



June 2, 2006

British Columbia Utilities Commission
6th Floor, 900 Howe Street
Vancouver, B.C. V6Z 2N3

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

Dear Sir:

**Re: Terasen Gas Inc. ("Terasen Gas")
Application for a Certificate of Public Convenience and Necessity
Replacement and Upgrading of the Vancouver Low-Pressure Gas Distribution
System to Distribution Pressure
Project # 3698423**

**Response to British Columbia Utilities Commission (the "Commission")
Information Request No. 1**

Terasen Gas respectfully submits the attached responses to the above noted Information Request.

Twenty hard copies of the attached will be sent to the Commission office by Monday, June 5, 2006

The full submission including all appendices will be available on the Terasen Gas website by Tuesday, June 6, 2006 at the following location:

<http://www.terasengas.com/Publications/Regulatory/Submissions/LowerMainlandInterior/default.htm>

If there are any questions regarding this Application, please contact Mr. Tom Loski, Director, Regulatory Affairs at (604) 592-7464.

Yours very truly,

TERASEN GAS INC.

Original signed by: Tom Loski

For: Scott A. Thomson

Attachment

Scott A. Thomson
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Chief Financial Officer

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1.0 Reference: CPCN Application, cover letter

- 1.1 Terasen Gas proposes to accelerate the replacement of its Vancouver Low Pressure ("LP") Distribution System, "...in order to avoid loss of service at this critical time (2010 Winter Olympics) and to ensure that construction activities are not in progress during the time around the Olympic events." It would be unfortunate if the 2010 Olympics became a rationale for an unwarranted sense of urgency, as occurred with Y2K. Please explain why the possibility of a major earthquake during the two weeks of the Olympics should be a significant consideration with respect to the timing of the LP replacement work.

Response:

The primary justification for the replacement and upgrading of the Vancouver Low Pressure ("LP") Gas Distribution System is the risk to the integrity of the system from ground disturbances such as earthquakes, and human derived activity such as excavation. The accelerated schedule for the replacement of the Low Pressure System allows the utility to prudently manage the replacement schedule and minimize resulting service disruption in this area.

The City of Vancouver (the "City") and Terasen Gas will venture to perform the paving/roadwork and the LP replacement work as efficiently as possible, so as to minimize the disruption to the affected residents. Per discussions with the City's Utility Management Branch (refer to Attachment 1.1), a significant amount of concurrent construction related activity will be embarked upon in preparation for the 2010 Olympics throughout the City of Vancouver. Accelerated excavation activity can exacerbate leakage in this system; rather than replacing this pipe as its integrity is continually challenged by excavation activity, Terasen Gas feels that a more robust polyethylene Distribution Pressure System should be installed at this time.

If an earthquake were to occur in the period leading up to, and/or during the Olympics, the residents of this area of Vancouver would face significant hardships due to a complete replacement effort that would thereupon be required. Terasen Gas considers that in replacing this system with a more robust polyethylene Distribution Pressure System by 2008, risk is being significantly reduced with respect to the state of preparedness, planning and consideration that this replacement effort will enable.

- 1.2 What facilities planned for the 2010 Olympics and Olympic activities would be directly affected by an outage on the LP distribution system?

Response:

The following facilities would be directly affected by an outage within the Low Pressure system:

- Riley Park Athlete's Village;
- Curling Arena at Nat Bailey Stadium Park.

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2.0 Reference: CPCN Application, pp. 4, 30

2.1 Terasen Gas intends to upgrade the system by inserting PE pipe into the remaining LP mains and services. Please describe in detail using sketches or photographs the process for inserting the PE pipe into the LP mains and services, including the connection of the PE pipe to the distribution system at the ends of a new section.

Response:

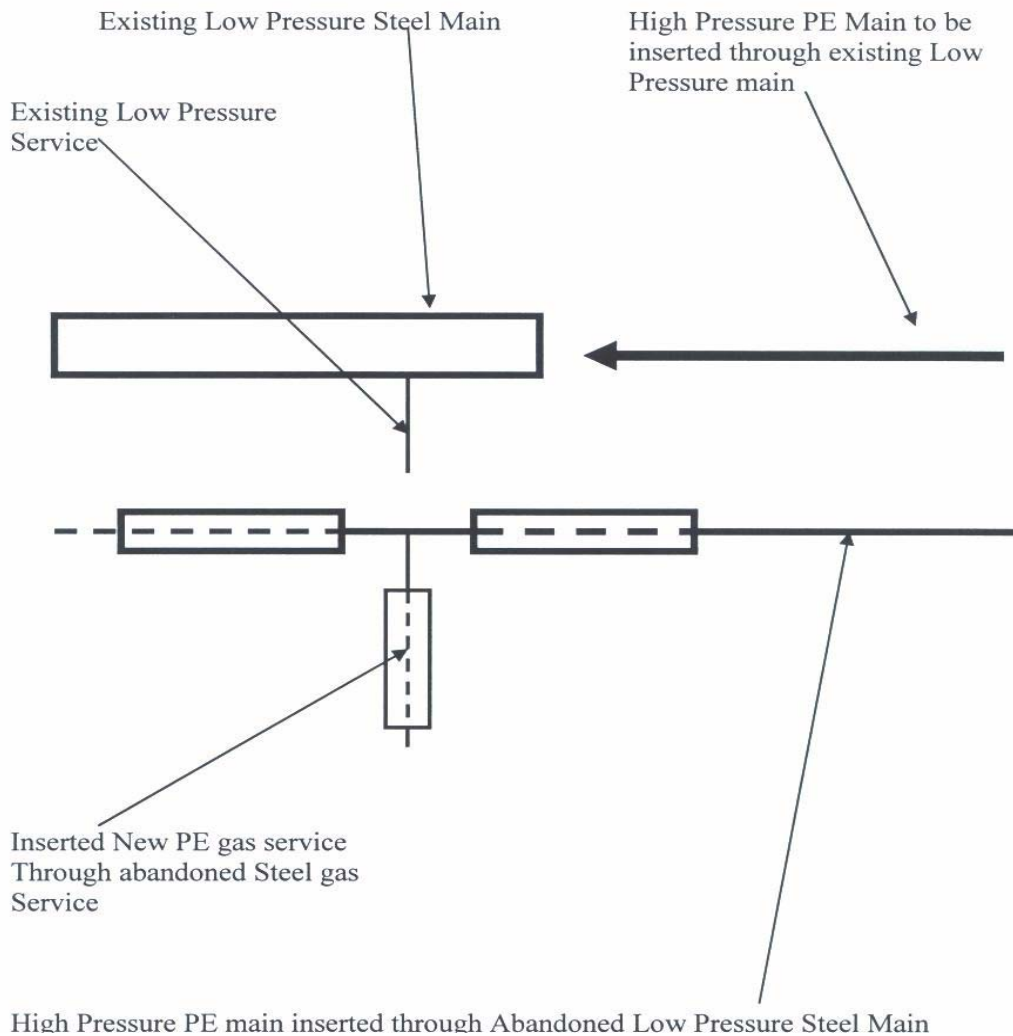
The PE main, at 420kPa, will be initially up to the end point of the LP main in order to start the insertion phase. Assume 12 services are affected per day. Bell holes are pre dug at each service tie. The affected customers are shut off and the section of LP main feeding these twelve customers is stopped off and abandoned. The abandoned service ties are then cut out. PE main is then inserted into the abandoned LP main. Similarly the 11/4 service piping is inserted with 1/2 PE pipe. The PE service pipe is terminated at the riser using a Service Head Adapter fitting. The service piping is tied to the main using a Poly Tapping Tee as described below. Once the system has been pressure tested, tied-in and gasified a regulator is added upstream of the meter. Following gasification the customer's appliances will be relit.



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- 2.2 Please describe how a new service will be connected to the new PE main that will be cased within the old LP pipe (please respond both for new services installed as part of the project, and subsequently). Will an excavation be needed where each service joins the main?

Response:

The new service will be connected to the new PE main using the same method as used in conventional open trenching. It involves fusing a Poly Tapping Tee to the main using either saddle or electro fusion.

When a service is required at a later date a segment of the abandoned LP piping will be

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cut away using transverse and regular pipe cutters to obtain access to the live PE main contained within. The tie-in will then be carried out as described above.

An excavation is required where each service joins the main.



2.3 Please confirm that the smaller PE pipes will not cause constraints with respect to system capacity.

Response:

The existing LP system operates at 2.0 kPa while the new DP PE system will run at 420kPa. The DP PE system pressure is therefore approximately 200 times greater than the existing LP pressures.

The majority of LP mains is 4" in diameter and will be replaced with 2" mains. Although the cross sectional area of the new main is approximately 25% of the existing mains the increase in pressure will more then offset the decrease in diameter and the capacity will actually increase by a factor of up to 50.



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- 2.4 Please describe two of the more recent similar projects where Terasen Gas used the insertion of PE pipe into existing mains and services, including location, length of mains and number of services, schedule to complete the work in the field, cost to complete the project and a summary of any concerns that were raised by local residents affected by the projects.

Response:

MCO 47-21214 - Osler St - 64 Ave. to 67 Ave., Vancouver

Total Planned Cost: \$62,567.00 (main) + \$18,000.00 (service) = \$80,567.00
Total Actual Cost: \$32,537.94 (main) + \$18,000.00 (service) = \$50,537.94
20 Customers
Start: Jan 2006 Finish: Feb 2006
230 metres of inserted pipe

MCO 47-25485 - E. 26 - St. George St. to Fraser St., Vancouver

Total Planned Cost: \$59,327.00 (main) + \$45,000.00 (service) = \$104,327.00
Total Actual Cost: \$45,197.79 (main) + \$45,000.00 (service) = \$90,197.79
50 Customers
Start: Feb 2006 Finish March 2006
440 metres of inserted pipe

The primary concerns expressed by residents have been:

- Quality of restoration work
- Work schedule

All concerns were addressed to the satisfaction of affected residents.

- 2.5 Please provide a copy of any reports prepared by or for Terasen Gas with respect to these projects and their execution.

Response:

In 1994, Terasen Gas commissioned a seismic risk assessment of its Lower Mainland facilities by EQE International of Oakland, California. The assessment focused on the Lower Mainland Transmission System, the key Lower Mainland stations, and intermediate pressure ("IP") pipelines greater than 219 mm diameter. A copy of this report was contained in Appendix A of the Application.

More recently our System Integrity Department reviewed the frequency of leaks



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occurring within the Low Pressure system and found that over the last 5 years, the frequency of detected leaks from unprotected LP piping is 19 times greater than that of cathodically protected piping. Terasen Gas believes that this increasing trend will continue. Advice regarding this matter from our System Integrity department is included as in the response to Question 4.5.

