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December 1, 2010

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" or "TGI")

Application for Approval of a Service Agreement for Compressed Natural Gas ("CNG") Service and for Approval of General Terms and Conditions ("GT&Cs") for CNG and Liquified Natural Gas ("LNG") Service (the "Application")

Attached please find Terasen Gas' Application to the British Columbia Utilities Commission (the "Commission") seeking the following:

- Pursuant to sections 59 to 61 of the *Utilities Commission Act* (the "Act"), approval of a Service Agreement with Waste Management Canada Corporation ("WM") for compression and dispensing service for CNG (the "WM Agreement"); and
- Pursuant to section 44.2 of the Act, acceptance of the expenditures required to provide compression and dispensing service for CNG under the WM Agreement; and
- Pursuant to sections 59 to 61 of the Act, approval of GT&Cs for compression and dispensing service for CNG Service and transportation, delivery, fuel storage and dispensing service for LNG Service that would be used for future service agreements with customers.

TGI notes that it is seeking expedited review and approval of the WM Agreement, with the remainder of the Application (the third bullets above) to be considered in the normal course. The contract contained in Appendix D is a draft version of the pending contract with WM, which is expected to be finalized shortly. TGI will finalize this updated contract upon execution with WM. TGI does not expect any material changes to this draft contract dated December 1, 2010 as filed. The WM contract is conditional upon Commission approval. While the date by which TGI must waive the condition precedent relating to Commission approval is not for six months, WM is expected to have CNG trucks in place that require CNG service in mid-January. Further explanation regarding TGI's request for expedited consideration of the WM Agreement is set out in Section 1.2.1 of the Application. TGI appreciates the Commission's consideration of these legitimate commercial imperatives. The relevant Sections and Appendices of the Application for this expedited approval request are as follows:

Section 3.1.2:	WM Agreement in Perspective
Section 4:	The WM Agreement
Section 8.1:	Approval of the WM Agreement
Section 8.2:	Expenditure Schedule For WM Project
Appendix D:	Draft WM Contract for NGV refueling service with TGI
Appendix G:	Draft Order Approving the contract

The draft WM Agreement dated December 1, 2010 filed under Appendix D-1 and the Financial Schedules filed under Appendix E contain commercially sensitive terms and negotiated rates, and has therefore been filed confidentially under separate cover in accordance with the BCUC Practice Directive related to Confidential Filings. Pursuant to the Practice Directive, TGI requests that interveners wishing to review the confidential appendices execute an Undertaking of Confidentiality to maintain confidentiality (a sample of which is found in Appendix G of the Application).

Twelve (12) hardcopies of this Application, including the confidential portion, will be submitted to the Commission. The Application including non-confidential appendices and all subsequent non-confidential exhibits will be made available on the Terasen Gas website under the Regulatory Submissions section for the Lower Mainland at the following link:

http://www.terasengas.com/_AboutUs/RatesAndRegulatory/BCUCSubmissions/LowerMainlandSquamishInterior/CNGAndLNGServiceForVehicles/default.htm

If you have any questions or require further information related to this Application, please do not hesitate to contact Shawn Hill at (604) 592-7840.

Yours very truly,

TERASEN GAS INC.

Original signed by Shawn Hill:

For: Diane Roy

Attachments

cc (email only): Registered Participants in the TGI 2010-2011 RRA Proceeding

TERASEN GAS INC.

Application for Approval of a Service Agreement for Compressed Natural Gas Service

and

for Approval of General Terms and Conditions for Compressed Natural Gas and Liquefied Natural Gas Service

Volume 1 - Application

December 1, 2010

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1 INTRODUCTION AND EXECUTIVE SUMMARY

1.1 Introduction

Terasen Gas Inc. ("Terasen Gas", "the Company" or "TGI") has negotiated an agreement with Waste Management of Canada Corporation ("WM"), expected to be executed within a day or two of the filing of this Application that contemplates the Company providing, subject to Commission approval, compression and dispensing service for Compressed Natural Gas ("CNG") fueling to serve at least 20 new natural gas vehicles ("NGV") owned by WM (the "WM Agreement"). A late stage draft of the WM Agreement has been appended to this Application in order to allow the Commission to commence expeditious consideration of it, and the Company is planning to file the finalized and executed WM Agreement imminently. In this Application, TGI is seeking approval of the WM Agreement as a Tariff Supplement pursuant to sections 59-61 of the *Utilities Commission Act*. The WM Agreement contemplates WM paying the full cost of providing the service on a "take-or-pay" (i.e. minimum contract demand) basis over the term of the agreement and contains other contractual provisions that are intended to protect existing ratepayers. TGI believes that the terms and conditions of service stipulated in the WM Agreement are just and reasonable.

TGI is seeking acceptance pursuant to section 44.2 of the Act of expenditures on facilities required to provide service to WM, estimated at $738,000. The public interest considerations relevant to the section 44.2 approval include the fact that the cost of the facilities is to be recovered from WM over the term of the WM Agreement. TGI's investment also benefits existing and future customers by adding cost-effective natural gas load to the TGI system, and reduces greenhouse gas ("GHG") emissions.

The Company is seeking further approval pursuant to sections 59 to 61 of the Act of General Terms and Conditions ("GT&Cs") that will permit the Company to offer the following NGV fueling services to other future NGV customers:

- compression and dispensing service for CNG fueling ("CNG Service"), and
- transportation, delivery, fuel storage and dispensing service for Liquefied Natural Gas fueling ("LNG Service").

The proposed GT&Cs contain a general description of CNG and LNG Services, require customers to enter into "take-or-pay" (i.e. minimum contract demand) service agreements that are subject to Commission approval, provide for full cost recovery from each NGV customer, and stipulate how the costs of service will be determined under each service agreement. TGI believes that the GT&Cs are just and reasonable and should be approved.

The specific approvals sought in this Application are itemized in Section 8 of the Application. TGI is <u>not</u> seeking any approvals for Energy Efficiency & Conservation ("EEC") funding, O&M

funding for NGV business development, or any costs that are intended to be recoverable from existing natural gas customers.

With respect to process, WM requires service to commence no later than **January 24, 2011**, and accordingly TGI is respectfully requesting that TGI's request for approval of the WM Agreement be considered on an expedited basis. The remainder of the Application, consisting of the section 44.2 acceptance and the approval of GT&Cs, is independent of the WM Agreement approval (as the GT&Cs will be applied to future NGV service agreements only) and can proceed on a non-expedited basis. The proposed process is described in Section 8.5 of this Application and is set out in the draft procedural order in Appendix G. If the Commission is unable to approve the WM Agreement on a permanent basis by **January 14, 2011**, TGI then requests an interim order pursuant to section 89 of the Act on or before **January 14, 2011** approving the WM Agreement on an interim basis pending the final determination of this Application.

1.2 Executive Summary

The proposed CNG Service and LNG Service are natural extensions of the Company's existing service offering to customers. Terasen Gas is in the business of delivering energy to customers in a useable form, meaning that in this instance, natural gas is delivered at the pressure required by end customers to use in whatever application they see fit. TGI's natural gas customers typically require delivery at a low distribution pressure, thereby requiring the Company to install pressure-reducing equipment between transmission and distribution pipes. However, in the case of NGVs, natural gas at the low pressure associated with the Company's distribution system is unsuitable for use; the gas must first be re-compressed or liquefied before it can be used in NGVs. The proposed CNG and LNG Services described generally in Section 2 will allow Terasen Gas to deliver natural gas to these NGV customers at the point of use in a form that is appropriate for their use without additional conditioning or processing.

