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September 4, 2009

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

Attention: Ms. Erica M. Hamilton, Commission Secretary

Dear Ms. Hamilton:

**Re: Terasen Gas Inc. (“Terasen Gas”, “Terasen”, “TGI” or the “Company”)
Customer Care Enhancement Project Application for a Certificate of Public
Convenience and Necessity (“CPCN”) to Insource Customer Care Services and
Implement a New Customer Information System Amended Application**

On August 28, 2009, Terasen Gas submitted to the British Columbia Utilities Commission pursuant to section 45 of the *Utilities Commission Act*, R.S.B.C. 1996, Chapter 473, an Amended Application for a CPCN for the implementation of a new Customer Information System (“CIS”) and for insourcing core elements of customer care services as therein. In this Amended Application we referenced two appendices, Appendix W and Appendix Y which were unavailable at the time of filing but that would be submitted when available.

Please find enclosed Appendix W – KPMG, Economic Impacts of the Customer Care Enhancement Project and Appendix Y – Gannett Fleming, CIS Depreciation Review.

If you have any questions or require further information related to these additional appendices, please do not hesitate to contact Danielle Wensink, Director, Customer Care & Services at (604) 592-7497.

Yours very truly,

TERASEN GAS INC.

Original signed

Tom A. Loski

Attachments

cc (email only): Parties to the TGI 2004-2009 Multi-Year PBR Settlement
Parties to the Terasen Gas (Vancouver Island) Inc. 2006-2009 Negotiated Settlement

Appendix W

**KPMG –
ECONOMIC IMPACTS OF THE CUSTOMER CARE
ENHANCEMENT PROJECT**



Terasen Gas

Economic Impacts
of the Customer
Care Enhancement
Project

September 4, 2009

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Executive Summary

KPMG LLP was engaged by Terasen Gas ('Terasen') to assess the economic impacts of the implementation of the Customer Care Enhancement Project and ongoing operation of the new customer care function in 2012.

The Customer Care Enhancement Project

The Customer Care Enhancement Project represents a significant change to the customer care operating model currently in use at Terasen. The new model includes the in-house delivery of all key customer contact points including call centre, billing and collections, ownership of critical assets and the outsourcing of certain transactional activities. Previously, these functions were all outsourced to centres in eastern Canada, the United States and Philippines. A summary of the model is noted below:

- the insourcing of customer care functions after 2011, including call handling, back-office billing, industrial billing, customer escalation handling and correspondence, and collections;
- the continued outsourcing after 2011 of third party services including bill printing, payment processing, and agency collections for finalized accounts;
- the acquisition of the assets, facilities, technologies and human resources to support providing services to customers.

Terasen will establish two call centre locations including the technologies and staff to support all of the Company's current and future call centre needs.

Economic Impacts

The sums of the direct, indirect and induced economic impacts of the Project on British Columbia are expected to be as follows:

	Implementation Phase ¹ (One Time)	Operations Phase ² (Annual)
Project Expenditure	\$52.9 million	\$23.1 million
Economic Output	\$65.3 million	\$15.0 million
Gross Domestic Product	\$40.8 million	\$25.1 million
Employment	666 jobs	414 jobs
Taxes	\$7.2 million	\$4.6 million

Source: BC Input-Output Model Report (see Appendix A)

¹ The implementation phase is from 2010 to 2012.

² The operations phase begins in 2012.

I. Introduction

A. Background

Terasen Gas (Terasen) has applied to the British Columbia Utilities Commission (the “BCUC” or the “Commission”) pursuant to section 45 of the Utilities Commission Act, R.S.B.C. 1996, Chapter 473, for a Certificate of Public Convenience and Necessity (CPCN) for insourcing core elements of customer care services and for the implementation of a new Customer Information System (the “Customer Care Enhancement Project” or the “Project”).

KPMG LLP (“KPMG”) was asked to assess the economic impact of the various aspects of Project.

B. Objectives and Scope

The objective of this study was to assess the economic impacts of:

- Implementation of the Customer Care Enhancement Project
- Ongoing operation of the new Customer Care centres

C. Structure of Report

In the remainder of this report we:

- Describe the Project (Chapter II);
- Discuss the methodology used for this study (Chapter III);
- Discuss the economic impacts of the Project (Chapter IV).

II. The Customer Care Enhancement Project

A. Background

The customer care function of Terasen Gas is the main point of interaction between customers and Terasen in all aspects of its business. The customer care component of a public utility such as Terasen Gas generally includes a combination of service activities and infrastructure devoted to providing initial and ongoing service to customers. The specific customer care services provided by Terasen Gas are set out in the following table.

	Service	Description
1.	Call Center	Communicating with customers via telephone, fax, electronic mail, internet and regular mail. Communications include opening or closing accounts, moving and responding to customer inquiries and requests. Certain activities, such as opening an account and moving, are addressed only by telephone. The traditional technology channel for customer contact is the call centre supported by both self-serve and agent handled options.
2.	Billing (and Payments)	<p>The billing function includes establishing and maintaining rates and prices, determining tax applicability, calculating usage based on specific equipment and installation characteristics, calculating charges and taxes based on usage, applying special charges and payments, and formatting and printing statements to be delivered to customers. Currently the majority of the monthly statements is produced in paper form and is delivered by mail. On request, statements can also be produced in electronic format for customers who prefer to retrieve their statement electronically from the Company's internet site.</p> <p>Receiving and processing customer payments. While a large number of customers continue to make payment of their monthly statement by mail, a growing number use electronic means, such as direct deposit or online payment through their bank's website.</p>
3.	Collections	Managing activities to secure payment of arrears balances on active accounts including specific messaging, notification and disconnection of services related to active customers. The collections function also includes the placement, reporting and recovery processes related to terminated account balances.

4.	Contract Management	Contract management includes the agreements specifically negotiated to support industrial and transportation customers. In recent years this has been extended to include contracts in support of marketers providing commodity service to customers under the commercial and residential customer choice programs.
5.	CIS System Support and Maintenance	Supporting daily system operations, interface requirements and controls, application changes including configuration changes and enhancements to support changing business needs, and periodic technical upgrades to ensure ongoing sustainability.
6.	Meter Reading	Most utility services are based on metered commodity usage. Meter readings provide the basis for determining the amount of billable consumption for a scheduled billing period. Currently meter reading is performed manually on a bi-monthly basis. When an actual meter reading is not available at the time a monthly bill is being prepared, an estimated reading is calculated.

The Company's customer care function is currently outsourced to CustomerWorks LP. This arrangement has been in place since January 1, 2002.

B. The Project

The Project represents a significant change to the customer care operating model currently in use at Terasen. The new model includes the in-house delivery of all key customer contact points including call centre, billing and collections, ownership of critical assets and the outsourcing of certain transactional activities. A summary of the model is noted below:

- the insourcing of customer care functions after 2011, including call handling, back-office billing, industrial billing, customer escalation handling and correspondence, and collections;
- the continued outsourcing after 2011 of third party services including bill printing, payment processing, and agency collections for finalized accounts;
- the acquisition of the assets, facilities, technologies and human resources to support providing services to customers.

Terasen will establish two call centre locations, including the technologies and staff to support all the Company's current and future call centre and billing operational needs.

III. Methodology

In this chapter we discuss various methodological issues underlying the study, including:

- The conceptual framework of this study;
- The definition of economic impacts employed;
- The methodology for impact calculation; and
- Data-gathering and analysis.

A. Conceptual Framework

Input-output analysis is based on statistical information about the flow of goods and services among various sectors of the economy. This information, presented in the form of tables, provides a comprehensive and detailed representation of the economy for a given year. An input-output model is essentially a database showing the relationship between commodity usage and industry output. It consists of three components:

- a table showing which commodities—both goods and services—are consumed by each industry in the process of production (the input matrix)
- a table showing which commodities are produced by each industry (the output matrix)
- a table showing which commodities are available for consumption by final users (the final demand matrix).

