E'	= 0.5 ksi
F	= 0.50	Er	= 10.0 ksi
E	= 1.00	Soil unit weight	= 120 pcf
Install T1	= N/A	Longitudinal weld	= ERW
Operation T2	= N/A	Single axle load, Ps	= 12.0 kips
T	= 1.000	Tandem axle load, Pt	= 10.0 kips
Thickness, tw	= 0.188 in.	Pavement type	= Flexible

Steel properties:		FS1 = 1.80
Young's modulus	= 30000 ksi	FS2 = 1.80
Poisson's ratio	= 0.30	FS3 = 1.80
Coef. thermal expan.	= 6.500e-006 per deg F	Impact = AREA

Calculation Steps

Step c - Circumferential Stress Due to Earth Load, SHc:			
tw/D	= 0.054	E'	= 0.5 ksi
H/Bd	= 5.1	Soil type	= A
Bd/D	= 2.71		
gamma	= 120 pcf	D	= 3.500 in.
	0.069 pci	SHc	= 764 psi

Step d - Impact Factor, F_i , and Applied Design Surface Pressure, w :
 $H = 4.00$ ft $F_i = 1.75$
Critical case = Tandem axle, $P_t = 10.0$ kips $w = 69.4$ psi

Step e - Cyclic Stresses, SH_h and SL_h :
 $tw/D = 0.054$ $E_r = 10.0$ ksi $KH_h = 4.7$
 $D = 3.500$ in. $H = 4.00$ ft $GH_h = 1.47$
Pavement type = Flexible $SH_h = 839$ psi
Critical case = Tandem axle $KL_h = 5.6$
 $R = 1.00$ $GL_h = 2.05$
 $L = 1.00$ $SL_h = 1394$ psi

Step f - Circumferential Stress Due to Internal Pressurization, SH_i :
 $p = MAOP = 960$ psi
 $D = 3.500$ in. $tw = 0.188$ in. $SH_i = 8456$ psi

Step g - Check Allowable $Seff$ (See Page 1 of 5.)

Principal Stresses, S_1 , S_2 , and S_3 :
 $S_1 = 10059$ psi
 $S_2 = 4160$ psi
 $S_3 = -960$ psi

Effective Stress, $Seff$:
 $FS_1 = 1.80$ $SMYS = 42000$ psi $Seff = 9551$ psi
 $SMYS/FS_1 = 23333$ psi

Step h - Check Fatigue: (See Page 1 of 5.)

Girth Welds:
 $FS_2 = 1.80$ $SFG = 12000$ psi $SL_h = 1394$ psi
 $SFG/FS_2 = 6667$ psi

Longitudinal Welds: ERW
 $FS_3 = 1.80$ $SFL = 21000$ psi $SH_h = 839$ psi
 $SFL/FS_3 = 11667$ psi

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Tabulated values for the minimum required wall thickness.

Highway crossing at Class 3 location, flexible pavement

Diameter, $D = 3.500$ in. $E' = 0.5$ ksi
MAOP 960 psi $E_r = 10.0$ ksi
SMYS 42000 psi Long. Weld type = ERW

Depth (ft)	tw (in.)	SH_iB (psi)	SH_e (psi)	SH_h (psi)	SL_h (psi)	SH_i (psi)
3.00	0.083	20241	3147	2303	2340	19761
3.25	0.083	20241	3277	2303	2340	19761
3.50	0.083	20241	3407	2303	2340	19761
3.75	0.083	20241	3504	2303	2340	19761
4.00	0.083	20241	3601	2303	2340	19761
4.25	0.083	20241	3666	2225	2329	19761