TGI has previously offered a regulated NGV service. The Company's past NGV initiatives, which ultimately failed to gain lasting traction, included NGV fueling stations and targeted light-duty NGV vehicles served by a public refueling network. By contrast, TGI is now targeting return to base fleets of buses, heavy-duty and vocational trucks. The proposed rate structures require firm "take-or-pay" (i.e. minimum contract demand) commitments, with rates set to recover from the particular customer over the term of the service agreement the cost of investing in and maintaining CNG/LNG facilities located on the customer's property to permit refueling. The specific terms and conditions of service agreements with customers will vary depending on factors such as the project cost of service and other commercial requirements. The WM Agreement provides an illustration of this approach. Going forward, TGI will file for Commission approval each customer-specific service agreement pursuant to sections 59-61 of the Act. The Company expects, however, that the review of these service agreements will be simplified by virtue of the fact that the proposed GT&Cs prescribe how TGI must determine the cost of service and the resulting rates.

Section 3 of this Application outlines several benefits associated with TGI providing the CNG and LNG Services through a business model that relies on Commission-approved firm "take-or-pay" commitments from identified customers, with rates that recover the cost of service from the NGV customer over the term of the service agreement. Briefly, the three key benefits discussed in Section 3 include:

- NGVs represent a currently untapped customer segment that can add high load-factor throughput to make better use of the existing TGI infrastructure. Increasing the throughput in this manner benefits existing and future natural gas customers of Terasen Gas by producing lower delivery rates, all other things being equal;
- There is demand for CNG and LNG Services, as evidenced by the executed contract with WM, a return-to-base fleet owner. For this customer and potential future CNG and LNG Service customers being pursued by TGI, CNG and LNG Services represent an opportunity to reduce fleet operating costs by up to 20 or 30 percent and deliver emission (GHG) reductions in the process; and
- TGI's investment in services that promote the use of natural gas as a substitute for traditional gasoline or diesel fuel is consistent with British Columbia's energy objectives and government policies generally that favour a reduction in GHGs, the use of NGVs, and the promotion of jobs in the Province. British Columbia's energy objectives must be considered in the context of TGI's section 44.2 application for acceptance of expenditures associated with providing the CNG Service to WM.

TGI's provision of regulated CNG and LNG Services as proposed represents an opportunity to promote the NGV market to the benefit of the Company's customers where the market has, thus far, failed to gain traction. TGI's provision of these regulated services is complementary to, and does not preclude, the involvement of other market participants.

Section 4 of the Application examines the WM Agreement for CNG Service. Consistent with the proposed GT&Cs applicable to future customers, the rate charged to this initial customer recovers the project-specific costs of service over the term of the WM Agreement. TGI has also outlined in Sections 4 and 6 how the Company manages the modest risks associated with its investment in the related facilities required to obtain the benefit of the additional load. The terms and conditions of the WM Agreement are just and reasonable, being the product of negotiations between sophisticated parties and providing a net benefit to natural gas ratepayers by charging cost of service based rates.

The Appendices to this Application include information on NGV demand forecasts to provide context for the proposed rate structures.[1] However, the NGV demand forecast is not presented to justify the proposed rate structures, which contemplate investment in each project backed by a "take-or-pay" contract that recovers the cost of service and generates benefits for existing

[1] Some of this information was filed in the 2010 LTRP.

natural gas customers. Service agreements signed on this basis stand on their own regardless of how successful TGI is in developing the NGV market in the long-term.

In summary, the approvals sought in this Application put in place the necessary rate structures for the Company to offer CNG and LNG Services to WM and also to future customers. The GT&Cs require each potential NGV customer to enter into a service agreement that is subject to Commission approval. The WM Agreement reflects these principles. Approving TGI's investment in the WM fueling facilities will not only create benefits to WM but also result in the addition of load to the TGI system to the benefit of all customers, and will advance British Columbia's energy objectives. The business model reflected in the proposed agreement and the GT&Cs is a sound blueprint for the addition of future NGV customers and load in TGI's service territory. TGI submits that the proposed GT&Cs and the WM Agreement are just and reasonable and should be approved as sought pursuant to sections 59 to 61 of the Act. The expenditures required to add this beneficial load are in the public interest and should also be accepted under section 44.2.

1.2.1 THE NEED FOR EXPEDITED APPROVAL OF THE WM AGREEMENT

TGI is respectfully requesting approval of the WM Agreement prior to January 14, 2011. The basis for TGI's request for expedited approval is as follows.

TGI and WM have been negotiating the WM Agreement for some time, and are expecting to have a final agreement very shortly. WM wishes TGI to commence refueling service no later than January 24, 2011. WM's twenty NGV trucks require access to refueling service and TGI's contract with WM, filed as Confidential Appendix D to this Application, commits TGI to providing that service subject to Commission approval. While TGI's obligations under the WM Agreement are conditional upon Commission approval of the WM Agreement, it is of commercial importance for both WM and TGI that the WM Agreement be considered before the planned in-service date of January 24, 2011 so that WM does not experience down time with its NGV trucks and TGI is able to begin charging its "take-or-pay" rate. Such down time would likely result in substantial negative impact on WM, as transportation of solid wastes is WM's core business and the NGV trucks that will be refueled using the CNG Service represent approximately 20% of WM's truck fleet.

The Company submits that the evidentiary record is sufficient at this stage to merit granting approval of the WM Agreement as a Tariff Supplement on a permanent basis. The evidence includes the "take-or-pay" nature of the WM Agreement and the contractual mechanisms in place to reduce TGI's risk (see Section 4). Should the Commission consider that it requires further information, TGI has included in the proposed timeline an expedited initial round of Commission information requests restricted to the terms and conditions of the WM Agreement. The timeline would have responses to those information requests filed by Wednesday, December 22, 2010, or three weeks before the required decision date on the WM Agreement. In the alternative, TGI submits that the Commission should approve the WM Agreement on an interim basis so as to avoid potential harm to WM.

In either case, the approval of the WM Agreement can proceed before the Commission completes its review of the other approvals sought. The proposed GT&Cs will be applied only to future NGV service agreements. The Commission's examination of the nature of the proposed expenditures on the WM facilities, which is covered by the section 44.2 acceptance, is distinct from the issue of whether or not service should be provided to WM under an approved service agreement.

The Company recognizes the difficulties inherent in a compressed timeline, particularly in light of the holiday season. TGI appreciates the Commission's consideration of this request for expedited approval of the WM Agreement, which is prompted by real commercial constraints.

1.2.2 REGULATORY CONTEXT

In the recent Terasen Gas 2010-2011 Revenue Requirements Application ("RRA"), the Company made a number of proposals relating to NGV. focusing on offering a NGV refueling service to customers through a standardized rate based on a model similar to a main extension. During the RRA process, there were indications of some reservations on the part of stakeholders about the possibility of having TGI's current customers fund the growth of such a service. In the subsequent Negotiated Settlement Agreement ("NSA"), the parties agreed as part of an overall compromise that TGI would withdraw those proposals without prejudice, and it was anticipated that TGI would submit an NGV application during the RRA settlement period.

The proposals made in this Application have taken into account concerns voiced during the RRA process. In particular, the CNG and LNG Services are structured in such a way that the Company's current customers bear very little risk of having to fund the costs of this service, while still creating an opportunity for present and future customers to obtain the benefits associated with TGI providing NGV service. These individually negotiated customer contracts also allow for unique customer requirements at this early stage of NGV adoption, as well as unique risk mitigation tools, such as the possibility of requesting that the customer be required to purchase the remaining refueling equipment at the conclusion of the contract if it is not renewed.

Subsequent to the RRA and resulting NSA, the Company also filed the 2010 Long Term Resource Plan in which, at a high level, the impacts of offering the services proposed in this Application were discussed. This resulted in a number of Information Requests ("IRs") from the Commission regarding the proposed structure of the service and the potential volume forecasts. The Company answered these IRs to the best of its ability, but indicated in a number of them that it would be providing more detailed information in an upcoming NGV application. This Application seeks, among other things, to answer any outstanding questions about the nature and impact of TGI's offering of NGV refueling service during the portion of the process centering on the approval of GT&Cs.