2.6 In order that the Commission can understand how local residents are likely to be affected by the upgrades, please select a reasonably typical section of the work proposed for 2006 that involves mains, services, relocation of meter sets and station removal, and provide a detailed, day-by-day description of how the project would proceed. Please identify how the public consultation that Terasen Gas proposes for the section would fit into the process and chronology.

Response:

- Terasen representative visits each resident/home to determine the extent of work required on the property.
- Notification letters with a brief description of the proposed works are delivered at the same time.
- Construction crew staff call customer 24 - 48 hrs prior to construction.
- 6 - 12 customers are shut down for the day for the gas service renewal/transfers.
- Crew arranges for access to the houses to relight the gas appliances.

Crew will leave cards on the front and back doors of the houses with contact information for after hours appliance relights if access is not available when the crews are there during the day.



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3.0 Reference: CPCN Application, pp. 4, 13, 15, 31; Appendix B

3.1 Terasen Gas proposes to accelerate the upgrading of the LP system. For the LP replacements in each of the past 10 years, please provide a schedule showing the length of LP mains and number of services replaced, LP stations removed and the cost of doing the work.

Response:

Prior to accounting system upgrades, units of replaced LP piping, and associated costs, were tracked in the Andersen Work Management System ("WMS") which has been retired. Terasen Gas has included two tables that reference the data that Terasen Gas was able to retrieve for the LP system replacement that has occurred over seven of the past 10 years; 1996-1999 is in one format (from WMS records), while 2003-2005 is in the current SAP format.

From reporting based on legacy system data, for areas of LP replaced in Burnaby, New Westminster, and Vancouver:

Units of LP replacement work:

Year	Mains	Services	Stations
1996	10.0 km	898	1
1997	4.0 km	466	1
1998	11.0 km	517	3
1999	<u>14.4 km</u>	<u>1143</u>	<u>5</u>
Total	39.4 km	3024	10

Total Costs per year

1996	\$ 0.8 M
1997	\$ 0.4 M
1998	\$ 1.0 M
1999	<u>\$ 2.4 M</u>
Total	\$ 4.6 M

TOTAL WORK: \$4.6 Million over 4 years; average of \$1.15 M per year.



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During the years 2000-2002, Low Pressure replacements were not performed.

From the current system that references only the Vancouver LP system, the only LP system remaining:

The information extracted from current systems, by year, is as follows:

Year	Mains	Services	Stations
2003	392 m (DP backbone main)	-	-
2004	7089 m	379	-
2005	<u>7053 m</u>	<u>522</u>	<u>1</u>
Total	14534 m	901	1
Total Costs	\$1,954,235.11	\$1,100,311.18	\$7,292.16

*Station removal commenced in 2005, final costs collected in March 2006

TOTAL WORK: \$3.06 million over 3 years \$1.02 M per year.

3.2 Terasen Gas estimates the project cost at \$23.7 million, and states that the primary risks to cost and schedule relate to the availability of contract resources. Please confirm that by using Terasen Gas crews over an extended project schedule, this risk could be minimized.

Response:

Based on the responses to the tender for the Mains & Services Contract suitable contractor resources can be secured to maintain the proposed project schedule.

Due to Terasen Gas labour resource levels and the requirement to provide emergency response across all regions, Terasen Gas is unable to assign sufficient Terasen Gas resources to complete the work. Contractor resources are necessary.

3.3 Page 31 indicates Terasen Gas Installation Crews handling 5 km of main and 310 services each year, plus removal of stations. If this is not the maximum amount of upgrade work that Terasen Gas crews could handle, what is the maximum? What constraints define this maximum?

Response:

The 5km of LP main replacement and 310 LP service replacements are the maximum capacity of existing Terasen Gas installation personnel. Due to Terasen Gas resource



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levels, and primarily the requirement to provide emergency response across all regions, Terasen Gas is unable to provide more than one installation crew for this work.

3.4 Please clarify whether Table 3 is in nominal (as spent), or real dollars. If the table is in real dollars, please identify the year of reference, and also provide the table in nominal dollars.

Response:

Table 3 is provided in nominal (to be spent) dollars.

3.5 If Table 3 is in nominal dollars, please also provide it in 2006 dollars.

Response:

Figures from Table 3, provided in 2006 dollars:

Line Item	2006	2007	2008	Total
Project Management				
Project Management	\$ 140,000	\$ 90,000	\$ 45,000	\$ 275,000
Training & Evaluation	\$ 40,000	\$ 20,000	\$ 20,000	\$ 80,000
Mains				
Labour - Company	\$ 751,570	\$ 939,490	\$ 955,690	\$ 2,646,750
Labour - Contract	\$ 2,031,629	\$ 3,211,179	\$ 3,406,838	\$ 8,649,646
Materials	\$ 446,040	\$ 665,280	\$ 684,180	\$ 1,795,500
Labour - Company (including permits)	\$ 553,940	\$ 711,083	\$ 663,014	\$ 1,928,038
Labour - Contract	\$ 1,283,575	\$ 2,181,123	\$ 1,975,899	\$ 5,440,597
Materials				
Service	\$ 277,673	\$ 446,040	\$ 394,538	\$ 1,118,250
Meters & Regulators	\$ 43,899	\$ 70,517	\$ 62,375	\$ 176,790
Electrofusio	\$ 30,513	\$ 52,962	\$ 46,095	\$ 129,570
Stations				
Company field labour - station removal	\$ 30,000	\$ 60,000	\$ 54,000	\$ 144,000
Surface Rehabilitation - station removal	\$ 45,000	\$ 92,700	\$ 85,933	\$ 223,633
Total Direct Costs	\$ 5,673,838	\$ 8,540,374	\$ 8,393,561	\$ 22,607,773
AFUDC	\$ 158,395	\$ 238,419	\$ 234,321	\$ 631,135
Total Planned Project Costs	\$ 5,832,233	\$ 8,778,793	\$ 8,627,882	\$ 23,238,908



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- 3.6 Please provide the net present value of the project expenditures discounted to 2006 assuming a discount factor of 6 percent real.

Response:

	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>Total</u>
Total Planned Project Costs	5,832	8,949	8,967	23,747
	x	x	x	
6% Discount Factor	<u>1.00</u>	<u>.943</u>	<u>.890</u>	
Discounted Cost	5,832	8,439	7,981	22,252

- 3.7 Further to Table 3 and Appendix B, what unit costs were estimated for mains installation, services installation and meter set relocation, for each of company labour and contract labour? Please describe in detail how each of the unit costs was developed.

Response:

Many of the unit costs for company work were derived by averaging the as-built results from actual work completed by company personnel during the past three years. Other annual resources for items such as project management and training were simply estimates of the time requirement for an individual carrying out that role. The contractor is expected to be able to field a larger crew and thus increase the length of the daily replacement sections thus reducing the number of purges and tie-ins. The Company estimates that the contractor rates should be approximately 15% less than company rates because of these efficiencies.



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For 2006 activity the rates that contributed to overall unit costs such as \$/meter of main and \$/service were:

Activity	Rate	Rationale
Project Management	\$500/day	Contract rate
Training & Evaluation	\$500/day	Average wage rate
Company office labour - mains plan	\$16.2/m	Recent historical average
Company field labour - mains and services inspect	\$160,000	Average loaded wage
Company field labour - mains install	\$41.85/m	Recent historical average
Contract labour - gas mains install	\$35.5725/m	85% of company
Contract labour - other	\$58.05/m	85% of company
Materials - mains	\$18.9/m	Recent historical average
Company office labour - services plan	\$135/m	Recent historical average
Permits	\$120/meter	Actual cost
Company field labour - meter sets	\$160,000	Average loaded wage
Company field labour - services relations	\$80,000	Average loaded wage
Company field labour - services install	\$348.75/service	Recent historical average
Contract labour - gas services install	\$296.4375/service	85% of company
Contract labour - other	\$483.75/service	85% of company
Materials - services	\$178.5/service	Recent historical average
Materials - Low clearance regulators	\$83/regulator	Incremental cost of using
Company field labour - station removal	\$6000/stn	Recent historical average
Surface Rehabilitation - station removal	\$9000/stn	Estimate per station

3.8 The table in Appendix B notes that a 15 percent contractor advantage has been applied to the base rate. Please explain this adjustment and its impact on the estimated cost of the project.

Response:

Unit costs for company work were derived by averaging the as-built results from actual work completed by company personnel during the past three years. The contractor is expected to be able to field a larger crew and thus increase the length of the daily replacement sections thus reducing the number of purges and tie-ins. The contractor will also work longer days and not be subject to interruptions. The Company estimates that the contractor rates should be approximately 15% less than company rates because of these efficiencies. This reduces the over-all cost of the project between 10 and 15%.

3.9 Does Terasen Gas assume that the productivity of company and contract labour will be the same? If yes, please explain why. If no, what relative productivities were assumed, and why?



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Response:

The productivity of Terasen Gas crews and contractor crews are not assumed to be the same. As Terasen Gas personnel are required to respond to gas emergencies the low pressure replacement work is frequently interrupted. Terasen Gas personnel assigned to the low pressure replacement are also required to fill in for absent personnel assigned to other work in the Vancouver area. Hence, productivity is lowered by the interruptions.

Utilizing dedicated contractor resources will ensure higher productivity as the contractor will not be faced with these same interruptions.

- 3.10 Please clarify whether the proposed agreement with a contractor sets out fixed hourly costs, fixed unit costs (e.g. cost per metre of main or service) or a fixed cost for a section of the project.

Response:

The contract establishes fixed unit costs with a small portion of specialty work based on fixed hourly costs.

- 3.11 Please explain the extent to which the contract will make the contractor responsible for cost, schedule or other risks.

Response:

The contract establishes fixed unit costs with allowance for a small portion of specialty work based on fixed hourly rates. The contractor is only entitled to costs in accordance with the unit cost schedule or pre-approved specialty work for which a scope and cost estimate are provided.

The Mains & Services Contract contains requirements with respect to quality, production management, environment and safety.

The contractor is responsible for all risks associated with employee and public safety due to the conductance of the work and must ensure compliance with all appropriate regulations.

- 3.12 Please explain the "work volume discounts" referenced on page 15.

Response:

Work volume discounts apply when the full volume of work is offered over the three year



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period. The "discounts" are essentially a reduction in typical unit costs due to the volume of work being guaranteed to the contractor. The volume discount will not apply if all of work volume is not released to the contractor.



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4.0 Reference: CPCN Application, pp. 5, 26

- 4.1 Terasen Gas states that the primary justification for the project is the risk to the integrity of the system from ground disturbances. Please confirm that soil types and conditions in the areas under consideration are relatively favourable from a seismic perspective, or identify any parts of the LP system where this is not the case. Please include a copy of the study that identifies such high risk portions of the LP system.