These data are combined into a single model of the economy which can be solved to determine how much additional production is generated by a change in the demand for one or more commodities or by a change in the output of an industry. Changing the usage or production of a commodity or group of commodities is often referred to as shocking the model. The known relationship between goods and services in the economy is used to generate an estimate of the economic impact of such a change.

If a change in demand is met by increasing or decreasing imports from other jurisdictions, there is no net effect on domestic production. All of the benefits or costs associated with employment generation or loss, and other economic effects, will occur outside the region. Therefore, it is important to identify whether or not a change in the demand for a good or service is met inside or outside a region.

The British Columbia Input-Output model (BCIOM) maintained by BC Stats can be viewed as a snapshot of the BC economy, taken in 2003 and updated with new information as available. It is derived from the 2003 inter-provincial input-output tables developed by Statistics Canada and includes details on 727 commodities, 300 industries, 170 “final demand” categories, and a set of

computer algorithms to do the calculations required for the solution of the model. It can be used to predict how an increase or a decrease in demand for the products of one industry will have an impact on other industries and therefore on the entire economy.

The precision of the indications of economic impacts that are produced by the BCIOM should not be taken as an indication of their accuracy. Economic modelling is an imprecise science and the estimates in this report are probably no better than +/- 10%.

B. Definition of Economic Impacts

A number of economic impact measures included in this report are defined in this section. They include output, GDP, household income, employment, and tax revenues.

Output is a measure of the total value of production in all industries that is associated with project expenditures. It should be noted that output measures significantly overstate the total economic impact of a project since they include the activities of every industry at every stage of production. The value of a single good or service that is used by many industries before it is sold to a final consumer may be counted multiple times³ in output figures.

The relationship between GDP and output is a useful analytical measure since it shows the extent to which industries rely on labour and capital as opposed to material and service inputs in production.

Gross Domestic Product (GDP) is a measure of the value added (the unduplicated total value of goods and services) to the BC economy by current productive activities attributable to the project. It includes household income from current productive activities (wages, salaries and unincorporated business income) as well as profits and other income earned by corporations. Only activities that occur within the province are included in GDP.

GDP is the most appropriate measure of the overall economic impact of a project since the value of the work done by each industry is attributed to the producing industry, and is counted only once.

Employment impacts are measured in terms of full-year equivalent positions for ongoing employment (i.e., employment impacts associated with annual expenditures). Full-year equivalent positions are counted according to their duration and not according to whether they were full-time or part-time. Accordingly, an individual who is permanently employed for the entire year in a part-time capacity (e.g., hotel service staff) represents one full-year equivalent position or job.

³ This is explained in more detail in another document, entitled *The British Columbia Input-Output Model*

Household income includes income from wages, salaries and benefits, as well as income earned by proprietors of unincorporated businesses.

Provincial and federal tax revenues include federal and provincial personal and corporation income taxes. Also included are PST, GST and other commodity taxes such as gas taxes, liquor and lottery taxes and profits, air transportation taxes, duties and excise taxes. Property tax revenues are not included in the estimates.

C. Direct, Indirect, and Induced Impacts

In the results presented in this report, we estimate direct impacts (e.g., the employment and value-added associated with the Project); indirect impacts (e.g., the employment and value-added associated with suppliers to the Project); and induced impacts (e.g., those employment and value-added impacts associated with the re-spending of direct and indirect labour income generated i.e., impacts associated with the goods and services purchased by Terasen employees and suppliers' employees using their wages and salaries earned).

Indirect impacts represent the effect of the activities of, and subsequent rounds of expenditure by, suppliers to the Project. Suppliers to the Project both employ their own workers and earn their own business income, and also generate demands for labour and goods and services produced by other industries. This pattern of expenditure flow continues in the economy and goods and services purchased in the first round ultimately become labour income, business income, and government income, or "leak" out of the economy as imports. The sum of labour income, business income, and government income constitutes value-added.

The induced impact measures the overall effect of more income accruing to local households. The estimates reflect spending by all workers (those working directly on the Project as well as those working in industries directly or indirectly supplying goods and services used by the Project).

D. Data-Gathering and Analysis

We collected relevant information from Terasen, and prepared a profile of the Project in terms of both the implementation (capital) costs and its ongoing annual operating costs. The economic impacts associated with implementation are one-time impacts, while the impacts associated with operations are annual, ongoing impacts.

The Project profile identifies the major cost elements and the likely source of major goods and services (domestic versus import).

Two scenarios were modelled for the new call centres, as follows:

Scenario 1 – Terasen constructs new buildings

Scenario 2 – Terasen renovates existing buildings

Both scenarios have been modelled in terms of economic impacts, the results of which are contained in Appendix A of this report. The body of the report focuses on Terasen's preferred option, renovating existing buildings.

IV. Impact of the Customer Care Enhancement Project

A. Project Costs

1. Capital Cost

The estimate of capital costs for Scenario 2 was obtained from Terasen and is presented in Exhibit 1. Capital costs are disaggregated in terms of:

- **Source** – Source is important in that imported goods and services associated with the implementation of the Project do not confer economic benefits to the Canadian and/or British Columbian economies.
- **Cost category** – The cost categories are used to link the component costs to the commodities and industries contained in the BCIOM. In this way, Project specific impacts are assessed, rather than impacts from a generic project.
- **Year** – While the capital costs have been provided on the basis of the year in which they will be incurred, the BCIOM uses the total to estimate economic impacts. The economic impacts, as calculated by the BCIOM, can be spread over the implementation period in proportion to the percentage of total capital costs incurred in each year.

Exhibit 1

Implementation Costs of Customer Care Enhancement Project – Scenario 2

Expenditure Type	Sourcing	Cost Category	Incremental to BC ⁴	\$ 000					
				2009	2010	2011	2012	Total	
Capital ¹	BC	Consulting	100%	-	430	730	160	1,310	
			100%	20	120	1,330	-	1,460	
			100%	20	-	-	-	20	
		Project Management	100%	-	440	320	90	850	
			Design	0%	-	230	970	70	1,260
				100%	-	3,970	4,640	750	9,360
		Software Purchase	100%	200	90	260	-	550	
			100%	200	-	-	-	200	
			100%	-	140	-	-	140	
		Hardware Purchase	100%	-	690	250	-	940	
			100%	-	-	260	-	260	
		Service Ramp-Up	100%	-	130	-	-	130	
			100%	-	150	-	-	150	
		Building Improvements	100%	-	-	2,730	-	2,730	
			100%	170	1,300	9,360	-	10,830	
	Building Hardware	100%	-	50	6,630	-	6,670		
	PST	100%	-	80	20	-	100		
		100%	-	40	40	-	80		
		100%	-	-	320	-	320		
	BC Total				610	7,860	27,840	1,070	37,380
	ExBC ³	Consulting	0%	-	340	5,400	1,000	6,730	
			0%	170	-	10,380	4,000	14,540	
			0%	-	2,710	3,600	120	6,430	
			0%	-	960	1,150	-	2,110	
	Software Purchase	0%	-	4,740	940	-	5,680		
		0%	-	-	-	-	-		
	ExBC Total				170	8,740	21,470	5,120	35,490
US	Consulting	0%	860	2,420	3,040	570	6,890		
		0%	20	110	150	-	280		
		0%	20	-	-	-	20		
	Project Management	0%	-	620	790	140	1,540		
		0%	160	8,720	10,430	3,210	22,530		
	Design	0%	-	-	10	-	10		
		0%	-	570	580	-	1,140		
	Software Purchase	0%	-	-	200	-	200		
	Hardware Purchase	0%	-	-	-	-	-		
US Total				1,070	12,430	15,190	3,920	32,620	
Capital Total				1,840	29,030	64,500	10,110	105,480	
Deferred O&M ²	BC	Service Ramp-Up	100%	-	130	7,150	-	7,270	
			100%	-	40	3,380	-	3,420	
		Maintenance / Janitorial	100%	-	320	580	90	990	
	BC Total				-	480	11,110	90	11,680
Deferred O&M Total				-	480	11,110	90	11,680	
AFUDC	BC	Other - AFUDC	100%	-	860	4,260	-	5,120	
	BC Total			-	860	4,260	-	5,120	
AFUDC Total				-	860	4,260	-	5,120	
Grand Total				1,840	30,380	79,870	10,200	122,290	

Notes:

- Total capital cost to implement the Customer Care Enhancement Project.
- Total O&M that is deferred until 2012 for recovery from customers but incurred in 2010 and 2011.
- EXBC includes any province / territory in Canada other than BC.
- Indicates the portion of annual costs that are incremental to BC.