4.50	0.083	20241	3764	2146	2318	19761
4.75	0.083	20241	3828	2068	2318	19761
5.00	0.083	20241	3861	2005	2306	19761
5.25	0.083	20241	3926	1916	2282	19761
5.50	0.083	20241	3991	1854	2270	19761
5.75	0.083	20241	4023	1781	2235	19761
6.00	0.083	20241	4056	1725	2210	19761
6.25	0.083	20241	4088	1653	2186	19761
6.50	0.083	20241	4120	1607	2175	19761
6.75	0.083	20241	4153	1537	2140	19761
7.00	0.083	20241	4185	1483	2117	19761
7.25	0.083	20241	4218	1429	2082	19761
7.50	0.083	20241	4218	1375	2059	19761
7.75	0.083	20241	4250	1316	2048	19761
8.00	0.083	20241	4283	1293	2014	19761
8.25	0.083	20241	4283	1256	1991	19761
8.50	0.083	20241	4315	1204	1958	19761
8.75	0.083	20241	4315	1175	1947	19761
9.00	0.083	20241	4315	1138	1914	19761
9.25	0.083	20241	4348	1102	1892	19761
9.50	0.083	20241	4348	1073	1881	19761
9.75	0.083	20241	4348	1038	1849	19761
10.00	0.083	20241	4348	1003	1827	19761

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Tabulated values for the minimum required wall thickness.

Highway crossing at Class 3 location, flexible pavement

Diameter, D = 3.500 in. E' = 0.5 ksi
MAOP = 960 psi Er = 10.0 ksi
Long. Weld type = ERW
SMYS = 42000 psi FS1 = 1.80 SMYS/FS1 = 23333 psi
SFG = 12000 psi FS2 = 1.80 SFG/FS2 = 6667 psi
SFL = 21000 psi FS3 = 1.80 SFL/FS3 = 11667 psi

Depth (ft)	tw (in.)	Seff (psi)	SLh (psi)	SHh (psi)
3.00	0.083	22851	2340	2303
3.25	0.083	22966	2340	2303
3.50	0.083	23081	2340	2303
3.75	0.083	23167	2340	2303
4.00	0.083	23253	2340	2303
4.25	0.083	23239	2329	2225
4.50	0.083	23255	2318	2146
4.75	0.083	23240	2318	2068
5.00	0.083	23212	2306	2005
5.25	0.083	23191	2282	1916
5.50	0.083	23192	2270	1854
5.75	0.083	23158	2235	1781
6.00	0.083	23138	2210	1725
6.25	0.083	23104	2186	1653
6.50	0.083	23091	2175	1607
6.75	0.083	23060	2140	1537
7.00	0.083	23041	2117	1483
7.25	0.083	23025	2082	1429

7.50	0.083	22978	2059	1375
7.75	0.083	22981	2048	1346
8.00	0.083	22965	2014	1293
8.25	0.083	22934	1991	1256
8.50	0.083	22919	1958	1204
8.75	0.083	22893	1947	1175
9.00	0.083	22864	1914	1138
9.25	0.083	22863	1892	1102
9.50	0.083	22837	1881	1073
9.75	0.083	22809	1849	1038
10.00	0.083	22779	1827	1003