Response:

The primary reason for replacing the Low Pressure piping is to mitigate potential damage from soil disturbance, both from nearby construction, as well as from a seismic event. Although the soil types in the areas under consideration are relatively favourable from a seismic perspective the condition of the pipe is such that even minor disturbances, not necessarily significant slope movement, will result in a leak or break. Thus third party damage and ground shaking are cause for concern.

Broken mains or leaks silently release LP gas. LP gas escaping from a broken main does not have enough energy to displace the soil above it and draw attention by the general public. In contrast, a broken DP main will displace soil above and is more visible and easily detectable.

Compared to DP gas, escaping LP gas is able to spread out much further under and through typical street infrastructure such as roads, sidewalks, driveways, and storm lines and possibly into buildings before detection.

- 4.2 Please provide a copy of all studies regarding the risks to the existing LP system related to seismic events.

Response:

Please refer to the response to Question 2.5.

- 4.3 Terasen Gas states that it is concerned about the risk of a major system disruption in the event of a moderate to significant earthquake. If an outage on the LP system would affect the rest of the gas system, please explain.

Response:

The interconnected LP system is fed by 24 stations. It requires this many feeds to operate on a regular basis as each station supports the others. In a seismic event where it is anticipated that significant LP main and service breakages and leaks will occur, all of the stations will start to flow more gas to meet the requirements within the



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LP system. This will take gas supply from the adjacent DP mains areas, possibly lowering the pressure to an unacceptable level depending on the time of year, e.g. home heating requirements.

- 4.4 Terasen Gas states that the area experiences 300 small earthquakes each year and a significant seismic event every 10 years. This being the case, and considering that the LP piping has been in service for 50 years or more, please explain the urgency to replace the LP piping. What has changed?

Response:

The remaining LP pipe is likely the last that was installed; however the change is that the pipe has significantly deteriorated over its lifetime as indicated by the frequency of leaks. As mentioned in the Application, calculations reviewed during the Company's asset management prioritization process indicate that the frequency of leaks in the LP piping exceeds 19 times the rate incurred in the Terasen Gas steel cathodically protected DP system. Terasen Gas believes that since the pipe has been in this condition there has not been a seismic event of sufficient magnitude to cause obvious significant damage however undetected leaks may exist.

- 4.5 Terasen Gas states that the LP system is steel pipe that was installed at least 50 years ago, and that it expects the system will deteriorate at an accelerated pace. Please explain why Terasen Gas expects the rate of deterioration to increase. What has changed to cause this? Please provide a copy of all recent studies regarding the condition of the existing LP system.

Response:

In response to Distribution Asset Management's query last fall, the System Integrity department evaluated the results from the Company's ongoing pro-active leak survey process, to compare the frequency of leak occurrences from the cathodically protected distribution pressure piping against that for the unprotected LP piping. Such a comparison was reported to have been done ten years ago, with no difference in frequency found.

The recent comparison indicates that over the last 6 years, the frequency of detected leaks from unprotected LP piping is 19 times greater than that of cathodically protected piping. While there is no definitive cause that can be proven, it is Terasen Gas' opinion that the past two decades of high rainfalls and above average temperatures may well have contributed to increased corrosion and hence frequency of leaks. Terasen Gas believes that this increasing trend will continue.

The advice received from our System Integrity department is included as Attachment 4.5.



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- 4.6 Terasen Gas states that the LP system is experiencing leaks at approximately a 19 times greater rate than newer steel distribution mains. Please provide the background data and calculations that are the basis for the statement.

Response:

The background data is as shown in the following table.

	Total km of Main	Total # of Services	Total # of Leaks Between 2000/01/01 and 2006/03/13	# of Leaks on Mains	# of Leaks on Services	Leaks per km of Main	Leaks per Service
Unprotected	79.3842	6228	145	111	34	1.398263	0.005459
Protected	1210.647	87257	444	89	355	0.073514	0.004068

The statement is derived by dividing the figure 1.398263 by 0.073514, arriving at a difference in leak frequency of 19.02 times greater for unprotected mains compared to protected mains.

- 4.7 Please provide a summary covering at least the past 10 years showing the leak history (i.e. number of leaks) on the LP system, separating the data between leaks on mains and on services and among the four categories of failure identified on page 26.

Response:

Terasen Gas has provided the leak history for mains and services for the past 6 years in the response to IR 4.6. Further categorization is not possible, as this information is not available from the Company's information systems. Historically, the majority of leaks are due to corrosion, with some as a result of fitting and joint degradation, ground disturbance, and third party damage.

It should be noted that the latter two failure categories exacerbate the acceleration of pipe degradation noted in the other two categories; third party damage has an impact on the integrity of the fittings and joints, while ground disturbance induces greater levels of oxygen and/or moisture into this fragile pipe, accelerating corrosion rates.

- 4.8 Please discuss the data provided in response to the previous question, in relation to the proposal to accelerate the LP replacement program.

Response:

Acceleration of the current replacement program is based on the increased leak frequency on the LP mains regardless of where the leak occurs, i.e. on a pipe or fitting.



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5.0 Reference: CPCN Application, p. 6

- 5.1 Terasen Gas requests an expedited review of the CPCN Application and a decision by July 1, 2006. Please provide estimates of the impacts on costs if a decision is not made until August 1 or September 1, 2006.

Response:

If the work can not start as proposed then the proposed contract pricing and inherent volume discount are at risk. Terasen Gas may not be able to secure the same terms with a contractor if the work must be re-tendered, thus the potential impact is an increase in cost of \$1.2 million.

- 5.2 Terasen Gas filed its 2004 Resource Plan on April 6, 2005, and Commission Letter No. L-30-05 accepted the 2004 Resource Plan. Please outline, with references, the extent to which expenditures related to replacement of the Vancouver LP system were included in the 2004 Resource Plan.

Response:

The Vancouver LP system project is not specifically identified in the Terasen Gas 2004 Resource Plan. The Resource Planning Guidelines direct utilities to design resource option portfolios that can meet that utilities future demand forecast. The Vancouver LP system is part of Terasen Gas's existing distribution system serving existing, rather than forecasted future demand growth for which expansion alternatives need to be examined through the Resource Planning process. This Application is not driven by the need to upgrade system capacity.

A general comment was made on distribution system upgrades in Section 6.5, page 90 of the Terasen Gas 2004 Resource Plan, wherein Terasen Gas noted that it seeks optimal solutions that are both cost effective and minimize impacts on the local community. Although this statement refers to small distribution projects undertaken to upgrade capacity, the statement is also true for distribution projects that are driven by upgrades to improve system integrity, such as the Vancouver LP system.

Since the submission of the Terasen Gas 2004 Resource Plan, the Commission has expressed a desire for Terasen Gas to provide more information on ongoing capital expenditures that are not necessarily major capital expansions that are demand growth or supply expansion driven. To this end, Terasen Gas does intend to include additional, summary information on its five year major capital plan in future Resource Plans. While this information will inform the Commission of such future spending expectations in order to provide additional context in which to review the Resource Plan recommendations, Terasen Gas does not intend to provide detailed analysis of non-expansion capital projects, nor seek approval for such projects through the Resource Plan.



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5.3 On what date does Terasen Gas intend to file its 2006 Resource Plan?

Response:

Terasen Gas Inc. plans to file its 2006 Resource Plan Update no later than July 31st, 2006.

5.4 Considering the nature of the replacement work involved and the minimal review that Terasen Gas proposes for the CPCN Application, please discuss whether identification of such expenditures in a Resource Plan capital plan filed pursuant to Section 45(6.1)(a) of the Utilities Commission Act and acceptance of the plan pursuant to 45(6.2)(b) would be a more appropriate forum for the Commission to review the proposed expenditure, rather than a CPCN application.

Response:

Terasen Gas does not believe that the Resource Plan is the appropriate forum for review of this type of system integrity upgrade expenditure. Consistent with past practice, Capital Projects are reviewed in the context of Revenue Requirements. As outlined on page 2 of Commission Order G-51-03 which approved the current PBR Settlement, the Commission has stated that "*CPCN's will not be filed for projects below 5 million*". As a result, Terasen Gas has applied for CPCN approval for capital projects in excess of \$5 million during the course of the 2004 – 2007 PBR Period.

Section 45(6.1) and 45(6.2) of the Utilities Commission Act ("UCA") do set out the administrative requirements for utilities to submit capital expenditure plans as prescribed by the Commission. However, a Resource Plan is just one such plan and the Resource Planning Guidelines issued by the Commission under Section 45 of the UCA, prescribe the type of capital projects that are specifically to be assessed and recommended within a Resource Plan.

As discussed in the Response to Question 5.2 above, the Resource Plan Guidelines set out a process for examining resource alternatives needed to meet forecasted demand growth and not projects driven strictly by ongoing system integrity improvements such as the Vancouver LP system. Further, the Resource Planning process examines resource alternatives and makes a recommendation of which alternative is preferred based on a set of utility objectives. The Resource Plan does not specifically seek approval of the preferred resource options, but rather sets out, in an action plan, the steps that will be taken to seek such approvals, if required. For large expansion capital projects recommended by the Resource Plans, an action plan would generally identify the submission of a CPCN application as the appropriate step for seeking project approval.



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- 5.5 Please discuss whether the Resource Plan approach would be better than a CPCN application for the Commission to review the capital expenditures proposed for the upgrade of the Mission Intermediate Pressure system.

Response:

The rationale for the upcoming Mission Intermediate Pressure System CPCN is seismic upgrading to ensure system integrity. This rationale is consistent with the rationale for the Vancouver Low Pressure Replacement CPCN application. Please refer to the response to IR 5.4, which outlines the reasons why Terasen Gas believes that the Resource Plan is not the appropriate forum to review the Mission Intermediate Pressure System CPCN application.

- 5.6 Please provide a copy of any material regarding the LP replacement project that Terasen Gas included in its filings for the 2005 Annual Review, or in other recent filings to the Commission and stakeholders.

Response:

The Low Pressure Replacement Project is noted in the Terasen Gas 2005 Annual Review Application (Tab B1 – Page 7) and in the presentation materials presented at the November 10th (2005) Annual Review Workshop (Pages 78 to 80).

More recently, the project was noted in the presentation made by Terasen Gas to the Customer Advisory Council on April 26, 2006 (Pages 47 and 48). At that time, due to resource constraints, it was assumed that the application would not be filed until the end of May and a two month review process was envisaged.

The aforementioned materials can be found in Attachment 5.6.

- 5.7 Considering the considerable urgency that Terasen Gas ascribes to the project, and the evidence that it has been aware of the situation for some time, please explain why it did not bring the project and CPCN Application forward in a more timely manner.

Response:

Terasen Gas initiated the proposal for replacement of the LP system in the fall of 2005 after concluding that it was one of the two remaining concerns for Distribution with respect to the seismic upgrading of the Terasen Gas systems. Up until that point, as described in the Application, other piping systems such as the larger intermediate pressure pipelines were being addressed.