1.2.3 NAME, TITLE, AND ADDRESS OF COMPANY CONTACT

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1.2.4 NAME, TITLE, AND ADDRESS OF LEGAL COUNSEL

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1.3 Organization of Application

This Application is organized as follows:

Section 1 Introduction and Executive Summary

Section 2 Rate Proposals For CNG and LNG Service

- The rates required to recover the cost of providing gas to customers at the pressure that makes it useful to them

Section 3 Proposed Service Offering Beneficial to Customers and Supports Energy Objectives

- Government policy guides TGI towards providing this environmentally beneficial service which will also allow for financial benefits to all customers on TGI's delivery system

Section 4 The Waste Management (WM) Agreement

- Details of the WM contract and discussion of what other contracts might include

Section 5 Cost of Service, Accounting Treatment and Rate Design

- Accounting treatment required to ensure that the cost of service is recovered from the contract customer

Section 6 Risks and Risk Mitigation

- TGI has identified risks associated with offering NGV refueling service and has taken steps to mitigate these risks

Section 7 Stakeholder Consultation

- TGI has consulted with affected stakeholders and they are generally supportive of this initiative

Section 8 Approvals Sought

Section 9 Conclusion

2 RATE PROPOSALS FOR CNG AND LNG SERVICE

TGI is seeking Commission approval of the necessary rate structures to permit TGI to provide a complete NGV Service offering, consisting of CNG and LNG Services, in a way that makes sense for both potential NGV customers and TGI's existing customers. The business model reflected in the proposed GT&Cs and the WM Agreement described in Section 4 involves TGI offering CNG or LNG Service only where backed by firm "take-or-pay" commitments (i.e. minimum contract demand) that recover TGI's cost of service over the term of the agreement. This business model represents a notable departure from past NGV initiatives undertaken by the Company, which, while initially successful in reaching the light duty market served by a public fueling network, were not sustainable once market conditions changed (see Section 2.1). The business model proposed and illustrated in this Application will minimize risk to existing customers, while providing them with direct benefits as outlined in Section 3.1. The key objective of the rate structures proposed in this Application is to make natural gas available at the pressure and form required by the transportation sector, thus putting it on a comparable footing to gasoline and diesel from the perspective of potential NGV customers.

This Section describes:

- The underlying business model for CNG & LNG Service, and how it differs from the previous NGV business model;
- The proposed rate structures for CNG and LNG Service, including GT&Cs and service agreements, required to facilitate the "take-or-pay" business model;
- The two complete service offerings that Terasen Gas is proposing for LNG & CNG;
- The scope of Terasen Gas' involvement in the proposed service offerings;
- The importance of making natural gas available to NGV customers at an appropriate pressure, and in a useable form; and
- How TGI will assess future projects under this business model.

2.1 Targeting Fleets and Supported by "Take-or-Pay" Commitments

The rate structures that TGI is proposing for CNG and LNG Service are limited in scope in the sense that they permit TGI to provide service only where there is a "take-or-pay" (i.e. minimum contract demand) commitment from a customer. These rate structures reflect TGI's business model, which is targeting return to base fleet of buses, heavy-duty and vocational trucks. The proposed rate structures, and the underlying business model reflected in those structures, represent a marked departure from the earlier approach adopted in B.C. in the 1990s, which targeted light-duty vehicles served by a public fueling network and ultimately failed to gain traction. The investments required on the part of TGI to facilitate CNG and LNG Services on this new proposed model are relatively modest, and the benefits of providing service are captured with only modest risk to the Company's existing natural gas customers.

2.1.1 PAST BUSINESS MODEL

British Columbia has a long track record of experience with NGVs that dates back over 25 years. TGI previously provided CNG Service as a regulated offering to the NGV market through nearly 20 public and several private CNG fueling stations in B.C. At its peak, NGV demand reached over 1PJ. As discussed in detail in Appendix A, the public fueling network business model has gradually eroded over time in B.C. due to a variety of market conditions. This has resulted in the new approach reflected in the proposed rate structures. What follows is a summary of the history explained in Appendix A-1.

From the mid 1980s to mid 1990s Terasen Gas helped establish the NGV marketplace by installing, owning and maintaining CNG compression and dispensing facilities as a regulated offering at many sites. The Company focused on public fueling stations and charged the retail companies that hosted the CNG fueling station a postage stamp rate for the CNG service. The source of the load was primarily high-mileage light duty vehicle conversions. By 1997 there were 52 private fleet and public access fueling stations that were owned and maintained by either TGI or other third party providers within TGI's service territory with an annual load of 627,000 GJ. In the late 1990's, several original equipment manufacturers[2] ("OEM") providers such as GM, Ford and Chrysler started offering factory-built NGVs and there was a market shift from vehicle conversions to OEM natural gas engines. Ford was the leading supplier of OEM NGVs during this period with several different models available including the Crown Victoria sedan, F-150 pickup and Econoline vans – that were used by taxi companies, municipalities, police forces and utilities.

During the period of 1999 to 2005, Terasen Inc. formed a separate non-regulated company in order to have greater flexibility to grow the NGV market and own and operate natural gas fueling stations across North America. The company acquired the natural gas fueling stations from TGI as well as a third party in B.C. and underwent a number of name changes from 4Pro Systems to eFuels and is now called Clean Energy after merging with Pickens Fuel Corp based out of California during this time period.

However, natural gas consumed by the transportation sector has decreased dramatically since 1992. The peak in 1992 was achieved primarily due to the high level of vehicle conversions and a wide price differential between natural gas and gasoline. Terasen Gas believes the decline in consumption from light duty vehicles over the past ten years is due a number of reasons:

- In the period from 2001 to 2003 the price advantage of natural gas versus conventional fuels narrowed to the point where there was insufficient economic incentive to switch fuels given the differential in capital cost between the two options;[3]

[2] OEM is the industry term to indicate vehicles are available direct from the factory or original equipment manufacturer
[3] See Section 3.2

- Passenger cars and light duty OEM suppliers such as Ford and General Motors withdrew their natural gas vehicle offerings of pickup trucks and vans from the market around 2004;[4]
- Cost of engine conversions for light duty vehicles increased from around $3,000 in the early 1990s to approximately $7,000 - $10,000 at present day;[5]
- B.C. fueling infrastructure was not supported by an 'anchor-tenant' model which has been successful in other jurisdictions.[6] As a result of loss in load, NGV station closures resulted in a decline in customer confidence and convenience for fueling. For instance, five stations were closed in 2007 and eight stations closed in 2010;
- Discontinuation of government incentive programs such as the Natural Resources Canada matching grant program in 2006;[7]
- Introduction of hybrid electric vehicles as competitors within the passenger and light duty segments despite uncertainty surrounding the technology; and
- There were also early generation technology issues with NGVs that have now been resolved.

TGI's proposed service offering intends to build a sustainable platform by having TGI's investment in infrastructure backed by a long-term "take-or-pay" contract that generates direct benefits for existing natural gas customers over the term of the service agreement. Additionally, TGI is now targeting return to base fleets of buses, heavy-duty and vocational trucks that have OEM availability in B.C. rather than targeting light-duty vehicles served by a public fueling network. While the target market is smaller under the proposed rate schedules, it comes with reduced risk of changing market conditions.