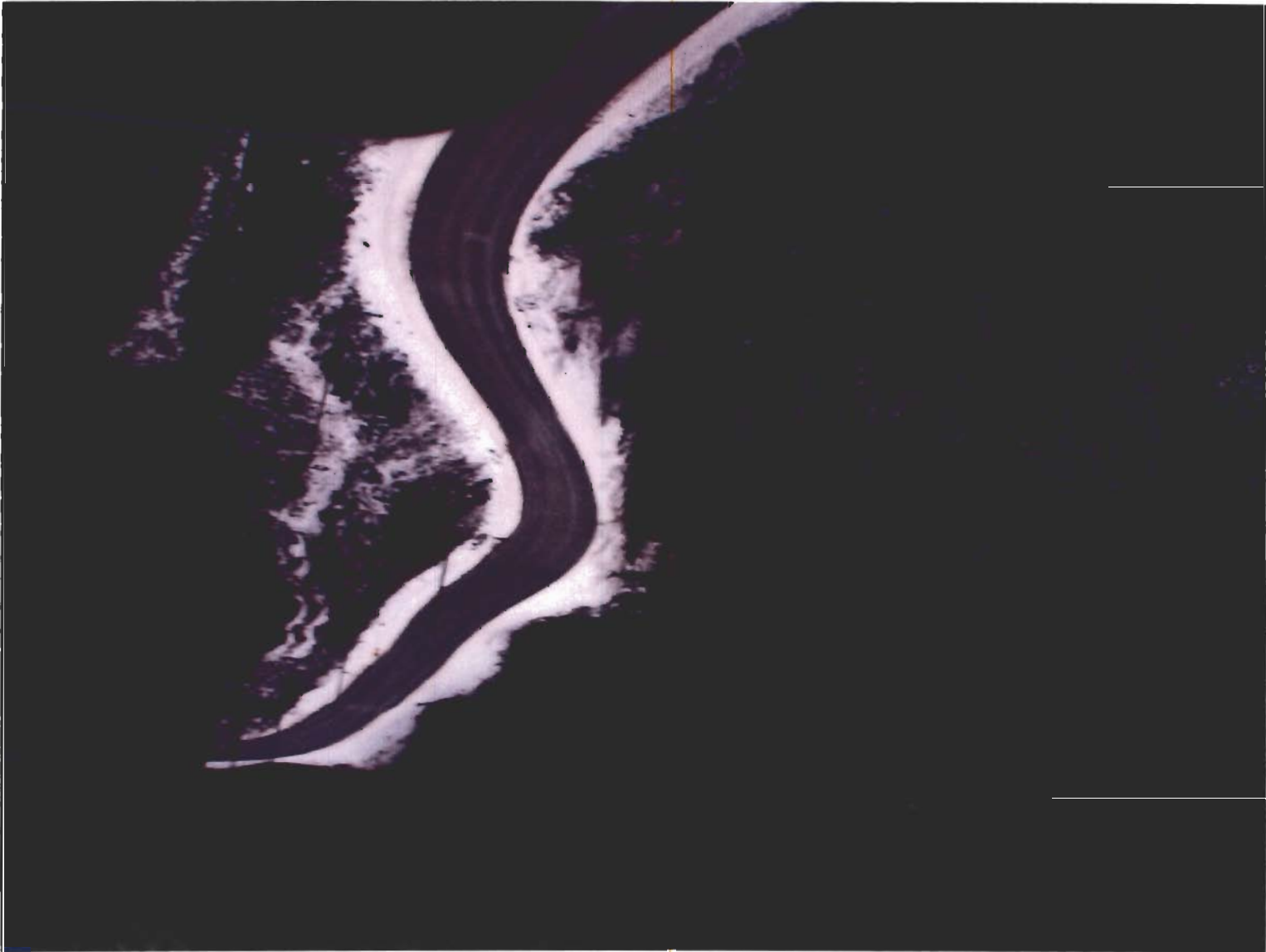
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Tabulated values for the input wall thickness.