During the first quarter of 2006 Terasen Gas realized that with the upcoming May 1,



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2006 expiry of the Company's DP Mains & Services Contract there may be an advantage to including the LP work in with the new contract. To determine if this was the case Terasen Gas first extended the 2005 Mains & Services Contract in order to revise the tender for 2006, issued the tender, and waited for feedback from potential contractors. Following the receipt of positive tenders and confirmation that there was clear benefit to include the LP work in the Mains & Services Contract, Terasen Gas proceeded with completing and submitting the Application.

5.8 Please discuss whether, in the circumstances, it would be appropriate and efficient to review the CPCN Application in the 2006 Annual Review, with construction to commence in 2007.

Response:

In respect of the Vancouver LP CPCN application, Terasen Gas believes it is important that the work be carried out as soon as possible to ensure that the integrity of the system is not compromised in the event of a moderate to significant seismic event. Terasen Gas had informed customers in the 2005 Annual Review process and stated its intention to file a CPCN in the first quarter of 2006. On April 26, 2006, Terasen Gas outlined its intention to file this CPCN in May 2006. On both occasions, Terasen Gas received no expressions of concern from key customers in respect of its plan to file this CPCN.

Further to the volume discount savings which have been negotiated with contractors and noted in the response to 5.1, Terasen Gas believes that delaying the review and approval of this Application to December 2006 will further increase the total contractor related cost of this project by between \$240,000 and \$300,000. In addition, the current contractor pricing is valid until June 14, 2006. Terasen Gas believes it likely that the contractor will provide a 30 to 60 day extension to complete the contract. However, it is unlikely that the contractor would hold their pricing beyond 60 days. In this event, there remains a risk that Terasen Gas will have to go to market and obtain new bids which will have an additional impact on the total project cost.

Under the terms of the Terasen Gas 2004 - 2008 Performance Based Rate Settlement ("PBR Settlement"), it is not necessary for Terasen Gas to wait until the annual review process in order to apply for a CPCN. As outlined on page 2 of Commission Order G-51-03 which approved the current PBR Settlement, the Commission noted that *"the parties agree that CPCN applications should continue to be outside of the incentive formula and approved separately by the Commission."*

Terasen Gas believes that it is appropriate, efficient and consistent with past practice for this CPCN Application to be reviewed under a separate process rather than as part of the 2006 Annual Review. Terasen Gas also believes that the review of this project as part of the 2006 Annual Review process may serve to increase the burden of review for Interveners during that proceeding. Consistent with Terasen Gas's objective of appropriately communicating its intentions to key stakeholders, this Application has been emailed to Interveners who were registered in the PBR Settlement and the 2005 Annual Review.



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- 5.9 If Terasen Gas considers that some portion of the work proposed for 2006 is absolutely essential, please provide a description of the location, scope, cost and justification for this work. Please explain if this work can be carried out under Terasen Gas' 2006 Base Capital budget.

Response:

Terasen Gas is of the opinion that all of the Low Pressure system should be replaced as it is all equally prone to breakage or leaks. As a minimum, any Low Pressure mains and services in streets that are being repaved by the City of Vancouver must be replaced. However, in order to properly connect these sections to the rest of the Distribution Pressure grid additional sections of Low Pressure piping will also likely need to be replaced. This may not lead to the most efficient or effective system design as described in the Application, and as explained, a proactive and effectively planned approach will result in the most efficient system design and installation.

With respect to the question regarding the Base Capital Budget, please refer to the response to Question 11.2.



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6.0 Reference: CPCN Application, p. 8

6.1 Terasen Gas states that it will schedule the LP system replacement in conjunction with Vancouver's repaving plans where feasible. Please provide a copy of the information about Vancouver's repaving plans in the area that Terasen Gas has obtained.

Response:

A City of Vancouver's preliminary repaving plan, received by Terasen on May 26, 2006, is included in Attachment 6.1.

6.2 How much of the project's 95 km of mains replacement will be scheduled in conjunction with Vancouver's repaving plans? Does this mean that, for this portion of the project, Terasen Gas will not be responsible for repaving costs?

Response:

Based on the current preliminary City of Vancouver repaving plan (Attachment 6.1), below is a brief summary of the potential locations where repaving savings may be achieved.

2007 Paving

Includes Blenheim from 16th – 49th. Existing LP mains run across Blenheim and Terasen Gas should be able to insert through the existing mains without impacting on the paving. One possible exception is the crossing at 39th which has a jog. Once the location of the jog is confirmed, if it would impact on paving, we may pre-run a road crossing if this portion of the LP replacement work is not completed prior to paving.

2008 Paving

Includes King Edward from Cambie to King Edward. Existing LP main on King Edward from Main to Inverness (1.4 km), which was originally scheduled for replacement in 2009, may be rescheduled to 2008 to ensure it is carried out in conjunction with City of Vancouver repaving plans.

Paving of Arbutus 33rd – 36th (0.4 km) will also coincide with the LP Project and may also result in repaving savings.

2006 and 2009 Paving

Based on current City's prepaving plan, no impact is projected.



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2010 paving

Based on current City's repaving plan, approximately 6 blocks of paving will be impacted.

In summary, coordination of the work on Blenheim paving in 2007 will have little to no impact on repaving costs. Coordination of the work on King Edward and Arbutus in 2008 in conjunction with the City's repaving work should result in repaving savings, however, the amount of savings will be determined by the City, and is dependant upon the nature of the City's repair. All other work at this time is not impacted by the City's current paving plans; however, their paving schedule is subject to change. Should any changes to the City's paving schedule create opportunities to work together to minimize traffic disruption and repaving costs, Terasen Gas will adjust its schedule as required.



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7.0 Reference: CPCN Application, pp. 9, 29

7.1 Terasen Gas states that there was significant replacement of the Vancouver LP system in the 1970s and 1980s. Please explain why the replacement program was terminated before completion, and identify when it was terminated.

Response:

The replacement program has never been terminated. Work continued; however, other system improvements of higher priority based on risk assessments by Terasen Gas took precedence and reduced the extent of the annual replacement work.

7.2 Please identify the CPCN Orders that have been issued with respect to the replacement of the Vancouver LP system.

Response:

Terasen Gas is not aware of any CPCN Orders that have been issued with respect to the replacement of the Vancouver LP System.

7.3 If the criteria that were used in the 1970s and 1980s to determine the areas of the LP system that needed replacement were applied to the current LP system, how much of the 95 km would require replacement?

Response:

The same criteria would be applied; however, the additional impetus that the remaining piping has a much greater frequency of leakage must be considered. Thus, all of the 95 km would be replaced.

7.4 Please provide a copy of any study of the LP system done by or for Terasen Gas that recommends complete replacement of the existing LP system for seismic or other reasons.

Response:

Please refer to the response to Question 2.5.



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- 7.5 On page 29, Terasen Gas states that it has received support of the British Columbia Safety Authority for the project. Please provide a copy of this communication.

Response:

A copy of a letter received by Dwain Bell, VP Distribution, Terasen Gas, from Catherine Roome, VP Engineering & Standards, BCSA is included as Attachment 7.5.

- 7.6 If Terasen Gas has received a direction requiring it to proceed with the replacement of the LP system from any authority, please provide a copy of the direction.

Response:

Terasen Gas has not received direct instruction to replace the LP system, however to ensure alignment with regulator and industry integrity management expectations, as a prudent operator, Terasen Gas must take proactive action to ensure public safety.



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8.0 Reference: CPCN Application, pp. 16, 30

- 8.1 On page 16, Terasen Gas states that the project could have a significant effect on the daily lives of the public. Please confirm that Terasen Gas has held no public consultation to date, and has taken no steps to inform local residents who may be affected of the project. Does Terasen Gas intend to do any public consultation prior to the Commission making a decision on the CPCN Application?

Response:

Terasen Gas has always ensured regular communication with local residents. Terasen Gas communicates with all affected residents as part of its ongoing LP work, by letters that explain the work being performed, and that cite specific issues that affect gas service to individual homes/businesses during the replacement process.

A dedicated Terasen Gas Planner has managed concerns raised by local residents, and field visits are routinely made to monitor progress. A full-time project manager that resides in the UBC area will also work with the Terasen Gas Planner to ensure that all concerns continue to be managed accordingly during this accelerated phase of LP replacement work.

The Terasen Gas Strategic Communications group will ensure that the most current information regarding the replacement strategy is posted on the Terasen Gas web site. Letters to affected customers will continue to be sent per standard process, and on-site information packages will be made available to all customers that request information of the crews performing the field work.

Call centre representatives will also be updated with respect to the annual workplan for this project.

- 8.2 Assuming the Commission approves a CPCN for the project by July 1, 2006, please describe the public consultation program (actions and timing) that Terasen Gas proposes. Please discuss how the public consultation program timing coordinates with the construction schedule for the project. When would field construction activities commence?

Response:

Terasen Gas is currently undertaking LP replacement work in coordination with City of Vancouver repaving and infrastructure improvements. For these sites Terasen Gas undertakes public consultation in advance of the construction crew arrival on site. The approval of a CPCN for the work described in the Application will be a continuation, but in an accelerated manner, of our standard process of contacting residents directly by mail, in person, and by telephone.



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8.3 If the proposed public consultation process does not include open houses, please explain why not.

Response:

Public consultation will not be in the form of information sessions, per se, but will be ongoing in the field, to ensure that residents have ample opportunities to inquire about the entire project. It is likely that residents and customers will have different concerns depending on property and dwelling specific constraints, in addition to the alterations required on the low pressure meter sets. Therefore, it will be more appropriate to deal with each resident on a direct, one-on-one basis.

8.4 Please explain why Terasen Gas believes it is appropriate for the Commission to review and make a decision on the CPCN Application without local residents and the public generally being informed of the proposed project.

Response:

Terasen Gas believes this approval to be appropriate, as the work described by the Application is not unusual in nature, even if it is more extensive. Terasen Gas has been replacing the LP System for a number of years in order to upgrade the LP piping to current standards, thus ensuring the continued safe and reliable supply of natural gas.

Residents will be contacted prior to construction crews initiating work within their neighbourhoods, as the work is performed on a 'block-by-block' basis. Public consultation will happen on each day of the project, as letters outlining specific, customer-focused issues will be delivered to every affected household. Customers issues will include scheduling of service replacement, meter set replacement, relight, and any home repairs required after interior meter removals are completed.

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9.0 Reference: CPCN Application, pp. 22-25

9.1 Please confirm that, after the Loma Prieta earthquake in 1989, PG&E replaced 16.2 km of mains affecting 1,590 services in 24 days.

Response:

The figures were obtained from various reports regarding the earthquake. For example, the Disaster Recovery Journal, article by Dames and Moore's Earthquake Engineering Group.