2.1.2 TGI ADOPTING A MODEL IN WHICH INVESTMENT SUPPORTED BY FIRM COMMITMENTS

The business model reflected in TGI's proposed rate structures focuses on fleet vehicles that can serve as an anchor tenant to a fueling station and will represent a minimum contract demand over the life of the service agreement. This means a focus on "return to base" commercial vehicles and vehicles that operate between a limited number of destinations (e.g. long haul trucks that travel from point to point). These vehicles can generally be serviced by one or two fueling stations as there is an opportunity to fuel the vehicle when it returns to its base each night.

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[4] New York Times, September 26, 2004 http://www.nytimes.com/2004/09/26/automobiles/26AUTO.html
USA Today, July 5, 2007 http://www.usatoday.com/money/autos/2007-05-08-natural-gas-usat_N.htm

[5] Based on conversations with conversion specialist Excel Fuels Installations. Prices do not include incentive funding, grants, or subsidies.

[6] See Appendix A-2

[7] NGV Annual Report 2007, Order No. G-98-99

At this time, TGI is not targeting vehicles that operate over irregular or changing routes as that business model would require a widespread network of fueling stations. The anchor tenant model can, however, be capitalized to serve a secondary market that operates over a widespread network if the fueling station is built with public access. Eventually, when there are enough anchor tenant fueling stations built, the infrastructure for a wider spread network for a sustainable economic cost can be achieved once again. However, we are not seeking approval related to a rate schedule or postage stamp rate for the secondary market within this Application. TGI would propose any such offering in a future application once there is a sizable market to support such a need.

2.2 Proposed Rate Structures

The proposed rate structures for CNG and LNG Services on the "take-or-pay" business model outlined above consist of two components:

- GT&Cs for CNG and LNG Services; and
- Customer-specific contracts, filed as Tariff Supplements.

TGI provides a high level overview in the following paragraphs, with the details of the rate design being included in Section 5.

2.2.1 GT&CS

The proposed amendments to TGI's GT&Cs contain a new section (Section 12B) for CNG Service and LNG Service, which is included in Appendix B. The GT&Cs in Section 12B set out, in general terms:

- A description of each offering;
- The ownership of assets used in providing the services;
- How the "take-or-pay" rate is to be determined, including the inputs in the cost of service model.

The cost of service model that is outlined in the GT&Cs is described in detail in Section 5 of this Application. At a high level, it captures all of the costs associated with providing service to an NGV customer, and uses those costs to generate a rate that recovers the cost of service from the NGV customer over the term of the service agreement. The intent is to keep other natural gas customers whole. Existing and future customers benefit from the increased natural gas throughput, which produces lower delivery rates all else being equal (see Section 3.1).

2.2.2 CUSTOMER CONTRACTS APPROVED AS TARIFF SUPPLEMENTS

The GT&Cs contemplate that each CNG or NGV Service customer will have its own service agreement that is filed with the Commission as a Tariff Supplement. Under a "take-or–pay" commitment that must form the basis of every service agreement, the customer is obligated to

"pay" for the contracted or committed service even if the amount of service taken (the "take") is lower than the commitment level. As each NGV customer's rates are to be set based on TGI's cost of serving that customer, the rates charged to each customer will differ. Each customer will also have specific requirements that need to be addressed, but must be consistent with the GT&Cs.

The cost of service model generates a levelized 20 year rate that is then converted to an inclining rate structure over time. The rate of increase is fixed through negotiations with the customer and is set at a level that is intended to represent a general escalation factor. The intent is to generate a stable and predictable rate that increases but at a pace that is acceptable to the customer. In addition, the inclining rate reduces the early term rates making it easier for customers to adopt NGVs.

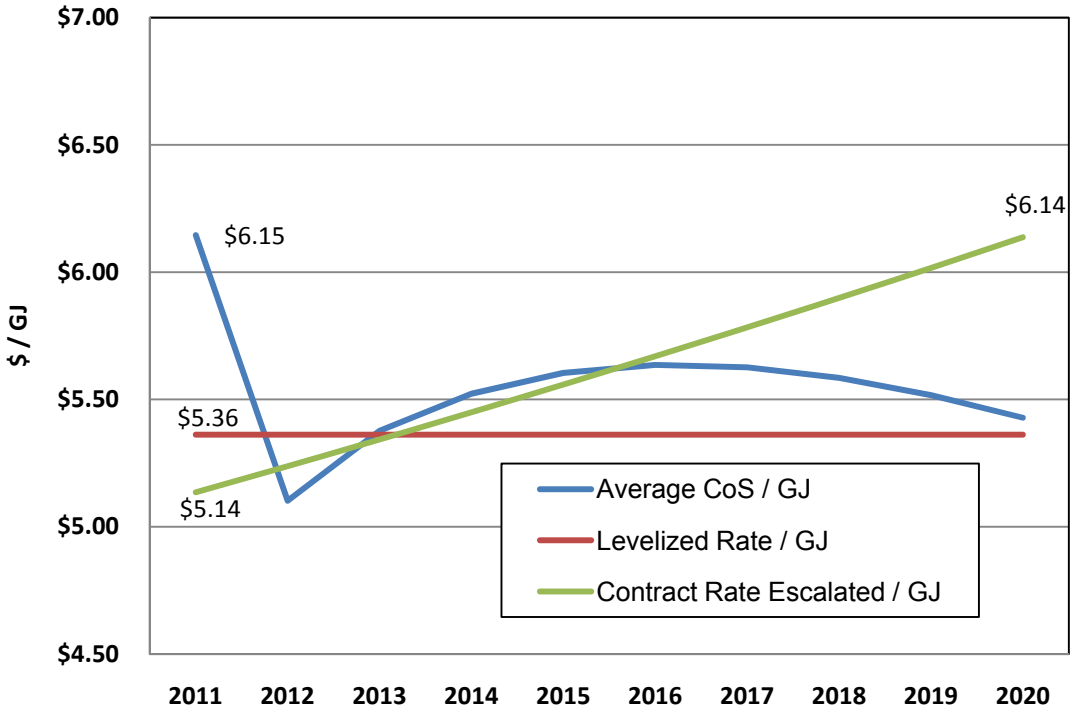
The term of the initial agreement is set to match the lifetime of the fleet of vehicles that will be served by the fueling station, and the customer provides a "take–or-pay" commitment[8] to pay for a minimum amount of natural gas fueling service on a monthly or yearly basis. The life of the vehicles in the projects that Terasen Gas has been targeting ranges from 5 to 10 years; therefore, the term on the initial contract is tied to the life of these assets. After the initial term of the service agreement, the customer may renew the contract at an agreed-to rate with TGI. TGI will be negotiating terms, such as those negotiated with WM (discussed in Section 4) that minimize stranding risk for existing customers both during and at the end of the contract term.

In the event that the customer takes more fuel than required under the service agreement, TGI contemplates that an excess rate be applied for volumes beyond a negotiated level. For example, the charge for excess gas beyond the minimum "take-or-pay" may be set at reduced amount from the "take-or–pay" rate that is established for each customer (i.e. the customer would still pay the same tariff rate for the commodity, but the charge for compression, for example, would be reduced). Contract volume commitments and rates will be unique to each customer, therefore the excess rate charge will also be unique.

An example of the output from the above discussed model is provided in Figure 2-1 below based on project costs for a proposed LNG fueling station (approximately $700,000 capital cost) for a fleet which consumes approximately 17,000 GJ per year.

[8] Based on the COS developed, the customer will be charged a set monthly rate for the fueling station. Volumes over and above the minimum monthly rate will be a per GJ charge.