Source: Terasen

As noted in Exhibit 1, the estimated capital cost of the Project is \$122.3 million. While most of the cost categories are easily understood, two require further discussion:

- **Other – AFUDC** – This represents the Allowance for Funds Used during Construction (AFUDC). The captures the cost of financing during the construction period, prior to the Project being included in Terasen's rate base, at which time the long term cost of financing is covered.
- **Deferred O&M** – This includes two sub-items. Service ramp up refers to the costs of hiring and training staff for the new facilities prior to their opening.

Maintenance/janitorial refers to the provision of these services prior to the formal opening of the new facilities.

All of the costs noted above in Exhibit 1 are one-time costs.

2. Operating Costs –Scenario 2

The estimate of annual operating costs for Scenario 2 was obtained from Terasen and is presented in Exhibit 2.

Exhibit 2 Annual Operating Costs of Customer Care Enhancement Project

	Incremental to BC	in \$000s
Labour	87%	20,179
Third Party Services	0%	20,309
Office Supplies/Expenses	100%	970
IT Support	100%	1,479
Maintenance/Utilities	100%	3,185
Total	50%	46,122

Source: Terasen

As noted in Exhibit 2, annual operating costs associated with the Project are expected to amount to about \$46 million. Most of the indicated costs will confer economic benefits to British Columbia, with the exception of third party costs. Third party costs cover bill/statement printing, payment processing, meter reading, collections action, braille and translation services. These functions are already outsourced hence there is no incremental cost or benefit associated with the Project.

3. Project Employment

Completion of the Project is estimated to result in full time employment as shown in Exhibit 3:

Exhibit 3
Annual Employment of Operation of Customer Care Centre

	Full Time Equivalent Jobs
Total	328
Non-Incremental to BC	(22)
Net New	306

Source: Terasen

The non-incremental jobs represent jobs either already staffed within Terasen or jobs outside of British Columbia

B. Economic Impact of the Customer Care Enhancement Project

1. Project Implementation Phase

Based on the data outlined above, Exhibit 4 shows the economic impact of the implementation of the Project.

Exhibit 4
Summary of Economic Impacts of Implementation of Customer Care Enhancement Project

	Direct	Indirect	Induced	Total
Project Expenditure (\$M)	52.9			
Change in Supplier Industry Output (\$M)	38.2	17.7	9.4	65.3
GDP at Basic Prices (\$M)				40.8
Project Expenditure	5.1			5.1
Supplier Industry Impacts	22.1	7.9	5.7	35.7
Employment (Jobs)				666
Project Expenditure	0			0
Supplier Industry Impacts	455	131	80	666
Household Income (\$M)				27.7
Project Expenditure	0			0
Supplier Industry Impacts	18.9	5.4	3.4	27.7
Tax Revenue (\$M)				7.2
Project Expenditure	1.2			1.2
Supplier Industry Impacts	3.0	1.2	1.7	6.0

Source: BC Input-Output Model

Economic Output

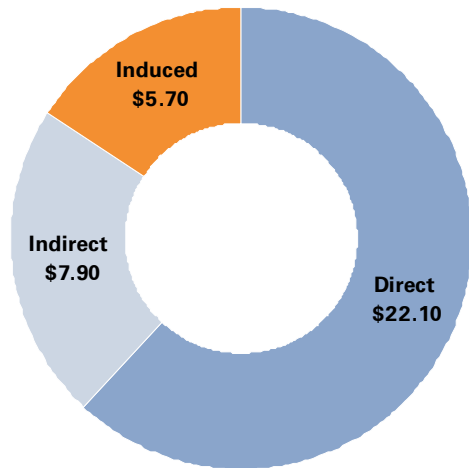
Spending in BC during the construction related to renovation of existing buildings for the call centre is expected to total \$52.9 million. This includes some operating costs incurred after the building has been completed, but before actual operation of the call centre begins. The direct increase in supplier industry output is expected to be \$38.2 million. Along with the indirect and induced impacts, economic output of the province is expected to increase by \$65.3 million.

Gross Domestic Product

The direct GDP associated with the Project is \$5.1 million, which is simply the operating surplus included in the construction costs (the AFUDC expenditure). There is no Project direct employment since it is assumed that consultants and contractors will be hired to do the work. The GDP and employment associated with the construction company's activities are included in the direct supplier industry impacts. As indicated in Exhibit 5, these supplier industries are expected to contribute to a \$22.1 million increase in the province's GDP. Industries further up the supply chain are expected to generate an additional GDP of \$7.9 million, with another \$5.7 million in GDP resulting from expenditures made by workers who are either directly or indirectly employed as a result of the construction Project.

Exhibit 5

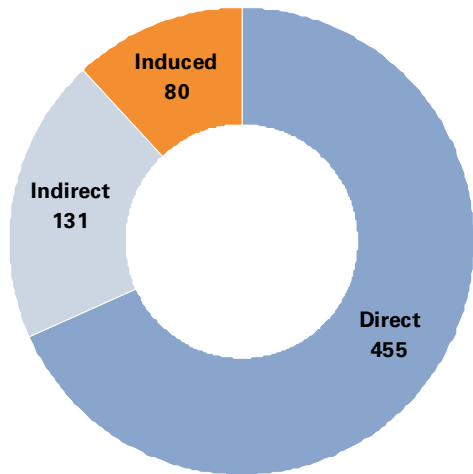
Distribution of Supplier Industry GDP Impacts from Implementation of the Customer Care Enhancement Project



Employment

As shown in Exhibit 6, implementation of the Project is expected to generate a total of 666 jobs. Over one half of the jobs are associated with the supplier industries, with the balance representing the indirect and induced employment.

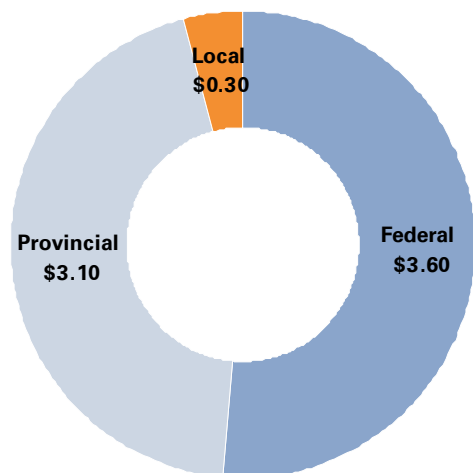
Exhibit 6
Distribution of Employment Impacts from Implementation
of the Customer Care Enhancement Project



Taxes

A total of \$7.2 million of tax revenues will be generated during the course of the implementation of the Project. As indicated in Exhibit 7 below, the federal government is expected to receive more tax revenues than the provincial government, while local government revenues are expected to be quite low.