Highway crossing at Class 3 location, flexible pavement

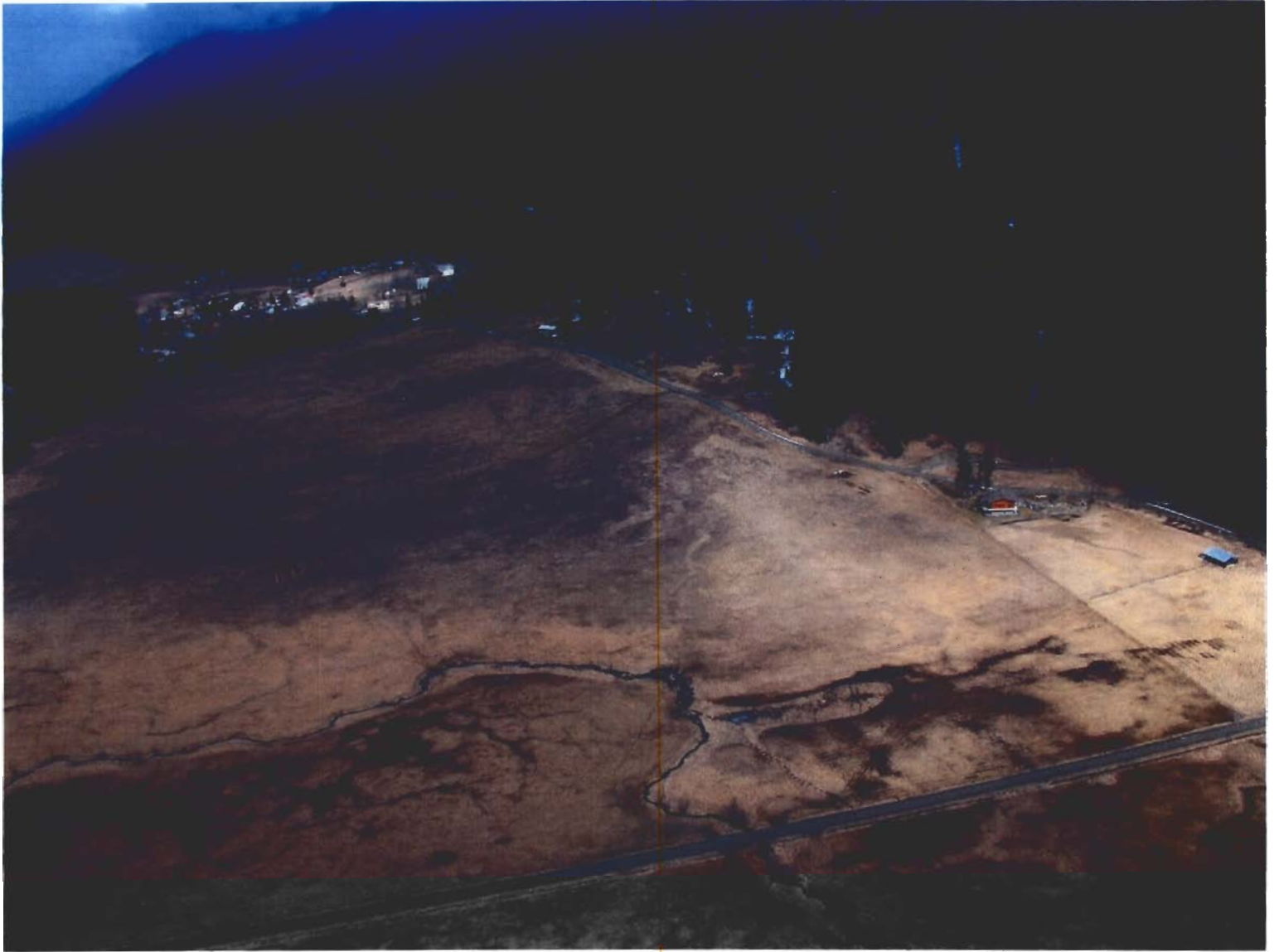
Diameter, D	=	3.500 in.	E'	=	0.5 ksi
MAOP	=	960 psi	Er	=	10.0 ksi
Constant tw	=	0.188 in.	SMYS	=	42000 psi
SHi (Barlow)	=	8936 psi	SHi	=	8456 psi