The distribution system in the Marina District of San Francisco was replaced within one month, at a cost of US \$17 million. Fifty-one hundred customers were affected (Practical Lessons from the Loma Prieta Earthquake (1994), Commission on Engineering and Technical Systems). Based on a cost of borrowing funds of 6% the estimated cost to undertake this today would be approximately US \$45 million.

9.2 How many km of LP mains were left in service on the PG&E system after the aftermath of the Loma Prieta earthquake had been dealt with? What program of LP mains replacement did PG&E undertake to deal with its remaining LP piping?

Response:

Terasen Gas was unable to determine the quantity of LP mains remaining in service after the Loma Prieta earthquake. As of April 2006, PG&E had approximately 400 km of LP pipe remaining in their system, as reported by PG&E LP Program Manager. Terasen Gas understands that PG&E plans to replace all LP pipe in their service territory, primarily by the insertion method, by 2014.

9.3 At this time, how many km of LP mains remain in service in the PG&E distribution system?

Response:

Please refer to the response to Question 9.2 above.

9.4 Further to the statement on page 24 that broken LP mains and holes will silently release gas, please confirm that all gas in the LP mains will be odourized and discuss whether this feature can be used to locate leaks.



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Response:

All natural gas delivered by Terasen Gas is odourized. Odourization facilitates leak identification; however, because of the nature of low pressure gas it does not rise to the surface of the ground quickly, as DP gas does, and thus can migrate extensively prior to detection.



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10.0 Reference: CPCN Application, p. 27

- 10.1 On page 27, Terasen Gas states that replacing the LP system will avoid other capital expenditures for upgrades of \$720,000 to \$1,680,000. Please describe how this estimate was arrived at, and provide a schedule showing when these expenditures are expected to be needed.

Response:

The cost estimate is based on the expected upgrading of each of the 24 LP stations within the foreseeable future, e.g. 1 – 10 years; however no definitive plan exists at this time. Upgrading, essentially replacement, will be required to address capacity and Occupational Health and Safety Regulations. The estimate is based on a historical cost of \$30,000 to \$70,000 per station, which is highly dependant upon site specific considerations at each location.

- 10.2 If the LP system replacement was carried out over a longer time schedule of approximately 10 years, would any of these expenditures be needed? If yes, how much?

Response:

Yes, as it is likely that the LP stations that have significant OH&S concerns, because of their location within the system, will not be able to be removed during the first few years as other areas will have a higher priority due to leakage or load growth. These stations should be addressed in a timely manner; however, it may not be practical due to the configuration of the LP system. Thus rather than being removed, they will have to be replaced/upgraded early on and then removed later. An exact amount is difficult to predict; however, it is estimated that one-half of the previous amount would be required to address LP station issues over a 10 year period.



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11.0 Reference: CPCN Application, p. 28

11.1 Further to the cost of service estimate on page 28, please provide a cost of service estimate for the LP replacement project for the first year that all the upgrades are in service, and a schedule showing how the amount was calculated.

Response:

Based upon the current project plan, the first year that all upgrades are anticipated to be in service is 2009. In 2009, Terasen Gas estimates the cost of service to be approximately \$2.1 million. Please find below the requested schedule.

Revenue Requirement Vancouver LP Replacement

	2006	2007	2008	2009
Utility Rate Base:				
Opening	-	4,488	11,323	18,170
Additions (inclu cap'd o/h)	5,757	8,785	8,805	(24)
Retirements	(1,269)	(1,950)	(1,958)	-
Ending	4,488	11,323	18,170	18,146
Tax rates	34.12%	34.12%	34.12%	34.12%
Deprec	2.02%	2.04%	2.03%	2.03%
Accumulated Depreciation:				
Opening	-	1,344	3,358	5,231
Deprec (opening rbase x deprec rate)	-	(92)	(230)	(369)
Retirement cost of stations	75	156	145	-
Retirements	1,269	1,950	1,958	-
Ending	1,344	3,358	5,231	4,862
	5,832	14,681	23,401	23,008
CCA Calculation:				
Opening tax pool	-	5,561	13,865	21,849
Additions	5,674	8,701	8,713	(15)
Tax deduction based on opening pool	-	(222)	(555)	(874)
Tax deduction based on current year additions	(113)	(174)	(174)	0
Tax deduction 4%	(113)	(396)	(729)	(874)
Revenue Requirement:				
ROE 35% 8.80%	-	180	452	721
Interest 65% 6.70%	-	254	639	1,019
Depreciation	-	92	230	369
CCA (CCA*((t/1-t))	(59)	(205)	(377)	(452)
Tax (roe+deprec+lct)*((t/(1-t))	-	140	353	565
Revenue Requirement on Capital	(59)	460	1,298	2,221
Add: Operating costs to revenue requirement				
O&M		(50)	(99)	(148)
Less: capitalized portion (16%)		8	16	24
Total Revenue Requirement	\$ (59)	\$ 418	\$ 1,215	\$ 2,097



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- 11.2 In the event that the Commission is generally supportive of the replacement of the LP system, but denies the application for a CPCN on the basis that the replacement program set out in the CPCN Application is not in the public convenience and necessity, would Terasen Gas continue with replacement of the LP piping under its Base Capital budget?

Response:

As highlighted in its response to 5.8, Terasen Gas believes it is important that the LP replacement work be carried out as soon as possible to ensure that the integrity of the system is not compromised in the event of a moderate to significant seismic event. Terasen Gas believes that this issue should be addressed as soon as possible. As outlined in its response to 11.3, Terasen Gas believes that the LP replacement project qualifies as a CPCN as per the conditions identified in the 2004-2007 Performance-Based Rate Plan and is in the public convenience and necessity.

However, in the event the Commission found that the replacement of the LP system was not in the public convenience and necessity then the Company would not continue with the program. Under this scenario, presumably the Commission would rule it was not a prudent expenditure and disallow it from rate base. Accordingly, the Company would not invest in capital projects that are not in the public interest and necessity.

- 11.3 If the LP system replacement is carried out under Terasen Gas' Base Capital budget rather than a CPCN, how would this affect the cost of service calculation?

Response:

As per the approved annual review for the 2006 forecast period, the formula derived Based Capital Expenditure embedded in Capital Additions and Rate Base is set at \$70.7 million (2005 Annual Review filed materials Section A, Tab 3, Page 4, Line 22, Column 7). The \$70.7 million is used to determine the cost of service for the year, therefore if a specific project is funded through the base capital or not undertaken it will not have an impact on the cost of service under the current PBR mechanism.

The question of fact is however, whether this project qualifies as a CPCN under the approved 2004 – 2007 Performance-Based Rate Plan (BCUC Order No. G-51-03, Appendix A). In that Decision, Appendix A To Order G-51-03, Page 8 of 47 – Capital Additions Forecast, the following statement is made re CPCNs:

“CPCN expenditures are excluded from the capital formula. Except in very unusual circumstances, CPCNs will not be filed for projects below \$5 million. ... CPCN expenditures to be included for rate setting purposes will be only for those projects which have been approved by the Commission and are projected to be in service prior to the year for which rates are being set. The revenue requirement effect of variances between projected and actual CPCN expenditures for those projects being added to rate base will be taken into



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account in the Earnings Sharing Mechanism."

The expenditures for this project in each of the years, 2006 – 2008, exceed \$5 million. Even at 90% for 2006 forecast expenditures still exceed \$5 million (refer to the Application, Appendix B, 2nd page, Total Budget Calendar Year for 2006 - \$5,673,838 x 90% = \$5.1 million). On the basis of the Commission's previous Decision, the proper regulatory consideration is to treat this significant project as a CPCN.

11.4 If the LP system replacement is carried out under Terasen Gas' Base Capital budget, how would this affect incentive payments under the terms of the current 2004-2007 Performance Based Rate Settlement Agreement, compared to the situation where a CPCN were approved for the project?

Response:

LP system replacement costs impact would be commingled with all other impacts / variances that would lead to any variance in the normalized return on equity achieved less the allowed return on equity in 2006 and 2007 as long as the project does not attract AFUDC. Under utility policy each of the project phases would attract AFUDC and probably would not be close to plant until the end of the year, in which case it would have no impact on the Earnings Sharing Mechanism in the current year. For example 2006 project costs would not be included in the 2006 rate base. For 2007, the impact on the Earnings Sharing Mechanism from 2006 expenditures will be negligible because the rate base impact would only be \$5.8 million out of the +\$2.5 billion rate base times ROE portion of capital structure times the difference in achieved normalized ROE versus allowed in setting rates for the 2007 year times the 50% sharing mechanism. For example the achieved ROE in 2004 was 0.31% greater than the allowed, if the same was assumed to happen again in 2007 then the earnings sharing mechanism would be \$5.8 million x 35% (equity component of capital structure) x 0.31% x 50% = \$3.2 thousand dollars (after tax). The \$3.2 thousand ESM effect would be an immaterial impact on Terasen Gas' rate base (\$1.6 thousand mid-year) and on the earnings for Terasen Gas, however, because this project represents a capital addition it would decrease the ROE from what otherwise ensue occur and correspondingly a reduced earnings sharing mechanism dollar value from what otherwise would ensue.

The level of materiality (dollar value) should not be the factor for deciding whether the project should be treated as a Base Capital Expenditure or a CPCN. As discussed in Response to 11.3 whether the project qualifies as a CPCN should be based on the BCUC Decision re 2003 – 2007 PBR Plan related to Capital Additions.



Terasen Gas Inc. ("Terasen Gas") Certificate of Public Convenience and Necessity Application Dated May 11, 2006 Replacement and Upgrade of the Vancouver Low-Pressure Distribution System	Submission Date: June 2, 2006
Response to British Columbia Utilities Commission Information Request No. 1	Page 35

12.0 Reference: CPCN Application, pp. 5, 10, 20, 25, 28

12.1 On page 28, Terasen Gas states that the work will be completed and put into service on a main-by-main or "block-by-block" basis. The LP steel pipe that Terasen Gas proposes to replace has been in service for at least 50 years, the Loma Prieta earthquake occurred in 1989, the Seismic Risk Assessment Study was done in 1994 and the concern with single pass gas welds was recognized in 1994. In this situation, and considering the concern about contractor availability, please discuss the pros and cons of replacing the remaining LP sections over approximately 10 years, in increments of \$2 to \$3 million per year.

Response:

Terasen Gas believes there to be no positive reasons for extending the replacement of the LP system to a 10 year period.