Exhibit 7
Distribution of Tax Impacts from Construction
of the Customer Care Enhancement Project



It should be noted that these tax estimates, which are generated by the BCIOM, are based on the current tax structure. The model has not yet been updated to reflect the expected effect of the proposed HST which will come into effect in July 2010.

2. Project Operations Phase

Based on the data outlined above, Exhibit 8 presents a summary of the annual economic impacts associated with operation of the Project.

Exhibit 8

Summary of Annual Economic Impacts of Operation of Customer Care Enhancement Project – Scenario 2

	Direct	Indirect	Induced	Total
Project Expenditure (\$M)	23.1			
Change in Supplier Industry Output (\$M)	4.7	2.0	8.3	15.0
GDP at Basic Prices (\$M)				25.1
Project Expenditure	17.5			17.5
Supplier Industry Impacts	1.7	0.9	5	7.6
Employment (Jobs)				414
Project Expenditure	306			306
Supplier Industry Impacts	23	15	70	108
Household Income (\$M)				22.0
Project Expenditure	17.5			17.5
Supplier Industry Impacts	0.9	0.6	3	4.6
Tax Revenue (\$M)				4.6
Project Expenditure	2.7			2.7
Supplier Industry Impacts	0.2	0.1	1.5	1.9

Source: BC Input-Output Model

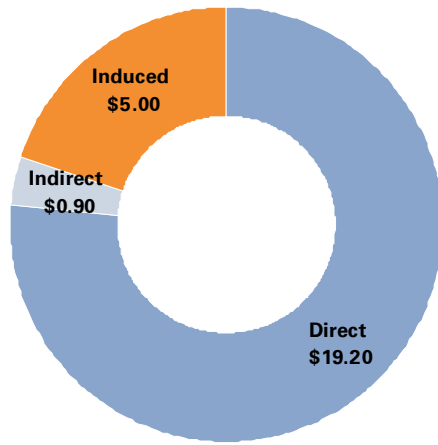
Economic Output

Annual spending in BC during the operations phase is expected to total \$23.1 million. The direct increase in supplier industry output is expected to be \$4.7 million. Along with the indirect and induced impacts, economic output of the province is expected to increase by \$15.0 million.

Gross Domestic Product

The direct GDP associated with the Project is \$17.5 million, which is largely associated with the payment of wages and salaries to the employees in the Customer Care centres. Since wages are the only component of GDP included in the expenditure data provided by Terasen, the Project direct GDP is estimated at \$19.2 million. (The actual GDP associated with the operation will likely be higher, since it would also include profits as well as an estimate of the depreciated value of capital equipment used by the call centre). Exhibit 9 illustrates the breakdown of direct, indirect and induced GDP impacts

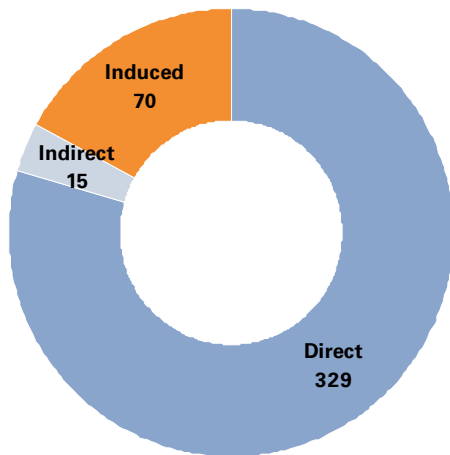
Exhibit 9
Distribution of Annual GDP Impacts from Operations
of the Customer Care Enhancement Project



Employment

As shown in Exhibit 10, operation of the Project is expected generate a total of 414 jobs. Of this total, 329 are associated with the direct employment (306 at the Customer Care centres and 23 with direct suppliers), with the balance representing the indirect and induced employment.

Exhibit 10
Distribution of Annual Employment Impacts from Operations
of the Customer Care Enhancement Project

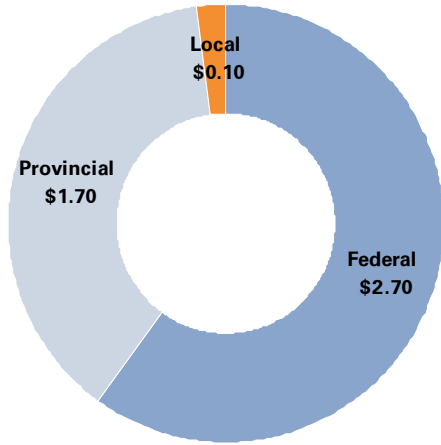


Taxes

A total of \$4.6 million of tax revenues will be generated during the course of the implementation of the Project. As indicated in Exhibit 11 below, the federal government is expected to receive more tax revenues than the provincial government, while local government revenues are expected

to be quite low. Much of the federal and provincial tax revenue is associated with personal income taxes

Exhibit 11
Distribution of Annual Tax Impacts from Operations
of the Customer Care Enhancement Project



It should be noted that these tax estimates, which are generated by the BCIOM, are based on the current tax structure. The model has not yet been updated to reflect the expected effect of the proposed HST which will come into effect in July 2010.

Appendix A

Output from BC Stats – BC Input Output Model Report

BC Input-Output Model Report

Terasen Call Centre (Revised)

This report summarizes the results of an input-output analysis that assesses the economic impact of the setup and operation of a call centre in British Columbia.

The 2004 British Columbia Input-Output Model (BCIOM) was used to generate the results. A description of the BCIOM, and the assumptions underlying input-output analysis, is included in the Appendix. A brief explanation of terms and concepts used in input-output analysis follows.

Measuring economic impacts

A number of economic impact measures included in this report are defined in this section. They include output, GDP, household income, employment, and tax revenues.

Output is a measure of the total value of production in all industries that is associated with project expenditures.

It should be noted that output measures significantly overstate the total economic impact of a project since they include the activities of every industry at every stage of production. The value of a single good or service that is used by many industries before it is sold to a final consumer may be counted multiple times¹ in output figures.

The relationship between GDP and output is a useful analytical measure since it shows the extent to which industries rely on labour and capital as opposed to material and service inputs in production.

Gross Domestic Product (GDP) is a measure of the value added (the unduplicated total value of

goods and services) to the BC economy by current productive activities attributable to the project. It includes household income from current productive activities (wages, salaries and unincorporated business income) as well as profits and other income earned by corporations. Only activities that occur within the province are included in GDP.

GDP is the most appropriate measure of the overall economic impact of a project since the value of the work done by each industry is attributed to the producing industry, and is counted only once.

Household income includes income from wages, salaries and benefits, as well as income earned by proprietors of unincorporated businesses.

Provincial and federal tax revenues include federal and provincial personal and corporation income taxes. Also included are PST, GST and other *commodity* taxes such as gas taxes, liquor and lottery taxes and profits, air transportation taxes, duties and excise taxes. Property tax revenues are not included in the estimates.

Input Information

The data inputs used for this study were provided to BC Stats by KPMG. Two different scenarios were considered. The first scenario includes the construction and operation of a call centre in the province. The second scenario looks at the impact associated with renovating an existing building and using it as a call centre.

The information included estimates of incremental spending in BC during the setup phase, as well as the first year of operation of the project. Spending that was identified by the

¹ This is explained in more detail in another document, entitled *The British Columbia Input-Output Model*,

client as occurring outside the province was not included. Only incremental expenditures in BC were included in this analysis.

Key Assumptions About Project Expenditures

The BCIOM relies on information about typical expenditure patterns in each industry. Many input-output analyses, however, are for specific projects, where the average spending pattern in a given industry may not conform to the pattern of project expenditures.

Because the commodity detail required to run the model is usually not directly available from clients, information from the model is used to help allocate expenditure data provided by the client to the appropriate model categories.