Depth (ft)	SHe (psi)	SHh (psi)	SLh (psi)	Seff (psi)	Passes
3.00	668	839	1394	9467	Yes
3.25	695	839	1394	9491	Yes
3.50	723	839	1394	9515	Yes
3.75	743	839	1394	9533	Yes
4.00	764	839	1394	9551	Yes
4.25	778	811	1387	9538	Yes
4.50	798	782	1381	9531	Yes
4.75	812	753	1381	9518	Yes
5.00	819	731	1374	9504	Yes
5.25	833	698	1359	9488	Yes
5.50	847	675	1352	9480	Yes
5.75	853	649	1331	9463	Yes
6.00	860	628	1317	9451	Yes
6.25	867	602	1303	9435	Yes
6.50	874	586	1296	9427	Yes
6.75	881	560	1275	9411	Yes
7.00	888	540	1261	9400	Yes
7.25	895	521	1241	9390	Yes
7.50	895	501	1227	9373	Yes
7.75	902	490	1220	9370	Yes
8.00	909	471	1200	9360	Yes
8.25	909	457	1186	9348	Yes
8.50	915	439	1166	9338	Yes
8.75	915	428	1160	9328	Yes
9.00	915	415	1140	9318	Yes
9.25	922	402	1127	9313	Yes
9.50	922	391	1121	9304	Yes
9.75	922	378	1101	9293	Yes
10.00	922	365	1088	9282	Yes









Appendix D

Unaccounted for Gas Update

Appendix D – Unaccounted for Gas Update

11.0 Reference: Sun Peaks Fiscal 2006 Annual Report, Schedule 7 – Gas Cost Reconciliation Account

Unaccounted for Gas Volumes and Percentages (UAF)

Over the past 8 years, SPUCL has averaged 2,614 GJ or 4.33% (a low of 1.24% in 1999 to a high of 7.24% in 2006).

Year ended April
30th

	1998	1999	2000	2001	2002	2003	2004	2005	2006
UAF Gas (Gj)	732	572	2,601	3,002	2,072	3,555	1,765	3,692	5,539
UAF Gas (%)	3.3%	1.2%	5.1%	5.9%	3.1%	5.3%	2.4%	4.9%	7.2%

Over the years, SPUCL addressed the following actions taken in an effort to reduce the Unaccounted for Gas within the Gas distribution system

Past Reviews Taken

- **Conversion Factors** - During the summer of 2002, SPUCL's field staff confirmed the type of gas meter and regulator pressure for each customer. Two gas meters were being read as cubic feet instead of cubic meters and the billing corrected. Each year, we reconfirm the factors for all new meters.
- **Underground Leaks** - Each year SPUCL contracts to have a leak survey completed. Over the past two summers, a number of defective t-valves on service lines and mains (installed prior to 1996) have been found to be leaking. These have now been replaced or repaired. The Utility continues to be diligent in monitoring the distribution grid for similar problems.
- **Customer Meters** – In 1997, the Utility replaced all gas meters to ensure compliance with Weights & Measures Canada. In 2005, (7th year of their service), SPUCL replaced and recalibrate almost 50% of SPUCL's total installed meter base. While SPUCL is confident that little discrepancy will be found, 8 of these meters account for almost 40% of the gas supplied and it is these commercial meters that have a significant affect on our overall unaccounted for gas percentage.
- **Gas Storage Facility** – A number of factors affect the overall accuracy of measurements taken at the Gas Storage Facility. These include but are not limited to:
 - **Errors in SPUCL's Master Send Out Meter** – This meter was recalibrated and the corrected meter was replaced in 2004, allowing for more accurate measurement of gas volumes leaving the plant.
 - **Liquid Volumes delivered** – Currently, SPUCL tracks bulk volumes delivered to the Gas Storage Facility by first determining the liquid levels in the delivery truck and the storage tanks. Then after the fuel is delivered, the storage vessels are checked again. The volume of gas received is then estimated. The fuel tanks were built in

1958 and utilize dipping tubes. Depending on the experience and expertise of the person performing the measurement, the volume recorded can be out by as much as a factor of 4%. We did investigate the replacement of the dipping tube with a gauge; however, because of the small aperture in these tanks, it was not possible to have the done.

- **Gas Lost during Line Hits** – SPUCL experiences between 2 to 5 line hits per construction season, even these few main/service line incidents result in an accumulative loss of gas. SPUCL continues to improve its tracking this volume of gas so that the damager is billed for the full volume rather than adding it to the overall gas volume losses.