Figure 2-1: 10 Year Cost of Service with $700,000 station infrastructure



With respect to the example:

- Inclining Rate - The long life of the assets creates a situation where an inclining rate structure is advantageous. The cost of fueling station is a significant element of the cost of delivering fuel to the customer's vehicle. For example, if the fueling service rate is set at $5.14/GJ, the fueling service rate represents $0.20 per diesel litre equivalent. After 10 years of escalation at 2%, the rate would be $0.24 per diesel litre equivalent. Alternatively, if the rate is fixed at $5.36/GJ over the full 10 year life, the rate would be $0.21. The inclining rate structure provides a lower cost in the early years and a higher cost in the latter years for the customer contracting for the service. This difference can be significant depending upon the customer. The inclining rate structure is preferred as it helps encourage early adoption of NGVs.
- Customer Pays – The "take-or–pay" commitment provided by the customer ensures that the customer carries the bulk of the cost and risk associated with the investment. In the example presented above, the customer would be obligated to pay approximately $955,000 over the life of the service agreement. Of the initial $700,000, approximately $364,000 will have been recovered over the initial term strictly from the "take-or–pay" commitment.

- Excess Throughput Rate – In the event the customer throughput exceeds projected volumes by more than 15%, there is potential for the customer to be overcharged for the fueling service. To reduce the potential for overcharging, the fueling service rate will be reduced to 25 - 50% of the base rate for all volumes in excess of 115% of the contracted volume commitment. This approach ensures that the potential to over-recover cost of service is limited.
- Renewals – The initial "take-or–pay" commitment in this example runs for 10 years. Assuming that load remains constant a renewal of the service agreement when the initial set of vehicles is replaced will be required as discussed above.

In summary, the proposed amendments to the GT&Cs establish clear parameters for TGI's CNG and LNG Services, while affording sufficient flexibility to achieve commercial service agreements that make sense from the perspective of both parties.

2.3 CNG & LNG Service Offerings Provide Complete Solution to NGV Customers

The LNG Service, which includes fueling, transportation and delivery, is generally required to support heavy duty tractor-trailers trucking applications, while CNG fueling services are required to support the remaining vehicle operations contemplated as being served by the rates proposed in this Application. The near-term or primary target market is buses and heavy-duty and vocational trucks. The proposed section 12B includes the necessary rate structures to permit the Company to serve both the CNG and LNG vehicle markets. The equipment used in each service offering differs slightly because CNG stations are dispensing compressed gas and LNG stations are dispensing liquefied natural gas at cryogenic temperatures. LNG Service also requires additional transport and delivery of the natural gas to the customer facility. Nevertheless, the concept of a complete service offering is the same in both instances. Both models provide natural gas in a form that is usable to the end customer. In this section, TGI describes the elements of CNG and LNG Services and how the services, combined with existing tariff services, provide a complete service to the customer.

2.3.1 CNG SERVICE OFFERING

The CNG value chain or steps required in order for natural gas to be usable as a transportation fuel is presented below.

Figure 2-3: CNG Model - Proposed CNG Service Offering Makes Sense for the Customer

Step (1) of the value chain is the delivery of natural gas supply to the customer. Terasen Gas currently provides natural gas supply for 16 NGV stations in B.C. through either Rate Schedule 6[9] or Rate Schedule 25[10] (both attached as Appendix C) for the natural gas supply that feeds the rest of the value chain for CNG refueling. Step (2) in the value chain is the compression and dispensing of the natural gas. To provide CNG Service, the gas must be compressed, stored at high pressure ready to be delivered to the vehicle's storage tank. Public stations in Canada dispense CNG at 3,000 pounds per square inch ("psi"). Private stations, such as the ones TGI will be installing, have the option of dispensing CNG at pressures of up to 3,600 psi. There is no risk of over-pressurizing a natural gas vehicle as the connection is designed so that a 3,000 psi vehicle cannot refuel at a 3,600 psi station. Step (3) is the dispensing of the CNG to the vehicle. Step (3), the final step, is the use of CNG in vehicles.

Terasen Gas will target buses, heavy-duty or vocational trucks that are return-to-base fleets and are of a size and volume that can easily be served by an OEM product. The cost of owning and maintaining the station will be built into the cost of service and the customer will pay a per GJ charge for the end use of the fuel which will include the cost of service for the fueling facility.

With this model, TGI will be positioned to offer a complete CNG Service offering to customers by following the steps below:

- The customer executes a service agreement with TGI for the compression and fueling services;
- Terasen Gas invests in meter and main extension[11] and provides gas supply, typically through Rate Schedule 6; and

[9] Rate Schedule 6 is the current tariff for NGV gas supply which allows for the resale of natural gas to transportation customers

[10] There is currently one NGV customer that has chosen to sign up for gas supply under Rate Schedule 25 as they do not have a need to resell the gas to third parties.

[11] Main extensions will be assessed using TGI's Approved MX Test Parameters (Commission Order Number G-152-07)

- Terasen Gas installs and maintains the compression, high pressure storage and dispensing equipment described in the proposed Section 12B of the GT&Cs.

TGI's CNG Service offering includes owning and maintaining the following equipment:

- Compression Equipment - The primary components of a CNG station include one or more gas compressors to take low line pressure gas from the main and compress it up to high pressure to appropriately rated CNG storage vessels.
- Gas dryer/dehydrator – A gas dehydrater, commonly referred to as a gas dryer, may be installed to remove any excess water from the gas. Water in gas stored and dispensed at high pressure could cause freezing at various points along the process.
- High pressure storage – CNG fuel storage tanks are used to store the gas prior to being dispensed into the vehicle.
- Fuel dispensers – The dispensers can be a fast-fill island type dispenser that can fuel a vehicle in 2 to 3 minutes, or a time-fill fueling setup that takes advantage of downtime by fueling overnight, or a combination of the two systems.

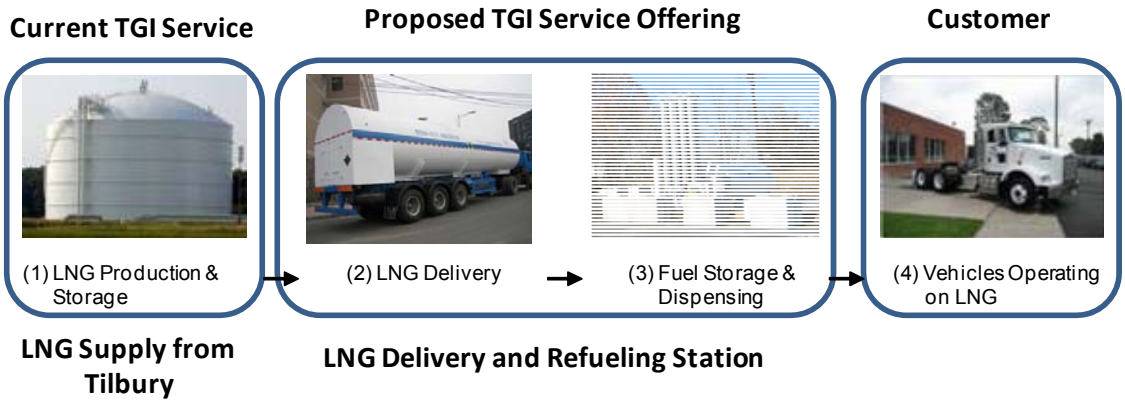
The model allows for the customer to receive a full service offering from TGI.

With this service offering, TGI is endeavoured to stimulate the NGV market and encourage the adoption of natural gas in the transportation market through the development of a sustainable business model and provide a straight forward solution to customers. This service offering does not preclude a third party from offering CNG compression and dispensing service, and Terasen Gas supports other third party investment.

2.3.2 LNG SERVICE OFFERING

LNG is natural gas that has been cooled to -160° Celsius. In order to remain in a liquid state, the LNG must be stored on vehicles and in stations so that it is kept at this low temperature. LNG has greater energy density than CNG and is particularly well-suited for vehicles with high daily mileage requirements such as highway tractors. The value chain for LNG as a transportation fuel is presented below.