In this study:

- Information from the model was used to estimate some of the tax and other margins included in the cost of goods and services purchased by the project. The client provided PST estimates for the setup phase of the project under both scenarios, and these estimates were used in the analysis. Other tax revenue estimates were based on information from the model.
- Project direct employment figures were supplied for the operating phase under both scenarios. For the construction phase, employment was calculated using average wages in the non-residential construction industry (for Scenario 1) and repair construction industry (for Scenario 2). The wage data used in the BCIOM does not include any overhead.
- It was assumed that most of the purchased services identified as being incremental to BC would be wholly produced in BC. However, information from the model was used to estimate the imported component of goods and some

types of services purchased from BC suppliers.

- The client provided information on various types of expenditures. In some cases, these expenditures could be matched to a specific model category. In other cases, information from the model was used to allocate expenditures for broad categories into the more detailed commodity categories used in the model. For example, “building hardware” was assumed to include telephone & other equipment as well as wiring components.
- The AFUDC expenditures were treated as operating surplus (i.e., profit), and hence show up in the project’s direct GDP but there is not any economic activity in supplier industries associated with this expenditure.

Interpreting the results

Total project expenditure

This estimate is provided by the client, and includes all direct expenditures associated with the project.

Project expenditure in BC

Not all goods and services purchased by the project are produced in BC. An estimate of the value of imported goods and services is deducted from project direct spending in order to determine the value of *project expenditure in BC*.

Estimates of wages, salaries and other components of GDP provided by the client are reported in *project direct GDP at basic prices*.

Commodity taxes less subsidies is calculated using information on average sales and other tax rates associated with each good or service purchased by the project.

Project expenditure in BC is traced back to the producing industries in order to determine the *direct BC supply*. Because industries do not

“produce” taxes, wages or other components of GDP, the direct BC supply only includes the value of goods and services produced by BC industries. Direct project spending on wages, salaries, operating surplus and taxes are excluded from this measure.

Project direct employment is derived based on the project’s wage bill and estimates of average annual wages in the industry.

Household income is calculated based on project direct wages, benefits and mixed income.

An estimate of **corporate and personal income taxes** associated with these project direct expenditures is calculated using information on average tax rates from the model.

About Project Direct GDP Estimates

It should be noted that project direct GDP figures are derived from information provided by clients. These figures are usually project-specific, but they are not always based on complete information. For example, it is often possible to get good data on wages and salaries associated with a project or activity. Labour costs are the biggest component of GDP, but other variables which ought to be included in the estimate (such as investment income, operating surplus, or depreciation) are not always known. When the GDP figures generated by the BCIOM are based on partial information, they may understate the project’s direct contribution to GDP.

Impact estimates

The direct BC supply is used to shock the model in order to determine the total economic impact of the project on the BC economy. This is reported in terms of direct, indirect and induced impacts.

The **direct impact** measures the change in economic activity required to satisfy the initial

change in demand. The **direct output impact** is equal to the direct BC supply—the change in the economic activity of the industries producing the goods and services purchased by the project.

The **direct GDP impact** is the GDP generated as a result of the activities of the industries that produce the goods and services used by the project.

The **direct employment impact** shows total employment in these industries, and the **direct household income impact** is a measure of the wages, salaries, benefits and other income earned by these workers.

The **direct tax revenue impact** includes personal, corporation, sales and other taxes generated as a result of the activities of the industries that supply the goods and services used by the project.

The allocation of tax revenues to federal, provincial and local governments is based on model averages.

The **indirect impact** measures the change in domestic output generated by the activity of industries that supply goods and services used in the direct activities.

The **induced impact** measures the overall effect of more income accruing to the household sector. The estimates reflect spending by all workers (those working directly on the project as well as those working in industries directly or indirectly supplying goods and services used by the project).

It is assumed that BC residents spend 80% of their gross earned income on goods and services.

The safety net estimates assume that a social safety net is in place, so that workers employed by the project had some income from EI or other safety net programs before they were hired to work on the project.

Summary of Results, Scenario 1: Terasen Call Centre Construction

Spending in BC during the setup of the call centre is expected to total \$102.5 million. This includes some operating costs incurred after the building has been completed, but before actual operation of the call centre begins. Most of these expenditures are expected to be produced by BC suppliers. The increase in supplier industry output is expected to be \$91.8 million.

The direct GDP associated with the project is \$4.9 million, which is simply the operating surplus included in the construction costs (the AFUDC expenditure). There is no project direct employment since it is assumed that the building construction, system design and setup will be done by contractors. The GDP and employment associated with these activities are therefore included in the direct supplier industry impacts.

Direct supplier industries are expected to contribute to a \$41.7 million increase in the province's GDP. Industries further up the supply chain are expected to generate an additional GDP of \$22.9 million, with another \$11.7 million in GDP associated with expenditures made by workers who are either directly or indirectly employed as a result of the construction project.

Direct supplier industry employment is estimated at 811 jobs (annualized) over the life of the project. This figure is based on an average annual wage in the non-residential construction industry. Another 338 jobs are expected to be generated in industries that are indirectly supplying goods and services used in the setup of the call centre.

Direct project expenditures are expected to generate \$1.2 million in tax revenue to all levels of government, including commodity taxes as well as corporate income taxes on the operating surplus. Another \$7.2 million of tax revenue (income and commodity taxes) is expected to be generated in direct supplier industries, with \$3.6 million coming from the activities of industries further up the supply chain. Purchases made by workers are expected to result in the addition of \$3.6 million to government coffers.

It should be noted that these tax estimates, which are generated by the BCIOM, are based on the current tax structure. The model has not yet been updated to reflect the expected effect of the proposed HST which will come into effect in July 2010.

**Terasen Call Centre
Construction of new building**

Total change, including project expenditure & supplier industry impacts				
	Direct	Indirect	Induced**	Total
Project expenditure (\$M)	102.5			
Change in supplier industry output (\$M)	91.8	49.9	19.4	161.1
GDP at basic prices (\$M)				81.2
Project expenditure	4.9			4.9
Supplier industry impacts	41.7	22.9	11.7	76.2
Employment (#)*				1,315
Project	0			0
Supplier industry impacts	811	338	165	1,315
Household income (\$M)				58.3
Project expenditure	0.0			0.0
Supplier industry impacts	35.4	15.9	6.9	58.3
Tax revenue (\$M)				15.6
Project expenditure	1.2			1.2
Supplier industry impacts	7.2	3.6	3.6	14.4

*Based on average annual wages in 2007

** Assumes a social safety net is in place.

Project Expenditure				
Total project expenditure (\$M)	102.5			
<i>minus imported goods & services</i>	5.1			
<i>Equals:</i>				
Project expenditure in BC (\$M)	97.4			
<i>Of which:</i>				
GDP at basic prices (\$M)	4.9			
Commodity taxes less subsidies (\$M)	0.7			
Direct BC supply (\$M)	91.8			
<i>(the change in BC supplier industry output associated with project expenditure)</i>				
Project employment (#)	0.0			
Household income (\$M)	0.0			
Tax revenue	Federal	Provincial	Local	Total
Commodity taxes less subsidies (\$M)	0.2	0.5		0.7
Personal income taxes (\$M)	0.0	0.0		0.0
Corporate income taxes (\$M)	0.3	0.1		0.5
<i>(income taxes paid on worker's wages and returns to capital reported in project expenditure)</i>				

Supplier Industry Impacts				
	Direct	Indirect	Total, direct & indirect	Induced **
Output (\$M)	91.8	49.9	141.7	19.4
GDP at basic prices (\$M)	41.7	22.9	64.5	11.7
Employment (#)*	0.0	0.0	0.0	0.0
Household income (\$M)	35.4	15.9	51.3	6.9
Total tax revenue (\$M)	7.2	3.6	10.8	3.6
Federal (\$M)	3.3	1.9	5.2	1.6
Personal income tax	2.8	1.4	4.2	0.4
Corporation income tax	0.4	0.4	0.8	0.3
Commodity taxes (net)	0.1	0.1	0.2	0.9
Provincial (\$M)	3.6	1.4	4.9	1.7
Personal income tax	1.2	0.6	1.8	0.2
Corporation income tax	0.2	0.2	0.3	0.1
Commodity taxes (net)	2.2	0.6	2.8	1.4
Municipal (\$M)	0.4	0.3	0.7	0.3

Summary of Results, Scenario 1: Terasen Call Centre Operation

Spending in BC during the first year of operation is expected to be \$26.3 million, almost all (\$25.5 million) of which will be spent on goods and services (including labour) produced in the province.