Items currently under review

- **Main/Line Installation Purges** – Starting with the 2004 construction season, the Utility will track main/service installation line venting and is billing this gas volume back to the developer or customer.
- **Unloading Dock leveling** – We surveyed the gas unloading dock and found that the area over the length of the unloading zone is out of level by almost 2 feet. Estimates to have this corrected have ranged between \$20,000 and \$30,000. To determine the effect of this on tracking gas volumes received, the Utility performed a two month trail and had the vehicles weighted prior to and post delivery. As a result of this, we believe that the amount of fuel left on the truck is not significant enough to warrant the expenditure. SPUCL continues to review this issue from time to time.
- **Liquid Meter at Receiving Dock** – Most large facilities like Revelstoke and Whistler have a liquid metering pump located at the receiving dock to more accurately record fuel being delivered. The costs to have one installed at Sun Peaks' Gas Storage Facility have been estimated at \$50,000. SPUCL believes this is the most effective method of accurately tracking the fuel delivered and would allow SPUCL to more accurately determine what the lost and unaccounted gas factor is. Due to the changes in ownership with Terasen Inc. (Terasen Utility Services (now Corix) and with the formation of Terasen Energy Services (TES), SPUCL is currently negotiating with TES for the installation of a liquid meter for installation within the Gas Storage Facility this summer.

The Utility continues to monitor the unaccounted for gas volumes each year and is working with TES, other gas utilities and industry experts at options to control and reduce this factor.

Appendix E

Schedule 1	Alternative Fuel Costs
Schedule 2	Allocation of Sun Peaks Resort Corp. Administration Fee

Sun Peaks Utilities Co Ltd
Allocation of \$2,000/mo Administration Fee

Schedule 1

Allocation based on Fiscal 2007 Forecast

	<u>Total</u>	<u>Gas</u>	<u>Water</u>	<u>Sewer</u>	<u>Other</u>
Revenue	3,087,046	2,089,105	480,978	499,373	17,590
Distribution		67.7%	15.6%	16.2%	0.6%
Allocation of monthly admin fee	2,000	1,353	312	324	11
Payroll Costs					
Wages & benefits	403,070	71,972	155,401	163,427	12,270
Distribution		17.9%	38.6%	40.5%	3.0%
Allocation of monthly admin fee	2,000	357	771	811	61
Net Book Value of Property & Equi	513,983	87,820	129,866	292,874	3,423
Distribution		17.1%	25.3%	57.0%	0.7%
Allocation of monthly admin fee	2,000	342	505	1,140	13
Average Allocation	2,000	684	529	758	29
Average Distribution	100%	34.2%	26.5%	37.9%	1.4%

Allocation based on Fiscal 2006 Actual

	<u>Total</u>	<u>Gas</u>	<u>Water</u>	<u>Sewer</u>	<u>Other</u>
Revenue	2,756,629	1,898,056	408,272	432,711	17,590
Distribution		68.9%	14.8%	15.7%	0.6%
Allocation of monthly admin fee	2,000	1,377	296	314	13
Payroll Costs					
Employee benefits	43,688	11,101	15,839	14,809	1,939
Wages	345,594	58,408	134,246	143,028	9,912
	389,282	69,509	150,085	157,837	11,851
Distribution		17.9%	38.6%	40.5%	3.0%
Allocation of monthly admin fee	2,000	357	771	811	61
Net Book Value of Property & Equi	519,583	94,420	141,866	275,874	7,423
Distribution		18.2%	27.3%	53.1%	1.4%
Allocation of monthly admin fee	2,000	363	546	1,062	29
Average Allocation	2,000	699	538	729	34
Average Distribution	100%	35.0%	26.9%	36.4%	1.7%

Sun Peaks Utilities Co., Ltd.
Cost of Alternative Fuels
 March 2007

Schedule 2

SPUCL Piped Propane *	Bottled Propane	Furnace Oil	Electricity
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Condo or Townhouse