The reasons for not increasing the duration of the replacement program include:

- Significant additional safety related risks to the public, that an event involving soil disturbance will cause leakage that goes undetected until an unfortunate event of significant magnitude occurs. The extension of the replacement program thus induces safety and integrity risk that Terasen Gas considers inappropriate.
- Significant additional risk to customers and to the public at large, that an event involving soil disturbance will potentially cause complete loss of service for an indefinite time frame. Total system replacement is a reality, based on the Loma Prieta experience; extending the timeframe of total replacement induces significant additional risk that Terasen Gas considers inappropriate based on these known results.
- Probable loss of secured contractor resource past the current four year term of the current Mains and Service contract in a time when these resources are extremely scarce in our province. The contractor resource could migrate to other construction projects, which, in addition to affecting the LP replacement will affect the scheduling, completion, and cost of other Base Capital Improvement projects.
- Increased contractor rates due to lower volume of gas utility work and greater demands from other construction.

12.2 Assuming that the work is spread out over approximately 10 years, please provide a schedule calculating the cost of the project in real 2006 dollars, and the net present value of the project expenditures discounted to 2006 assuming a discount factor of 6 percent real. The calculation should include any O&M expenses and capital expenditures that could be avoided by proceeding with the replacement more quickly.



Terasen Gas Inc. ("Terasen Gas") Certificate of Public Convenience and Necessity Application Dated May 11, 2006 Replacement and Upgrade of the Vancouver Low-Pressure Distribution System	Submission Date: June 2, 2006
Response to British Columbia Utilities Commission Information Request No. 1	Page 36

Response:

Please refer to Attachment 12.2. However, as described in the response to Question 11.2, the Company is of the view that the work needs to be completed in the timeframe set out in the Application.

12.3 If the response to the previous question does not assume that the LP replacement work will generally be carried out using Terasen Gas labour and other resources, please repeat the question on the basis that the work will generally be done by Terasen Gas resources.

Response:

Please refer to response to Question 12.2 above.

Attachment 1.1



CITY OF VANCOUVER
ENGINEERING SERVICES
T.R. Timm, P.Eng., General Manager

May 25, 2006

Mr. Dwain Bell
Vice - President, Distribution
Terasen Gas Inc.
16705 Fraser Highway
Surrey, B.C. V3S 2X7

Dear Mr. Bell:

***Terasen Gas Inc.
Low Pressure Distribution System Replacement Project***

The City of Vancouver Utilities Management Branch has met with Terasen Gas staff and has been informed of its intentions to replace the remaining Low Pressure sections of the Vancouver Distribution System between 2006 and 2008, in advance of the 2010 Olympic Games. The accelerated effort would commence in July 2006, in order to complete a large portion of work in the current construction season.

Based upon our understanding of the issues associated with the Low Pressure System; namely the extent of system deterioration combined with the operational, safety, and seismic concerns associated with maintaining this system of this age, we believe that rebuilding the system is in the interest of the citizens of the City of Vancouver. Further, we support the efforts of Terasen to schedule this work in advance of the 2010 Olympic Games and in cooperation with similar efforts from other utility providers, including the City of Vancouver.

Sincerely,



Mr. John D. Evans, P. Eng.
Utilities Management Branch
City of Vancouver

JE/sp

F:\OFFICE 06\John Evans\06TerasenGasVancouver.doc

F:\OFFICE 06\John Evans\06TerasenGasVancouver.doc

Attachment 4.5

MEMO

To	Gary Johnson	Date	May 25, 2006
	Distribution Assets & Improvements Manager	From	D.H. (Dan) Ellis, P.Eng
Re	LP System Leakage Rates - Unprotected CC Pipe		

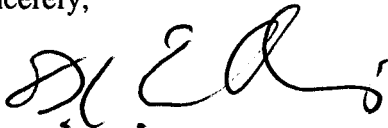
Terasen Gas has approximately 79 km of LP mains and approximately 6,200 LP services which we are not able to cathodically protect against corrosion due to poor or absent coating. This piping represents less than 0.5% of all Terasen Gas systems, and is the last remnant of piping which pre-dates the arrival of natural gas in 1956. Over the last 50 years, we have steadily replaced this piping wherever leaks began to develop, and have thus been successful in preventing any serious incidents.

In response to Distribution Asset Management's query last fall, we re-visited the results from our ongoing pro-active leak surveys, to compare the frequency of leakage from our cathodically protected distribution piping against that from our un-protected LP piping. Such a comparison was reported to have been done ten years ago, with no difference in frequency found, but methodology of that survey (pre-dating AM/FM records) is not known.

The comparison just completed shows that over the last 6 years, the frequency of detected leaks from un-protected piping is 19 times greater than that of cathodically protected piping. While there is no definitive cause that can be proven, my opinion is that the past two decades of record rainfalls and average temperatures in the area may well have contributed to the increased corrosion.

I would also like to note that the Vancouver region is statistically well-overdue for seismic activity. Even a modest earthquake in the "mildly damaging" range of Richter M 5 – 6 would, in my opinion, likely cause many leaks from this un-protected LP piping, due to disturbance of the pipe, adhering corrosion scale, and surrounding soil. In that event, I believe Terasen would in all likelihood be faced with a requirement to shut in this part of the system for an extended period to replace it all with new piping.

Sincerely,



D.H. (Dan) Ellis, P.Eng
Manager, System Integrity Programs
Terasen Gas Inc.

Attachment 5.6

2.6 Low Pressure Systems

Based on the Low Pressure systems peak load projections (forecast design loads) for 2006-2010 there are no major projects that have been identified.

3.0 PROJECTS FOR SYSTEM MODIFICATION OR EXPANSION

3.1 Secondary Containment

To comply with Provincial and Federal legislation all storage containers that hold a volume greater than 250 litres of flammable or combustible liquid require secondary containment facilities.

In 2002 Terasen Gas embarked on a five year program to construct secondary containment facilities. The total estimated cost of this project is \$9.2 million (excluding AFUDC) and is expected to be complete in 2006. The remaining expenditure is forecasted at: \$2.4 million in 2006 (excluding AFUDC).

3.2 Low Pressure System – Vancouver Low Pressure (LP) System Replacement

Approximately 95km of LP mains are still in service in a densely populated and established areas of Vancouver. The LP system serves approximately 7,500 customers including: commercial establishments; residences; schools and hospitals. It is planned to replace the steel/iron LP system with a polyethylene system, operating at Distribution Pressure, over a 4 year period commencing in 2006 with an expected completion in 2009. The estimated 2006 expenditure is forecasted at: \$4.9 million (excluding AFUDC).

It is anticipated that TGI will submit a CPCN Application in Q1 2006 estimated to be approximately \$20 million (excluding AFUDC) to complete the 4 year replacement program.



Customer Advisory Council

April 26, 2006

Presented by:
Terasen Gas Inc.
16705 Fraser Hwy
Surrey, BC

604.576.7000

Terasen Gas is a subsidiary of Kinder Morgan, Inc.



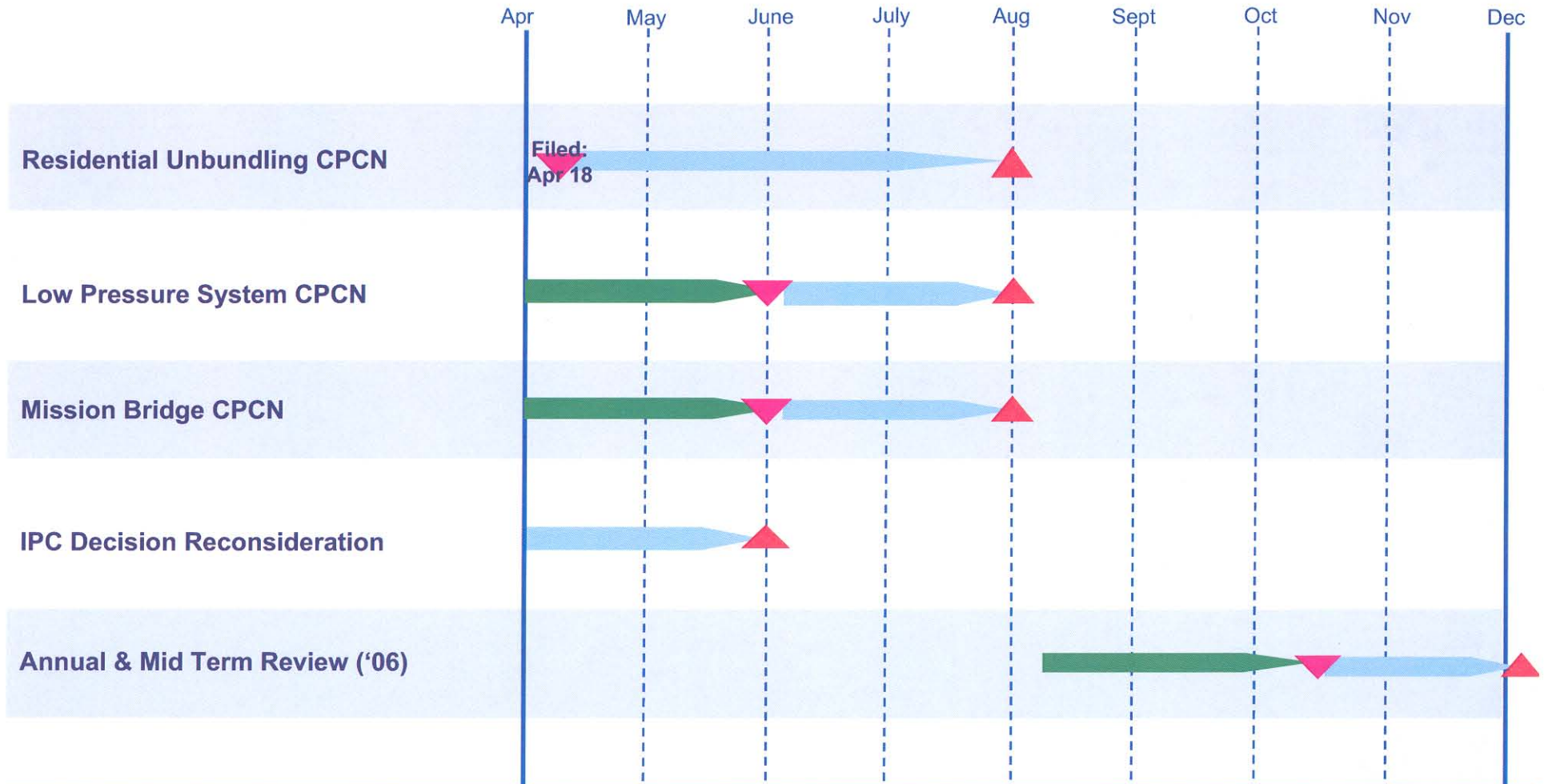
Regulatory Calendar

Tom Loski
Director
Regulatory Affairs

Terasen Gas is a subsidiary of Kinder Morgan, Inc.

Terasen Gas Inc.