Most (\$23.2 million) of this will be wages and salaries paid to the estimated 319 FTEs incrementally employed to work at the call centre.

Since wages are the only component of GDP included in the expenditure data provided by the client, the project direct GDP is also estimated at \$23.2 million. (The actual GDP associated with the operation will likely be higher, since it would also include profits as well as an estimate of the depreciated value of capital equipment used by the call centre).

Another \$2.2 million of output, with an associated GDP of \$1.0 million, is expected to be generated in BC industries directly supplying goods and services used to operate the call centre.

Industries further up the supply chain are expected to contribute \$0.5 million to the province's GDP, with another \$7.3 million coming from re-spending by workers (the induced effect), including those directly employed by the call centre, and workers in industries that are directly or indirectly supplying goods and services used by the centre.

Federal and provincial government tax revenues are expected to increase \$4.1 million as a result of direct call centre expenditures (mainly due to income taxes paid by workers). An additional \$0.2 million will be generated as a result of the combined activities of direct and indirect supplier industries, and \$2.3 million in tax revenues are expected to result from spending by workers.

It should be noted that these tax estimates, which are generated by the BCIOM, are based on the current tax structure. The model has not yet been updated to reflect the expected effect of the proposed HST which will come into effect in July 2010.

**Terasen Call Centre
Operating costs, Scenario 1**

Total change, including project expenditure & supplier industry impacts				
	Direct	Indirect	Induced**	Total
Project expenditure (\$M)	26.3			
Change in supplier industry output (\$M)	2.2	1.0	12.2	15.4
GDP at basic prices (\$M)				32.0
Project expenditure	23.2			23.2
Supplier industry impacts	1.0	0.5	7.3	8.8
Employment (#)*				445
Project	319			319
Supplier industry impacts	16	7	103	126
Household income (\$M)				28.6
Project expenditure	23.2			23.2
Supplier industry impacts	0.7	0.3	4.3	5.3
Tax revenue (\$M)				6.6
Project expenditure	4.1			4.1
Supplier industry impacts	0.1	0.1	2.3	2.5

*Based on average annual wages in 2007

** Assumes a social safety net is in place.

Project Expenditure				
Total project expenditure (\$M)				26.3
<i>minus imported goods & services</i>				0.7
<i>Equals:</i>				
Project expenditure in BC (\$M)				25.5
<i>Of which:</i>				
GDP at basic prices (\$M)				23.2
Commodity taxes less subsidies (\$M)				0.0
Direct BC supply (\$M)				2.2
<i>(the change in BC supplier industry output associated with project expenditure)</i>				
Project employment (#)				319
Household income (\$M)				23.249
Tax revenue	Federal	Provincial	Local	Total
Commodity taxes less subsidies (\$M)	0.0	0.0		0.0
Personal income taxes (\$M)	2.8	1.2		4.1
Corporate income taxes (\$M)	0.0	0.0		0.0
<i>(income taxes paid on worker's wages and returns to capital reported in project expenditure)</i>				

Supplier Industry Impacts				
	Direct	Indirect	Total, direct & indirect	Induced **
Output (\$M)	2.2	1.0	3.2	12.2
GDP at basic prices (\$M)	1.0	0.5	1.4	7.3
Employment (#)*	16	7	23	103
Household income (\$M)	0.7	0.3	1.0	4.3
Total tax revenue (\$M)	0.1	0.1	0.2	2.3
Federal (\$M)	0.1	0.0	0.1	1.0
Personal income tax	0.1	0.0	0.1	0.3
Corporation income tax	0.0	0.0	0.0	0.2
Commodity taxes (net)	0.0	0.0	0.0	0.6
Provincial (\$M)	0.1	0.0	0.1	1.1
Personal income tax	0.0	0.0	0.0	0.1
Corporation income tax	0.0	0.0	0.0	0.1
Commodity taxes (net)	0.0	0.0	0.0	0.9
Municipal (\$M)	0.0	0.0	0.0	0.2

Summary of Results, Scenario 2: Terasen Call Centre Setup

Spending in BC during the building renovations and setup of the call centre is expected to total \$52.9 million. This includes some operating costs incurred after the building has been completed, but before actual operation of the call centre begins.

The increase in supplier industry output is expected to be \$38.2 million.

The direct GDP associated with the project is \$5.1 million, which is simply the operating surplus included in the construction costs (the AFUDC expenditure). There is no project direct employment since it is assumed that the building improvements, system design and setup will be done by contractors. The GDP and employment associated with these activities are therefore included in the direct supplier industry impacts.

These supplier industries are expected to contribute to a \$22.1 million increase in the province's GDP. Industries further up the supply chain are expected to generate an additional GDP of \$7.9 million, with another \$5.7 million associated with expenditures made by

workers who are either directly or indirectly employed as a result of the project.

Supplier industry employment is estimated at 455 jobs (annualized) over the life of the project. This figure is based on an average annual wage in the repair construction industry. Another 131 jobs are expected to be generated in industries that are indirectly supplying goods and services used in the setup of the call centre.

Direct expenditures are expected to generate \$1.2 million in tax revenue to all levels of government, including commodity taxes as well as corporate income taxes on the operating surplus. Another \$3.0 million of tax revenue is expected to be generated in direct supplier industries, with \$1.2 million coming from the activities of industries further up the supply chain. Purchases made by workers are expected to add another \$1.7 million to government coffers.

It should be noted that these tax estimates, which are generated by the BCIOM, are based on the current tax structure. The model has not yet been updated to reflect the expected effect of the proposed HST which will come into effect in July 2010.

**Terasen Call Centre
Setup costs**

Total change, including project expenditure & supplier industry impacts				
	Direct	Indirect	Induced**	Total
Project expenditure (\$M)	52.9			
Change in supplier industry output (\$M)	38.2	17.7	9.4	65.3
GDP at basic prices (\$M)				40.8
Project expenditure	5.1			5.1
Supplier industry impacts	22.1	7.9	5.7	35.7
Employment (#)*				666
Project	0			0
Supplier industry impacts	455	131	80	666
Household income (\$M)				27.7
Project expenditure	0.0			0.0
Supplier industry impacts	18.9	5.4	3.4	27.7
Tax revenue (\$M)				7.2
Project expenditure	1.2			1.2
Supplier industry impacts	3.0	1.2	1.7	6.0

*Based on average annual wages in 2007

** Assumes a social safety net is in place.

Project Expenditure				
Total project expenditure (\$M)	52.9			
<i>minus imported goods & services</i>	8.8			
<i>Equals:</i>				
Project expenditure in BC (\$M)	44.1			
<i>Of which:</i>				
GDP at basic prices (\$M)	5.1			
Commodity taxes less subsidies (\$M)	0.7			
Direct BC supply (\$M)	38.2			
<i>(the change in BC supplier industry output associated with project expenditure)</i>				
Project employment (#)	0			
Household income (\$M)	0.000			
Tax revenue	Federal	Provincial	Local	Total
Commodity taxes less subsidies (\$M)	0.2	0.5		0.7
Personal income taxes (\$M)	0.0	0.0		0.0
Corporate income taxes (\$M)	0.3	0.1		0.5
<i>(income taxes paid on worker's wages and returns to capital reported in project expenditure)</i>				