Figure 2-4: Proposed LNG Service Offering Completes the LNG Value Chain



Step (1) of the value chain is the physical production and storage of LNG. Terasen Gas currently produces and stores LNG at its Tilbury facility. Terasen Gas has an existing rate schedule to provide LNG supply at Tilbury (Rate Schedule 16), which is included in Appendix C. Under Rate Schedule 16, Terasen Gas can provide LNG to customers in tank truck quantities from the Tilbury LNG bulk storage facility. Step (2) in the value chain is the delivery of LNG to a fueling station for use in the customer fueling station. Step (3) is the fuel storage and dispensing of LNG at a fueling station. Step (4), the final step, is the use of LNG in vehicles.

The proposed LNG Service involves Terasen Gas (1) owning and maintaining the LNG transport and delivery process, if necessary, as well as (2) providing the cryogenic storage and dispensing. In the proposed service offering, transport of the LNG to the end user by tanker truck is necessary in order to serve this market because there is no piped delivery infrastructure for LNG. TGI will offer the transport with its LNG tanker trailers, but customers that are able to meet TGI's safety requirements for LNG transport and delivery may self-provide that portion of the service.

TGI will be able to provide a complete LNG Service offering to the customer by following the below steps:

- Terasen Gas provides LNG supply at Tilbury per Rate Schedule 16;
- Terasen Gas secures a service agreement with the customer for the LNG fueling station, which includes cryogenic storage and dispensing as well as LNG transport and delivery should the customer require transport and delivery of LNG from TGI's LNG facilities to the fueling station; and
- Terasen Gas invests in and maintains the storage and dispensing equipment required for an LNG station.

TGI's LNG Service offering includes owning and maintaining the following equipment:

- LNG tanker(s) – These are required for transport and delivery to the customer's fueling facility as the customer may not be able to self-provide such service;
- Cryogenic storage tank including secondary containment – LNG is delivered into a cryogenic storage vessel. The vessel is of double-wall construction and vacuum insulated with double relief valves and can range in size depending of the fueling requirements of the customer's fleet. The fueling station is built with containment so that the LNG is contained in case of a spill;
- LNG Vaporizer (Saturation Coil) - The vaporizer is designed to saturate the LNG from a low pressure to a higher pressure that is needed for the vehicles;
- LNG Pump - Some configurations may include a separate offload pump; and
- Dispenser - The LNG dispensing hose includes fill /vent connections for the vehicle tank(s).

The cost of owning and maintaining the station will be built into a cost of service (COS) charge recovered from the customer and the customer will pay a per GJ charge for the end use of the fuel. A separate delivery charge will also be created for the transport and delivery of the LNG should the customer require this service.

As with the CNG model, this model does not preclude a third party from owning and maintaining an LNG fueling station or providing the transport and delivery of LNG to a customer to a TGI owned station. TGI supports other third party investment, but this allows for the customer to receive a full service offering from TGI.

2.4 The Importance of Delivering Energy at Appropriate Pressure and in a Usable Form

To serve the transportation sector, which is potentially a significant new customer base for TGI, TGI must be able to make natural gas available at the appropriate pressure and in usable form. The provision of CNG and LNG Services represents a natural extension of TGI's core business. Delivering a complete, and usable, energy offering is key for gaining traction among potential customers in the transportation industry.

2.4.1 THE NGV CUSTOMER'S PERSPECTIVE

The potential NGV customer's perspective is important as NGV Services must compete with the relative ease of access and use associated with gasoline and diesel fuel. Current users of diesel and gasoline technologies enjoy a complete end-to-end service offering, whereby the fueling infrastructure, delivery of the fuel, and operation and maintenance of a station is all taken care of; the customers are only responsible for the purchase of their fuel at the pump. TGI's proposed CNG and LNG Services permit TGI to provide a complete offering that mirrors a fleet customer's current fueling practices. Under the proposed model, all the customer needs to think

about is their vehicle and fuel purchase as is their normal practice. By providing a complete offering, NGV is better able to compete with the traditional fuels.

The task of establishing the fueling infrastructure necessary for a fleet operator to adopt NGV is not trivial and requires experience and expertise with respect to compressed gas facilities and/or cryogenic fuels facilities. The technical scope and complexity of providing the fueling services for natural gas makes it difficult for the average fleet managers to provide such services themselves as they might lack the necessary expertise, capital or time. The business model that is reflected in the rate proposals is thus to provide fueling station assets and delivery services and to recover the associated costs from the customer over the term of the contract.

2.4.2 EXTENSION OF TGI'S NATURAL GAS BUSINESS

The two proposed service offerings, compression and dispensing service for CNG fueling and fuel storage and dispensing service for LNG fueling, are natural extensions of the Company's existing service offering to customers.

Terasen Gas is in the business of delivering energy to customers in a useable form; that is, natural gas is delivered at the pressure required by end customers to use in whatever application they see fit. Many of TGI's large industrial customers, for instance, take natural gas at a high pressure, while TGI's residential customers generally require delivery at a lower pressure consistent with TGI's distribution system. Typically, TGI delivers natural gas at pressures at 7", 14kpa, 35kpa, 70,kpa, 420kpa, and 560kpa; but some customers may require delivery at a specific pressure. As an example, the University of British Columbia requires a delivery pressure of 25 lbs. All pressures require an investment from the Company. The ongoing O&M varies depending on the equipment installed to alter the pressure; however, in all cases the costs of delivering natural gas to these customers at an appropriate pressure are recovered in rates. Extension tests and connection policies are used to ensure that new customers pay the costs of service so that the additional load is beneficial to customers as a whole.

Natural gas at the low pressure associated with the Company's distribution system is unsuitable for use in NGVs. Gas must first be compressed or liquefied before it can be used. The proposed services and associated infrastructure will allow Terasen Gas to deliver natural gas to these NGV customers at the point of use in a form that is appropriate for their use without additional conditioning or processing. The proposed GT&Cs put in place a cost of service recovery mechanism that serves a similar function as the customer connection policies and extension tests – i.e. keeping existing customers whole.

Operationally, the compression that must take place to deliver CNG is very similar to the compression that TGI uses throughout its system. TGI has about 150 compressor stations and thousands of regulator assemblies dedicated to delivering natural gas at a variety of pressures. Terasen Gas also has considerable experience with LNG production, dispensing and transportation of LNG to end use customers. TGI currently owns and operates an LNG peak

shaving facility at the Tilbury LNG site and has another under construction located at Mt. Hayes. In 1997, Terasen Gas received approval from the Commission for Tariff Supplement I-5 Interruptible Liquefied Natural Gas Agreement Between International Forest Products Limited and Terasen Gas Inc. By Commission Order No. G-6-03, Terasen Gas received approval for Tariff Supplement I-5, Amended and Restated Interruptible Liquefied Natural Gas Agreement Between International Forest Products Limited and Terasen Gas Inc., effective November 1, 2002. Commission Order No. G-65-09, issued on June 4, 2009, approved Rate Schedule 16 Interruptible Liquefied Natural Gas Sales and Dispensing Service ("Rate Schedule 16") as a five-year pilot.

TGI's proposed service offering will provide customers with a complete service offering by the provision of the LNG fueling services and the safe and reliable delivery of LNG to the fueling station if required.