17.4 gj

Cost, FOB Sun Peaks	20.420 \$/gj	0.704 \$/L	440.00 Per 100 gal	0.0633 \$/kWh
Cost per Litre			0.968 \$/L	
Energy content			38.2 mj/L	277.778 kWh/gj
Energy content oin L/gj		39.4 L/gj	26.18 L/gj	
Efficiency Comparison Factor				80%
Cost per gj	20.420 \$/gj	27.745 \$/gj	25.337 \$/gj	14.067 \$/gj
Basic or bottle/meter rental	18.00 \$/mo	11.66 \$/mo	-	3.75 \$/mo
Annual energy usage	17.4 gj	17.4 gj	17.4 gj	17.4 gj
Annual Cost	571.31	622.69	440.86	289.72
Monthly Average Cost	47.61	51.89	36.74	24.14

Residential Home

85.7 gj

Cost, FOB Sun Peaks	20.420 \$/gj	0.704 \$/L	440.00 Per 100 gal	0.0633 \$/kWh
Cost per Litre			0.968 \$/L	
Energy content			38.2 mj/L	277.778 kWh/gj
Energy content in L/gj		39.4 L/gj	26.18 L/gj	
Efficiency Comparison Factor				80%
Cost per gj	20.420 \$/gj	27.745 \$/gj	25.337 \$/gj	14.067 \$/gj
Basic or bottle/meter rental	18.00 \$/mo	11.66 \$/mo	-	3.75 \$/mo
Annual energy usage	85.7 gj	85.7 gj	85.7 gj	85.7 gj
Annual Cost	1,965.99	2,517.71	2,171.36	1,250.48
Monthly Average Cost	163.83	209.81	180.95	104.21

Small Commercial

220 gj

Cost, FOB Sun Peaks	20.420 \$/gj	0.664 \$/L	440.00 Per 100 gal	0.0712 \$/kWh
Cost per Litre			0.968 \$/L	
Energy content			38.2 mj/L	277.778 kWh/gj
Energy content oin L/gj		39.4 L/gj	26.18 L/gj	
Efficiency Comparison Factor				80%
Cost per gj	20.420 \$/gj	26.169 \$/gj	25.337 \$/gj	15.822 \$/gj
Basic or bottle/meter rental	30.00 \$/mo	20.00 \$/mo	-	4.48 \$/mo
Annual energy usage	220 gj	220 gj	220 gj	220 gj
Annual Cost	4,852.40	5,997.29	5,574.08	3,534.65
Monthly Average Cost	404.37	499.77	464.51	294.55

Large Commercial

4,269 gj

Cost, FOB Sun Peaks	20.920 \$/gj	0.544 \$/L	440.00 Per 100 gal	0.0712 \$/kWh
Cost per Litre			0.968 \$/L	
Energy content			38.2 mj/L	277.778 kWh/gj
Energy content oin L/gj		39.4 L/gj	26.18 L/gj	
Efficiency Comparison Factor				80%
Cost per gj	20.920 \$/gj	21.441 \$/gj	25.337 \$/gj	15.822 \$/gj
Basic or bottle/meter rental	120.00 \$/mo	83.33 \$/mo	-	4.48 \$/mo
Annual energy usage	4,269 gj	4,269 gj	4,269 gj	4,269 gj
Annual Cost	90,747.48	92,533.64	108,162.44	67,598.88
Monthly Average Cost	7,562.29	7,711.14	9,013.54	5,633.24

* March 2007 rates which are based on the November 1/06 interim delivery rate and basic rate increase and the December 1/06 commodity price decrease.

SPUCL rates March '07	Residential	Small Commercial	Large Commercial
Commodity	17.8905	17.8905	17.8905
Delivery	2.5295	2.5295	3.0295
Rate per gj	20.4200	20.4200	20.9200

Conversion factors
 1 gallon = 4.5461 L
 1 gj = 1,000 mj