Supplier Industry Impacts				
	Direct	Indirect	Total, direct & indirect	Induced **
Output (\$M)	38.2	17.7	55.9	9.4
GDP at basic prices (\$M)	22.1	7.9	30.0	5.7
Employment (#)*	455	131	586	80
Household income (\$M)	18.9	5.4	24.3	3.4
Total tax revenue (\$M)	3.0	1.2	4.3	1.7
Federal (\$M)	1.7	0.6	2.3	0.8
Personal income tax	1.5	0.4	1.9	0.2
Corporation income tax	0.2	0.1	0.3	0.1
Commodity taxes (net)	0.0	0.0	0.1	0.4
Provincial (\$M)	1.2	0.5	1.7	0.8
Personal income tax	0.6	0.2	0.8	0.1
Corporation income tax	0.1	0.1	0.1	0.1
Commodity taxes (net)	0.5	0.2	0.7	0.7
Municipal (\$M)	0.1	0.1	0.2	0.1

Summary of Results, Scenario 2: Terasen Call Centre Operation

Spending in BC during the first year of operation is expected to be \$23.1 million, almost all (\$22.3 million) of which will be spent on goods and services (including labour) produced in the province.

Most (\$17.5 million) of this will be wages and salaries paid to the estimated 306 people incrementally employed to work at the call centre. Since wages are the only component of GDP included in the expenditure data provided by the client, the project direct GDP is also estimated at \$17.5 million. (The actual GDP associated with the operation will likely be higher, since it would also include profits as well as an estimate of the depreciated value of capital equipment used by the call centre).

Another \$4.7 million of output, with an associated GDP of \$1.7 million, is expected to be generated in BC industries directly supplying goods and services used to operate the call centre.

Industries further up the supply chain are expected to contribute \$0.9 million to the

province's GDP. Re-spending by workers (the induced effect), including those directly employed by the call centre, and workers in industries that are directly or indirectly supplying goods and services used by the centre is expected to add another \$5.0 million to total GDP.

Government tax revenues are expected to increase \$2.7 million as a result of direct call centre expenditures (mainly as a result of income taxes paid by workers). An additional \$0.3 million will be generated as a result of the combined activities of direct and indirect supplier industries, and \$1.5 million in tax revenues are expected to result from spending by workers.

It should be noted that these tax estimates, which are generated by the BCIOM, are based on the current tax structure. The model has not yet been updated to reflect the expected effect of the proposed HST which will come into effect in July 2010.

**Terasen Call Centre
Operating costs, Scenario 2**

Total change, including project expenditure & supplier industry impacts				
	Direct	Indirect	Induced**	Total
Project expenditure (\$M)	23.1			
Change in supplier industry output (\$M)	4.7	2.0	8.3	15.0
GDP at basic prices (\$M)				25.1
Project expenditure	17.5			17.5
Supplier industry impacts	1.7	0.9	5.0	7.6
Employment (#)*				414
Project	306			306
Supplier industry impacts	23	15	70	108
Household income (\$M)				22.0
Project expenditure	17.5			17.5
Supplier industry impacts	0.9	0.6	3.0	4.6
Tax revenue (\$M)				4.6
Project expenditure	2.7			2.7
Supplier industry impacts	0.2	0.1	1.5	1.9

*Based on average annual wages in 2007

** Assumes a social safety net is in place.

Project Expenditure				
Total project expenditure (\$M)				23.1
<i>minus imported goods & services</i>				0.8
<i>Equals:</i>				
Project expenditure in BC (\$M)				22.3
<i>Of which:</i>				
GDP at basic prices (\$M)				17.5
Commodity taxes less subsidies (\$M)				0.1
Direct BC supply (\$M)				4.7
<i>(the change in BC supplier industry output associated with project expenditure)</i>				
Project employment (#)				306
Household income (\$M)				17.484
Tax revenue	Federal	Provincial	Local	Total
Commodity taxes less subsidies (\$M)	0.0	0.1		0.1
Personal income taxes (\$M)	1.8	0.8		2.6
Corporate income taxes (\$M)	0.0	0.0		0.0
<i>(income taxes paid on worker's wages and returns to capital reported in project expenditure)</i>				

Supplier Industry Impacts				
	Direct	Indirect	Total, direct & indirect	Induced **
Output (\$M)	4.7	2.0	6.7	8.3
GDP at basic prices (\$M)	1.7	0.9	2.6	5.0
Employment (#)*	23	15	37	70
Household income (\$M)	0.9	0.6	1.6	3.0
Total tax revenue (\$M)	0.2	0.1	0.4	1.5
Federal (\$M)	0.1	0.1	0.2	0.7
Personal income tax	0.1	0.1	0.1	0.2
Corporation income tax	0.0	0.0	0.1	0.1
Commodity taxes (net)	0.0	0.0	0.0	0.4
Provincial (\$M)	0.1	0.1	0.1	0.7
Personal income tax	0.0	0.0	0.1	0.1
Corporation income tax	0.0	0.0	0.0	0.0
Commodity taxes (net)	0.0	0.0	0.1	0.6
Municipal (\$M)	0.0	0.0	0.0	0.1

Assumptions and Caveats

From an IO perspective, commodities made in BC have a much bigger impact than those imported into the province. The analysis presented here is based on using default import ratios for most commodities: i.e., assuming they are purchased locally, but allowing for the fact that they may have been manufactured elsewhere.

All tax data were generated using the model structure, and are based on averages for an industry or commodity.

The precision of the figures in the tables should not be taken as an indication of their accuracy. Economic modelling is an imprecise science and the estimates in this report are probably no better than +/- 10%.

Appendix: Some background on input-output models and analysis

Input-output analysis is based on statistical information about the flow of goods and services among various sectors of the economy. This information, presented in the form of tables, provides a comprehensive and detailed representation of the economy for a given year. An input-output model is essentially a database showing the relationship between commodity usage and industry output. It consists of three components:

- a table showing which commodities—both goods and services—are consumed by each industry in the process of production (the input matrix)
- a table showing which commodities are produced by each industry (the output matrix)
- a table showing which commodities are available for consumption by final users (the final demand matrix).

These data are combined into a single model of the economy which can be solved to determine how much additional production is generated by a change in the demand for one or more commodities or by a change in the output of an industry. Changing the usage or production of a commodity or group of commodities is often referred to as shocking the model. The known relationship between goods and services in the economy is used to generate an estimate of the economic impact of such a change.

If a change in demand is met by increasing or decreasing imports from other jurisdictions, there is no net effect on domestic production. All of the benefits or costs associated with employment generation or loss, and other economic effects, will occur outside the region. Therefore, it is important to identify whether or not a change in the demand for a good or service is met inside or outside a region.

The British Columbia Input-Output model

The BCIOM can be viewed as a snapshot of the BC economy, taken in 2003. It is derived from the 2003 inter-provincial input-output tables developed by Statistics Canada and includes details on 727 commodities, 300 industries, 170 “final demand” categories, and a set of computer algorithms to do the calculations required for the solution of the model. It can be used to predict how an increase or a decrease in demand for the products of one industry will have an impact on other industries and therefore on the entire economy.

Limitations and caveats associated with input-output analysis

Input-output analysis is based on various assumptions about the economy and the inter-relationships between industries. These assumptions are listed below:

Input-output models are linear. They assume that a given change in the demand for a commodity or for the outputs of a given industry will translate into a proportional change in production.

Input-output models do not take into account the amount of time required for changes to happen. Economic adjustments resulting from a change in demand are assumed to happen immediately.