2.5 Assessment of Future Projects

At this time, Terasen Gas has entered into discussions with a modest number of other NGV proponents to discuss the adoption of NGV service model similar to the one entered into with WM. TGI's intention is to use the proposed GT&Cs as the basis for negotiating service agreements that will be submitted for Commission approval. As the market develops, there are other rate design options that can be considered. For instance, TGI may propose a postage stamp rate for CNG Service similar to the model that was proposed in the 2010-2011 Revenue Requirement Application at a later date depending on the market size and demand. In the meantime, the approach proposed in this Application will allow for the safe, economic and timely development of additional NGV projects to ensure that demand for NGV and supply of NGV Services are re-introduced in a sustainable manner. Setting clear contract terms and rates, expectations of payback in investment, and a transparent process will mitigate risks and provide a simple process for end-users to take advantage of a complete service offering. TGI's application of the cost of service methodology described in the Section 5, as well as the Company's application of the risk mitigation steps described in this Section 6 of the Application, should permit the efficient Commission review of service agreements when they are filed.

2.6 Conclusion

The service offerings facilitated by the proposed rate structures and amendments to the GT&Cs will allow for the safe delivery of natural gas to the end user in a usable form. The business model of providing service to fleets, backed by "take-or-pay" contracts, means that there is only modest risk associated with investing in the necessary infrastructure to provide the service. TGI believes that, ultimately, the offerings will encourage the adoption of NGV as a transportation fuel and help to promote market transformation. The benefits associated with TGI offering CNG and LNG Services pursuant to the proposed amendments to the GT&Cs are detailed in Section 3.0.

3 PROPOSED SERVICE OFFERING BENEFICIAL TO CUSTOMERS AND SUPPORTS ENERGY OBJECTIVES

As discussed in Section 2 of this Application, offering LNG and CNG Services requires some investment in fueling infrastructure, the cost of which is to be recovered through contractual rates charged to the NGV customer. TGI's investment in infrastructure backed by a long-term "take-or-pay" contract generates immediate and direct benefits not only for the NGV customer but also for existing natural gas customers and British Columbians generally. Over the longer term, TGI's involvement as a market participant promotes the efficient development of natural gas as a transportation fuel,and will help stimulate the market, which does not appear to be gaining any traction without TGI's involvement, while continuing to accommodate other companies that may wish to offer the same service.

This section discusses three key reasons why it is in the public interest for TGI to invest in the necessary fueling infrastructure where the investment is backed by a multi-year "take or pay" contract. In particular:

1. Section 3.1 discusses how the addition of natural gas transportation load associated with a new NGV contract provides an immediate benefit to existing and new gas customers through lower delivery rates all else equal. Over time, the addition of NGV load has the potential to be a significant benefit to existing and future natural gas customers, which are being faced with declining load from traditional end uses.
2. Section 3.2 discusses how potential NGV customers benefit from accessing natural gas in a usable form from TGI in addition to other potential NGV providers. These benefits include:
    a) NGV customers can enjoy a fuel price differential compared to diesel or gasoline;
    b) Natural gas experiences more price stability; and
    c) Customers can reduce their carbon footprint.
3. Section 3.3 outlines how TGI's investment in fueling facilities that will enable a fleet to be converted to NGV supports government policy and, specifically, British Columbia's energy objectives. Federal, provincial, regional, and municipal governments are increasingly focused on addressing climate change and pollution. Governments at all levels are adopting policies in favour of lower carbon energy forms as a key part of the solution to help achieve these goals.

The proposed rate structures, which contemplate investment in projects backed by "take-or-pay" service agreements, generate immediate benefits for existing natural gas customers and stand on their own regardless of how successful TGI is in developing the NGV market in the long-term.

3.1 Existing Customers Benefit From Increased Throughput

NGVs represent a currently untapped customer segment that can add high load-factor throughput to make better use of the existing TGI infrastructure. Terasen Gas customers will achieve lower delivery rate benefits, all else being equal, as a result of the increased throughput on the system that is attributable to the NGV fueling service. As with any instance where cost effective load is added, each "take-or-pay" service agreement incorporates rates that recover the cost of providing service and thus confers a direct benefit on existing and future natural gas customers. While individual agreements will not, in isolation, result in material changes in delivery rates, TGI believes that there is significant market potential for NGVs in British Columbia (see Appendix A) and thus significant possible future benefits for existing and future natural gas customers.

In this Section, TGI:

- Explains how the addition of cost-effective load reduces delivery rates, all else being equal;
- Puts the WM Agreement into perspective in terms of the amount of load it is adding to the system for the benefit of all customers; and
- Provides some information about the potential benefit in terms of reduced delivery rates that could be achieved over time by adding NGV load.

3.1.1 ADDITION OF COST EFFECTIVE LOAD REDUCES DELIVERY RATES

As with any instance where cost-effective load is added, each "take-or-pay" service agreement incorporating rates that recover the cost of providing service confers a direct benefit on existing and future customers. The Company has been experiencing a trend towards lower use per customer in recent years, which results in upward pressure on delivery rates, all other things being equal. This occurs by virtue of the fact that the revenue requirement is shared over fewer GJs of throughput. NGV load will serve to mitigate some of the delivery rate pressure that existing customers may face in years to come as natural gas demand for heating declines. Moreover, NGV load tends to be more year-round in nature than low load factor space heating, which is the dominant contributor to demand in the residential and commercial customer segments. TGI has developed the cost of service model and rate structures to ensure that NGV load is cost-effective and thus beneficial to existing and future customers.

3.1.2 WM AGREEMENT IN PERSPECTIVE

Although individual agreements with an NGV customer will not, in isolation, result in material changes in delivery rates, it is useful to put these agreements in the context of how the added load compares in terms of residential customer additions. As an illustration, the WM Agreement described in detail in Section 4 is expected to add approximately 21,000 GJ of load per year, with Waste Management paying for the incremental cost of service.

The addition of 21,000 GJ per year is the equivalent of TGI adding 221 average Lower Mainland residential customers (assuming residential use rates of 95 GJ / yr). One natural gas garbage truck, for example, is akin to adding 10 of these average residential customers. In 2009, the Terasen Utilities will add just over 8,000 residential customers representing approximately 760,000 GJs[12]. The annual load under the WM Agreement alone will represent 3% of the residential load added in 2009. Put another way, TGI would need only 36 NGV stations with the same "take-or-pay" demand as the WM Agreement to add, on an annual basis, the equivalent residential load added in all of 2009. These figures illustrate why it is important for TGI to provide a service offering for NGVs that will help to add load.

3.1.3 POTENTIAL DELIVERY RATE BENEFIT OVER TIME

TGI has performed an analysis of the long-term potential NGV market in B.C. and the impact various demand scenarios could have on rates (all other things being equal). The impact under each scenario will be further discussed.

TGI's demand forecasts for NGV were addressed in the 2010 LTRP, and the Company is including them in this context only to illustrate how added NGV load can translate into benefits for existing and future customers. The Company believes that since the proposed rate structures contemplate investments backed by "take-or-pay" commitments from customers that will cover the incremental cost of service, it is unnecessary for the purposes of this Application to assess the reliability of the long-term demand forecasts.

3.1.3.1 Demand Forecast Scenarios

As detailed in Appendix A-1 Demand Forecast as well as the Terasen Utilities 2010 Long Term Resource Plan[13], Terasen Gas forecasts that by 2030 there is market potential for:[14]

- 30 PJ of total energy use under the Reference Case which targets Buses and Medium and Heavy Duty Trucks;
- 13 PJ of total energy use under the Low Growth scenario targeting only Heavy Duty Trucks; and
- 36 PJ of total energy use under the Reference Case Plus Passenger Growth scenario.