Regulatory Calendar April - December 2006



LEGEND

- Application Preparation
- Filing
- Review & Decision Process
- Hearing Process (Oral or Written)
- Decision

Major Capital Projects Subject to CPCN – Cost Projections

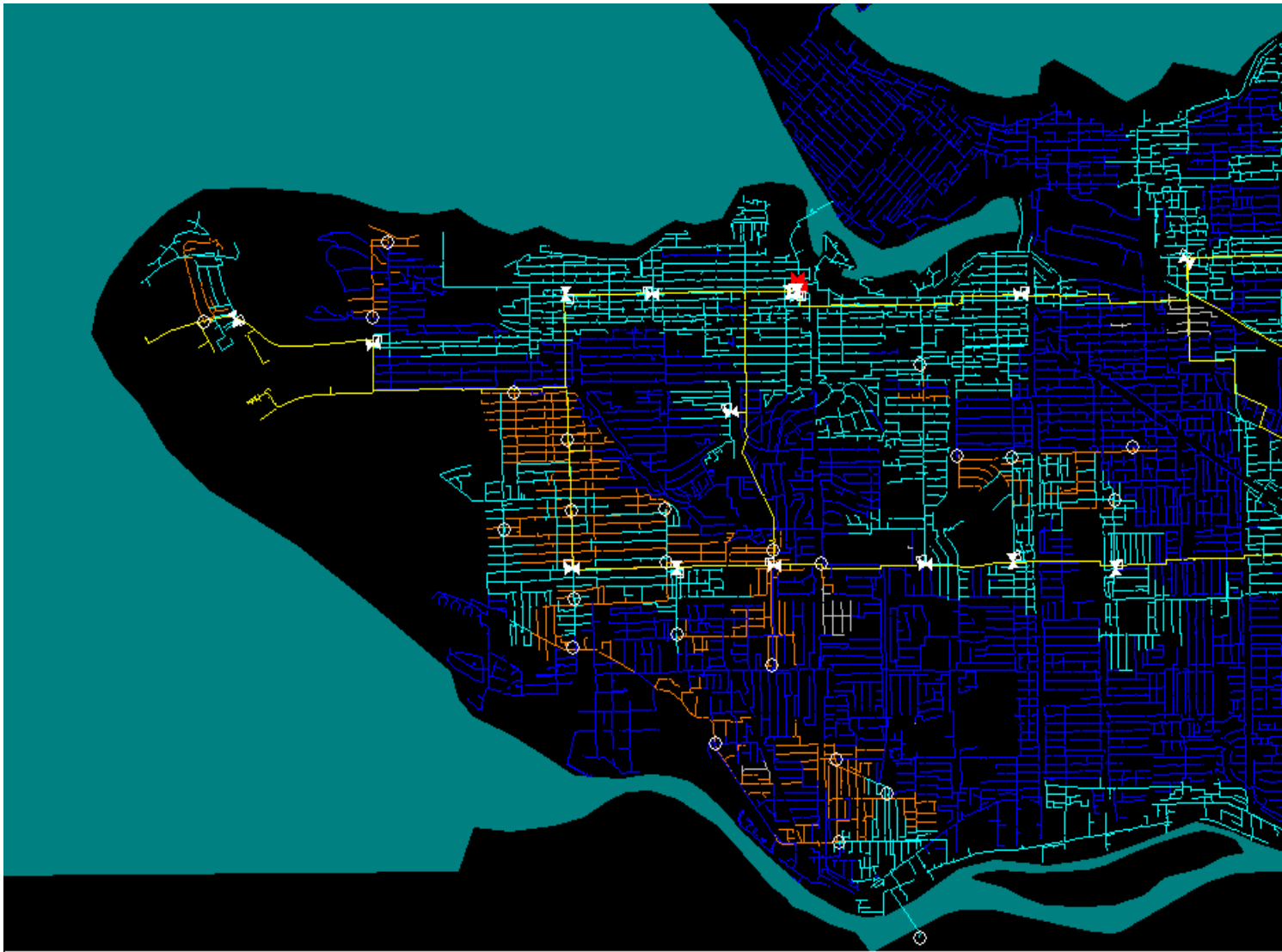


CPCN Applications (Certificate of Public Convenience and Necessity) (\$millions)	2006 Forecast	2007 Forecast	2008 Forecast	2009 Forecast	2010 Forecast
Mission Bridge IP	5.8				
Residential Unbundling	9.0	16.0			
Vancouver LP System Replacement	4.9	5.2	5.3	5.4	
Nichol to Port Mann Loop					15.8
Totals	19.7	21.2	5.3	5.4	15.8

Low Pressure System Upgrade – Mature Vancouver Neighbourhoods



Low Pressure System in Vancouver (in red) (95 km)



Attachment 6.1

Streets Operations - Construction Section

2006 Through 2021 MRN Paving Plans

As Provided By Streets Design Engineering Branch

Current to May 19th through to June 2nd, 2006.

Note : This listing reflects our Long-Term Paving Plans as of the dates noted above, but may be subject to change in the future pending changes in priorities and/or circumstances.

PRIORITY	YEAR	STREET	FROM	TO	# BLOCKS	ACTIVITY PLANNED	REASON	COMMENTS
	2006	BROADWAY	YUKON	NANAIMO	28	GRIND&OVERLAY	REHABILITATION & SOME COORDINATION W/SEWERS	
	2006	HOWE	GEORGIA	HASTINGS	3	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2006	HOWE	ROBSON	LANE S OF SMITHE	1.5	GRIND&OVERLAY	REHABILITATION	
	2006	41ST	SW MARINE	DUNBAR	7	GRIND&OVERLAY	REHABILITATION	
	2006	MAIN	GEORGIA	7TH	11	SHOWCASE	SHOWCASE	
	2007	41ST	DUNBAR	LARCH	7	GRIND&OVERLAY	REHABILITATION	
	2007	BROADWAY	ALMA	LARCH	13	GRIND&OVERLAY	REHABILITATION & SOME COORDINATION W/SEWERS	
	2007	CLARK/KNIGHT	7TH	33RD	26	UNKNOWN	REHABILITATION	
	2007	HASTINGS	NANAIMO	BOUNDARY	13	GRIND&OVERLAY	REHAB & 1 BLOCK WATER	
	2008	CAMBIE	MARINE	BRIDGE	60	GRIND&OVERLAY	RAV	*depending on RAV, could switch with 41st jobs in 2009
	2009	41ST	FLEMING	JOYCE	21	GRIND&OVERLAY	REHAB & 2 BLOCKS WATER	*added portion from Rupert - Joyce
	2009	41ST	OAK	INVERNESS	21	GRIND&OVERLAY	REHAB & 1 BLOCK WATER	
	2010	TERMINAL	MAIN	CLARK	8	GRIND&OVERLAY	REHABILITATION	
	2010	70TH	SW MARINE	SW MARINE	13	UNKNOWN	REHAB & 1 BLOCK WATER	
	2010	HASTINGS	HOWE	GLEN	19	GRIND&OVERLAY	REHABILITATION	
	2010	NANAIMO	HASTINGS	MCGILL	8	GRIND&OVERLAY	REHABILITATION	
	2010	CLARK/KNIGHT	43RD	49TH	6	UNKNOWN	REHABILITATION	
	2010	CLARK/KNIGHT	54TH	57TH	3	UNKNOWN	COORDINATION W/WATER	
	2010	CLARK	HASTINGS	VENABLES	5	UNKNOWN	REHABILITATION	
	2011	KINGSWAY	7TH	BOUNDARY	many	GRIND&OVERLAY	REHAB & SOME WATER	*except between Inverness and Perry
	2011	HOWE	PACIFIC	NELSON	4	GRIND&OVERLAY	COORDINATION W/WATER	
	2011	SMITHE	BURRARD	EXPO BLVD	10	GRIND&OVERLAY	COORDINATION W/SEWERS	*moved from 2016
	2012	BROADWAY	GRANVILLE	OAK	5	GRIND&OVERLAY	REHAB & 1 BLOCK WATER	
	2012	BROADWAY	MACDONALD	ARBUTUS	7	GRIND&OVERLAY	REHAB, 1 BLOCK WATER, LTB IN 2006	
	2012	GRANVILLE	4TH	BROADWAY	5	GRIND&OVERLAY	REHABILITATION	
	2012	BOUNDARY	22ND	MARINE WAY	many	GRIND&OVERLAY	REHAB & SOME WATER	
	2012	BOUNDARY	HASTING	NAPIER	7	GRIND&OVERLAY	REHABILITATION	
	2012	MCGILL	NANAIMO	HWY 1	8	GRIND&OVERLAY	REHAB & 1 BLOCK WATER	
	2012	SW MARINE	HUDSON	OAK	2	GRIND&OVERLAY	REHAB & 1 BLOCK WATER	
	2013	MARINE WAY	SE MARINE	BOUNDARY	4	GRIND&OVERLAY	REHAB & 1 BLOCK WATER	
	2013	SW MARINE	41ST	GRANVILLE	many	GRIND&OVERLAY	REHABILITATION	

Streets Operations - Construction Section

2006 Through 2021 MRN Paving Plans

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Current to May 19th through to June 2nd, 2006.

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PRIORITY	YEAR	STREET	FROM	TO	# BLOCKS	ACTIVITY PLANNED	REASON	COMMENTS
	2014	KNIGHT	33RD	43RD	7	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2014	KNIGHT	49TH	54TH	3	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2014	KNIGHT	57TH	BRIDGE	8	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2015	BROADWAY	ARBUTUS	BURRARD	3	GRIND&OVERLAY	REHABILITATION (1 BLOCK WATER, 2007)	
	2015	BROADWAY	BURRARD	GRANVILLE	3	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2015	CLARK	VENABLES	7TH	12	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2016	1ST	NANAIMO	BOUNDARY	12	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2016	BOUNDARY	NAPIER	22ND	20	GRIND&OVERLAY	COORDINATION W/SEWERS AND WATER	
	2016	BROADWAY	NANAIMO	BOUNDARY	12	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2016	GEORGIA	STANLEY PARK	BEATTY	19	GRIND&OVERLAY	COORDINATION W/SEWERS AND WATER	
	2016	NELSON	BURRARD	BEATTY	9	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2016	10TH	ALMA	BLANCA	10	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2017	NANAIMO	GRANDVIEW	BROADWAY	4	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2017	GRANDVIEW	LAKEWOOD	RENFREW	9	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2017	GRANDVIEW HWY	RENFREW	RUPERT	4	GRIND&OVERLAY	COORDINATION W/SEWERS & 1 BLOCK WATER	
	2017	MARINE	OAK	KNIGHT	24	GRIND&OVERLAY	COORDINATION W/SEWERS & WATER	
	2017	41ST	INVERNESS	FLEMMING	5	GRIND&OVERLAY	COORDINATION W/SEWERS & WATER	
	2018	HASTINGS	NANAIMO	GLEN	12	GRIND&OVERLAY	COORDINATION W/ SEWERS, WATER & UTILITIES (2007)	
	2018	BROADWAY	OAK	CAMBIE	5	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2018	SE MARINE	VICTORIA	MARINE WAY	12	GRIND&OVERLAY	COORDINATION W/ SEWERS & WATER	
	2018	GRANDVIEW HWY	RUPERT	BOUNDARY	4	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2018	HOWE	NELSON	SMITHE	1			
	2019	41ST	OAK	LARCH	18	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2019	1ST	CLARK	NANAIMO	11	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2020	OAK	BROADWAY	71ST	41	GRIND&OVERLAY		Paved 2004
	2020	SEYMOUR	PACIFIC	CORDOVA	11	GRIND&OVERLAY	COORDINATION W/SEWERS	*one section still in 2019 (Paved 2004)
	2021	GRANVILLE	BROADWAY	AURTHUR LANG	41	GRIND&OVERLAY		Paved in 2005
	2021	MAIN ST	TERMINAL	7TH		GRIND&OVERLAY		Paved in 2005

Streets Operations - Construction Section

2006 Through 2022 Non-MRN Paving Plans

As Provided By Streets Design Engineering Branch
Current to May 19th through to June 2nd, 2006.