It is assumed that there are no capacity constraints and that an increase in the demand for labour will result in an increase in employment (rather than simply re-deploying workers).

It is assumed that consumers spend an average of 80% of their personal income on goods and services. The remaining 20% of personal income is consumed by taxes, or goes into savings.

The BCIOM is based on a “snapshot” of the BC economy in 2003. It is assumed that relationships between industries are relatively stable over time, so that the 2003 structure of the economy

continues to be applicable today. However, it should be noted that employment estimates have been adjusted to reflect wage levels for the year of the expenditures in each case.

The BCIOM does not distinguish between regional effects. It will not, for example, differentiate between the economic impact of a plant located in one region of the province and a similar plant elsewhere in BC.

Appendix Y

**GANNETT FLEMING –
CUSTOMER INFORMATION SYSTEM DEPRECIATION
REVIEW**

TERASEN GAS INC.
DEPRECIATION ANALYSIS
CUSTOMER BILLING SYSTEM

OVERVIEW

Treason Gas Inc (“Terasen” or “the Company”) asked Gannett Fleming Inc. (“Gannett Fleming”) to provide an opinion on the appropriate average service life estimate to use for a replacement Customer Billing System.

In order to develop the average service life estimate, Gannett Fleming has relied on our experience in the development of such software lives, the previously used estimates of software lives at Terasen and its associated companies from the Fortis Inc. group, and on conversions with Terasen subject area experts and representatives from SAP Canada. Based on this information Gannett Fleming recommends the use of a 10 year average service life estimate for the SAP supplied Customer Billing System. Furthermore, given the impending conversion from Canadian Generally Accepted Accounting Principles (“GAAP”) to International Financial Reporting Standards (“IFRS”) Gannett Fleming recommends that the Customer Billing System be categorized as a separate asset, without the use of amortization accounting.

BACKGROUD OF SAP ACCOUNTING SYSTEMS

SAP is a multi-function software system that includes many modules and specific applications. A number of regulated utilities across North America have SAP systems installed, and have required average service life estimates for these systems. Gannett Fleming has participated in the average service life estimation for many of these installations. Additionally, the Fortis Inc. group of Canadian utilities generally all has SAP systems installed. Historically, the original SAP system installations have resulted in a large capital expenditure related to the original licensing of the system, the installation of the original system, changes to workflow, customized reporting, and training on the system. Additionally, given the very integrated nature of the SAP system

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modules, many utilities have installed multiple models of the SAP system at the same time. It is the experience of Gannett Fleming that SAP systems have been used by regulated Canadian Utilities for 15 to 20 years.

Prior to the installation of SAP systems many regulated utilities had internally developed accounting and customer service systems. These internally developed systems required a significant amount of internal company resources to develop and implement, often requiring many years from project initiation to completion. As such, these internally developed systems resulted in large capitalized costs through to the installation stage, but had few capitalized upgrades, as the expertise to perform upgrades was housed internally, and therefore upgrades and system fixes were performed through operating cost dollars, rather than through capitalized upgrades or new version releases. Regulated utilities with large in house developed accounting systems often had a large amount of full time Information Technology resources dedicated to the maintenance of the accounting systems. As the systems were continuously being maintained and upgraded through operating expense dollars, there were no retirements of capitalized investments for many years and long (10 to 15 year) average service life estimates were common.

When regulated utilities started to migrate to intergraded accounting systems such as SAP, a differing trend emerged. Large capitalized amounts of investment continued to be required for the original installation of the systems, however, the specific expertise required to maintain the systems moved to reside outside of the company. As such, requests for upgrades and fixes to the system are now made to third party vendors, such as SAP. Additionally the utilities pay an annual fee for the continued licensing of the software package, which are normally included in the operating expenses of the company's revenue requirement. As part of the annual licensing fee, any critical system issues are usually dealt with. Therefore, some system fixes are still dealt with through operating cost dollars and there is no system retirement associated with this expenditure. However, most issues are not usually considered as critical operating system failures and are considered upgrades or additional requirements, which are not covered by the annual operating license fee. System upgrades and enhancements are collected by the software vendors and usually distributed via new software releases, and periodically through new

versions of the software package. As these new versions and releases are costly to license and install, the costs are normally capitalized. Additionally, as these new releases and versions replace some of the original system operating code with a new capitalized item, some portion of the original system is retired. This practice has historically resulted in large segments of investment in these accounting systems to have lives as short as 2 or 3 years, and other segments to have lives up to potentially 10 years. As such, the average life estimates for these large accounting packages has ranged from 5 to 8 years.

NEW SAP CUSTOMER BILLING SYSTEM

Discussions with SAP Canada and Terasen internal subject experts have indicated that the new Customer Billing System is part of a newly released Industry Solutions for Utilities series of programs. As part of this program, the Customer Billing System has been developed on a new newer technology platform than previous SAP releases to Utilities, and is not expected to be modified for a number of years. SAP Canada indicated that the original platform will be fully supported for a period of 10 years from its original release. The Customer Billing System was originally released by SAP in 2006; therefore a commitment exists for SAP support for the original product through 2016. Additionally, the software is being distributed via a new Customer Relationship Management arrangement, wherein there will be a lesser amount of new releases and versions that will require capital dollars. The view of the internal company experts and SAP Canada is that the Customer Billing system should have a life of at least 10 years.

Additionally the discussions with SAP Canada have indicated that in the event of a new release (now referred to as enhancement packs), the new release will be layered onto the old program and will not replace or render obsolete any of the original coding. In this manner there will be no requirement for retiring any of the original installation.

Gannett Fleming notes however, that while the support of the product will extend through 2016, enhancement packs that are added to the Customer Billing System will have a shorter life than 10 years. As such Gannett Fleming considers that a range of life estimates from 7 to 10 years is reasonable for this new system. Given that the requirement to retire some coding will not exist with the capitalization of enhancement

packs, and that the Industry Solutions for Utilities series of programs have only recently been released by SAP, Gannett Fleming views that the use of a 10 year life is appropriate at this time. It is noted that the 10 year life estimate falls within the Range of Gannett Fleming expectations, is consistent with the views of the internal subject experts and with the expectations of SAP Canada.

USE OF AMORTIZATION ACCOUNTING

Over the past number of years, most regulated utilities across North America have converted to amortization accounting for a number of general plant accounts including application software. The use of amortization accounting provided that all costs capitalized costs in any given year be amortized over the life estimate of the group. Additionally, all costs are retired at the expiration of the life estimate, when the net book value of the asset is exactly zero. As such, no plant is retired until the net book value reaches zero, whether or not the asset physically retired earlier. Likewise, all plant retires at the end of its life estimate, even if it is still in service. This amortization method of accounting has been widely endorsed by regulators given that it is less burdensome to the utility and deals with assets that are difficult to track on a cost effective basis.

Effective January 2011, the current Canadian GAAP will be replaced with the IFRS. The use of amortization accounting is not as accepted within IFRS, however in the circumstances where individual assets are not significant (for example, an office chair, or desktop computer) it appears that the use of amortization accounting will still be allowed. However, large accounting systems such as SAP, will not fall into the category of being individually insignificant. Therefore Gannett Fleming recommends that the Customer Billing System be placed into its own sub-account and be depreciated on a unit basis.

RECOMMENDATIONS

Gannett Fleming recommends that the new Customer Billing system be depreciated over a 10 year period, and be placed into its own sub-account which is not subject to amortization accounting. Given the lack of interim retirement activity caused by the reduced need for retirements when the enhancements packs are capitalized, the use of a Square IOWA curve is appropriate. The 10 year live, combined with the use of a square

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IOWA curve results in a depreciation rate of 10% per annum. It is noted that this life estimate and depreciation rate require periodic review to determine the continued appropriateness of these factors.