Note : This listing reflects our Long-Term Paving Plans as of the dates noted above, but may be subject to change in the future pending changes in priorities and/or circumstances.

PRIORITY	YEAR	STREET	FROM	TO	# BLOCKS	ACTIVITY PLANNED	REASON	COMMENTS
	2006	COMMERCIAL	VENABLES	N GRANDVIEW HWY	15	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2006	MAIN	7TH	SE MARINE	55	SHOWCASE	SHOWCASE	
	2006	MAIN	ALEXANDER	GEORGIA	6	SHOWCASE	SHOWCASE	
	2006	DUNSMUIR	W/S BEATTY	E/S BURRARD	11	GRIND&OVERLAY	COORDINATION W/WATER	
	2006	RICHARDS	CORDOVA	GEORGIA	4	GRIND&OVERLAY		
	2007	RENFREW	McGILL	HASTINGS	8	GRIND&OVERLAY	REHABILITATION	
	2007	MELVILLE	DUNSMUIR	JERVIS	3	GRIND&OVERLAY	REHABILITATION	
	2007	BLEMHEIM	16TH	49TH	30	GRIND&OVERLAY	FORCED BY NT	
	2007	2ND AVE	CAMBIE	MAIN	7	UNKNOWN	COORDINATION W/SEWERS	
	2007	W 12TH AVE	BURRARD	TRAFALGER	8	UNKNOWN	COORDINATION W/SEWERS	
	2007	E 57TH AVE	MAIN	ARGYLE	13	UNKNOWN	COORDINATION W/SEWERS	
1	2007	DAVIE	MAINLAND	DENMAN	15	UNKNOWN	COORDINATION W/SEWERS	
3	2007	HAMILTON	SMITHE	HASTINGS	5	GRIND&OVERLAY	COORDINATION W/SEWERS	
2	2007	HASTINGS	JERVIS	HOWE	5	GRIND&OVERLAY	COORDINATION W/SEWERS & WATER	
	2007	KITSILANO DIV	LANE W MACDONALD	STEPHENS	2	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2007	NANAIMO	GRANDVIEW HWY	KINGSWAY	17	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2007	HORNBY	PACIFIC	NELSON	4	GRIND&OVERLAY	REHABILITATION	
	2008	VICTORIA	POWELL	VIC. DIV.	34	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2008	ARBUTUS	16TH	43RD	19	GRIND&OVERLAY	COORDINATION W/SEWERS & WATER	
	2008	CARRALL	EASEMENT N OF WATER	KEEFER	5	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2008	KING EDWARD	CAMBIE	KINGSWAY	23	GRIND&OVERLAY	COORDINATION W/SEWERS & WATER	
	2008	RAILWAY	JACKSON	GORE	2	GRIND&OVERLAY	COORDINATION W/SEWERS	
3	2008	MAINLAND	DAVIE	SMITHE	3	GRIND&OVERLAY	COORDINATION W/SEWERS	
1	2008	ROBSON	BEATTY	DENMAN	17	GRIND&OVERLAY	REHABILITATION	
	2008	GRANVILLE	DRAKE	CORDOVA	10	GRIND&OVERLAY	COORDINATION W/WATER & TRANSPORTATION	*not in Non-MRN list
	2009	4TH	NW MARINE	GRANVILLE	21	UNKNOWN	COORDINATION W/SEWERS	
	2009	BURRARD	1ST	16TH	15	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2009	FRASER	BROADWAY	KING EDWARD	13	GRIND&OVERLAY	COORDINATION W/SEWERS	
3	2009	HELMCKEN	HAMILTON	BURRARD	7	GRIND&OVERLAY	COORDINATION W/SEWERS, POSSIBLE UTILITIES	*greenway
	2009	BEACH	BURNABY	GRANVILLE	11	GRIND&OVERLAY	B. COORDINATION W/SEWERS, POSSIBLE UTILITIES	*UPDATED FROM 2011 TO 2009
	2010	49TH	SOPHIA	SW MARINE	42	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2010	MACKENZIE	QUESNEL	39TH	12	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2010	WEST BLVD	51ST	61ST	5	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2010	ANGUS DR	61ST	SW MARINE	8	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2010	RICHARDS	GEORGIA	PACIFIC	7	GRIND&OVERLAY	REHABILITATION (BIKELANE IN 2006)	
	2010	NICOLA	ROBSON	HASTINGS	4	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2010	ABOTT	KEEFER	DEAD END	6	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2010	THURLOW	PACIFIC	DAVIE	3	GRIND&OVERLAY	REHAB & SEWERS (2005)	
	2011	2ND	CAMBIE	ASH	2	GRIND&OVERLAY	COORDINATION W/SEWERS	*UPDATED FROM 2007 TO 2011
	2011	JOYCE	29TH	VANESS	5	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2011	NW MARINE	LOCARNO	W OF BLANCA	8	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2011	HEMLOCK	6TH	15TH	9	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2011	DUNBAR	LANE N OF 13TH	LANE S OF 44TH	34	UNKNOWN	COORDINATION W/SEWERS	

Streets Operations - Construction Section

2006 Through 2022 Non-MRN Paving Plans

As Provided By Streets Design Engineering Branch
Current to May 19th through to June 2nd, 2006.

Note : This listing reflects our Long-Term Paving Plans as of the dates noted above, but may be subject to change in the future pending changes in priorities and/or circumstances.

PRIORITY	YEAR	STREET	FROM	TO	# BLOCKS	ACTIVITY PLANNED	REASON	COMMENTS
	2011	NANAIMO	KINGSWAY	34TH	18	GRIND&OVERLAY	COORDINATION W/SEWERS	
	2011	BEATTY	CAMBIE BRIDGE	PENDER	5	GRIND&OVERLAY	COORDINATION W/SEWERS	
3	2011	HARO	LAGOON DRIVE	DEAD END E OF THURLOW	11	GRIND&OVERLAY	COORDINATION W/SEWERS (2008) & WATER (20	*Not in non-MRN list
3	2011	SMITHE	BURRARD	THURLOW	1	GRIND&OVERLAY	REHABILITATION	
	2012	57TH	CAMBIE	SW MARINE	22	GRIND&OVERLAY		
	2012	MCGILL	NANAIMO	BRIDGEWAY	9	GRIND&OVERLAY		
	2012	16TH	ST GEORGE	MAIN	3	GRIND&OVERLAY		
	2012	16TH	MAIN	WOLFE	15	GRIND&OVERLAY		
	2012	16TH	GRANVILLE	WATERLOO	20	GRIND&OVERLAY		
	2017	TYNE	SCHOOL	45TH	2	GRIND&OVERLAY		
	2018	FRASER	41ST	SE MARINE DR	24	GRIND&OVERLAY		
	2018	49TH	SOPHIA	FRASER	4	GRIND&OVERLAY		
	2018	2ND	YUKON	MAIN	6	GRIND&OVERLAY		
	2018	16TH	WATERLOO	CAMOSUN	9	GRIND&OVERLAY		
	2019	DENMAN	BEACH	GEORGIA	13	GRIND&OVERLAY		
	2019	POWELL	CORDOVA DIV	VICTORIA	9	GRIND&OVERLAY		
	2019	DUNDAS	VICTORIA	NANAIMO	5	GRIND&OVERLAY		
	2020	16TH	CAMOSUN	BLANCA	6	GRIND&OVERLAY		
	2020	W 6TH	4TH	ALDER	3	GRIND&OVERLAY		
	2020	WATER	CORDOVA	CARRALL	3	GRIND&OVERLAY		
	2020	VENABLES	CAMPBELL	VICTORIA	13	GRIND&OVERLAY		
	2021	FRASER	KING EDWARD	33RD	9	GRIND&OVERLAY		
	2021	E 49TH	FRASER	NANAIMO	20	GRIND&OVERLAY		
	2021	JOYCE	VANESS	KINGSWAY	6	GRIND&OVERLAY		
	2022	FRASER	33RD	41ST	6	GRIND&OVERLAY		
	2022	KENT	CROMPTON	ARGYLE	3	GRIND&OVERLAY		
	2022	12TH	SPRUCE	WILLOW	3	GRIND&OVERLAY		

Attachment 7.5



88 - 6th Street, Suite 400
New Westminster
British Columbia V3L 5B3

Phone: (604) 660-6261
Toll Free: 1-866-566-SAFE
Fax: (604) 660-6661
www.safetyauthority.ca

May 24, 2006

Mr. Dwain Bell
Vice – President, Distribution
Terasen Gas Inc.
16705 Fraser Highway
Surrey, BC
V3S 2X7

Dear Mr. Bell,

Re: Risk Control and the BC Safety Management System

This letter outlines our alignment of interests with respect to the safe use of gas in the Province of British Columbia. While the BC Safety Authority has no detailed knowledge of the proposed Terasen capital works investment to upgrade your Low Pressure distribution system, we support this decision as we anticipate it will have a positive safety impact in reducing potential risk posed by aging underground gas systems.

We are in agreement with the Terasen proactive approach in preventing any potentially high risk situations, and that prevention of future incidents is a key strategy of any large asset management company. We support investment in risk control as a regulatory policy, and expect to see a continual reduction in risk to the maximum extent which is reasonably practicable.

Sincerely,

A handwritten signature in black ink, appearing to read "C. Roome".

Catherine Roome, P.Eng.
Vice President
Engineering and Risk Control
BC Safety Authority

c: Ron Herrington, Acting Gas Safety Manager, BCSCA
Suzana Prpic, Manager Distribution Asset Management, Terasen

Attachment 12.2

[illegible]