30 PJ of natural gas demand for transportation represents about 6.5% of the Company's target transportation market (458 PJ) in 2030.[15] For illustration purposes, TGI will use those demand forecasts for calculating the potential favourable impact on delivery rates associated with NGV

[12] Assuming a Lower Mainland residential use rate of 95 GJs / year
[13] In addition to the information filed previously in the Terasen Utilities 2010 Long Term Resource Plan, TGI has expanded upon the previously-filed data to include a NGV station and station capital forecast.
[14] Scenario forecasts are expressed as rounded totals. Please see Appendix A-1 for actual data.
[15] Estimation based on the assumption that the current target market size grows at approximately 2% per year, equal to rate of GDP growth, based on current 5 year B.C. Ministry of Finance GDP forecast. See Appendix A-1 for the detailed analysis.

load. It should be noted, however, that the portion of the NGV market that is targeted by the proposed CNG and LNG Services is only a subset of this demand. NGV offerings would ultimately have to extend beyond the proposed offering to capture the full extent of the demand forecast.

3.1.3.2 Methodology for Calculating the Favourable Impact on Delivery Rates

Terasen Gas has used the projected increases in natural gas system load for each of the three scenarios (Reference Case, Low Growth, and Reference Case plus Passenger) as identified in Appendix A to calculate the impact to revenue requirements and the corresponding impact to Terasen Gas delivery rates under each scenario.[16] To determine the incremental revenue requirement benefit, Terasen Gas multiplied the volumes in each of the three scenarios by the approved 2011 volumetric delivery rates for three rate schedules. Each of the target market categories described in Appendix A are listed below in Table 3-1 and were assigned to an existing TGI Rate Schedule.[17]

The revenue requirement benefit represents the increase in delivery margin from the incremental volumes associated with the NGV fueling service and is offset by the cost of service of the forecast EEC innovative technologies funding attributable to NGV fueling service. As the incremental cost of service for adding an NGV customer (e.g. dispensing infrastructure) is paid by the NGV customer, this is not a factor in the calculations.

The table below demonstrates the annual benefit that existing gas customers experience in each of the three scenarios.

Table 3-1: All Customers Benefit from Increased Throughput

Impact to Existing Natural Gas Customers: NGV Refuelling Service	**2012**	**2015**	**2020**	**2025**	**2030**
Forecast Revenue Requirement Reduction (Increase), $000's					
Reference Case	384	2,285	12,501	39,829	82,451
Low Growth	308	730	5,059	15,865	33,377
Plus Passenger	421	2,650	17,973	50,773	104,339
Approximate Annual Delivery Rate (Decrease) Increase, %					
Reference Case	-0.07%	-0.42%	-2.31%	-7.36%	-15.24%
Low Growth	-0.06%	-0.14%	-0.94%	-2.93%	-6.17%
Plus Passenger	-0.08%	-0.49%	-3.32%	-9.38%	-19.29%

[16] Please see Appendix A-1 for the detailed analysis. The analysis excludes current transportation load in 2010 of 211,939 GJ from each scenario.

[17] Please see Appendix A-1 for the detailed analysis. In general, Transportation Rate Schedules have the following definitions:
Rate Schedule 6 (NGV Vehicle Service) – CNG service, no minimum GJ
Rate Schedule 16 (LNG Sales and Dispensing Service) – sale of LNG, maximum of 1,040 GJ/day
Rate Schedule 25 (General Firm Transportation Service) – CNG service, greater than or equal to 6,000 GJ per month. While other Transportation Rate Schedules exist (22, 23, 26, and 27) this analysis only considers the three for simplicity.

The results are consistent in all three demand forecast scenarios: increased throughput from the NGV fueling service results in a favorable reduction in delivery rates for Terasen Gas existing natural gas customers, all other things being equal. Under the Reference Case, existing natural gas customers benefit with a significant 15.2% reduction, or $82.5 million, in delivery rates in 2030. In today's dollars, this is an approximate revenue requirement reduction of $22.0 million.

Terasen Gas believes that the Reference Case scenario is the most likely of the three NGV demand scenarios developed, as it is based on the current positive external opportunity for increased adoption of NGV solutions as described above. This scenario is based on the best possible information available today on expected vehicle growth in the defined target segments, continued incentive funding expectations, favourable natural gas prices and availability of fueling infrastructure. The assumptions underlying this scenario are:

1. Adoption of NGV solutions over the long-term across all the identified target market segments except passenger cars;[18]
2. Incentive funding[19] will continue to be a driver to reduce the initial incremental capital cost across the entire target market segments excluding passenger cars;
3. In the later years, there is increased adoption and uptake of NGVs from the success of the initial pilot projects;
4. Public policy will continue to support the use of natural gas as a transportation fuel to meet climate action legislative targets;
5. Natural gas commodity prices will continue to maintain or increase its advantage against conventional fuel types as more shale gas comes online;
6. Economies of scale from OEM vehicle manufacturers and station manufacturers will help push the initial capital costs for natural gas fuelled equipment down over the longer term;
7. Availability of targeted fueling infrastructure supports the expected demand and uptake;
8. OEM vehicles and improvements in conversion technology are available across light duty and medium duty vehicles.

The Reference Case forecasts a demand of 34,540 NGVs by the end of 2030, which would require an estimated 405 stations to provide fueling service. Of those stations, 143 would provide LNG service and the remaining 262 CNG service.[20] The composition of NGVs is shown Appendix A, and a summary of the station infrastructure is shown in Table 3-2.

[18] Passenger vehicles are not pursued as a near-term target by Terasen Gas due to their low fuel consumption and limited fueling infrastructure, and thus a limited economic incentive to switch from gasoline to natural gas.
[19] From Terasen Gas EEC Innovative Technologies and potential government sources.
[20] Please see Appendix A-1, Section 2.2.1 for the fuel type consumption assumptions for each vehicle category

Table 3-2: Reference Case demand for 405 total fueling stations by 2030

Category	Total Number of New Stations - Reference Case				
	2011	2015	2020	2025	2030
Light Duty Trucks (CNG)	-	5	51	91	158
Medium Duty Trucks (CNG)	-	1	8	20	25
Heavy Vocational Trucks (CNG)	1	4	17	41	61
Heavy Duty Trucks (LNG)	1	7	30	68	118
Buses (CNG)	1	4	12	15	20
Marine Vessels (LNG)	-	1	4	13	23
Cumulative Total:	3	23	122	248	405

Note: Does not include existing public or private stations in B.C.

The delivery rate benefit associated with NGV fueling service will serve to mitigate some of the delivery rate pressure that existing customers may face in years to come as a result of natural gas demand declines. Furthermore, increasing NGV load offers additional benefits to the natural gas system as NGV load tends to be more year-round in nature than low load factor space heating which is the dominant contributor to demand in the residential and commercial customer segments. TGI's near-term target market that could be served by an anchor tenant model is a subset of this demand forecast, therefore TGI would seek Commission approval to pursue other business models to serve NGV demand should the demand for other models materialize.

3.1.4 CONCLUSION

The changing nature of market conditions for NGV solutions in B.C. has opened up an important new target customer segment for Terasen Gas. However, significant NGV adoption is unlikely to occur in the province unless adequate station infrastructure is provided. Terasen Gas can serve a sub-set of NGV demand on a low-risk basis whereby the NGV customer pays on a "take-or-pay" basis for the incremental cost of service associated with installing a fueling station. The proposed WM Agreement is an illustration of this approach. Any future initiatives to expand the Company's basis for serving NGVs beyond the proposed "take-or-pay" contractual model would be submitted to the Commission for consideration. Ultimately, all TGI customers will benefit from lower delivery rates as a result of the increased throughput on the system that is attributable to the CNG and LNG Services proposed in this Application.

3.2 Benefit to NGV Customers

In the previous Section, TGI explained the benefits of additional NGV load for all existing and future customers through reduced delivery rates, all else equal. The proposed offerings also directly benefit potential NGV customers. Potential customers in the transportation industry that are able to adopt NGV technology can achieve some important benefits, including:

- Operating cost savings;
- Reduced fuel cost volatility as compared to diesel and gasoline; and
- Reduced GHG emissions.

The unavailability of fueling infrastructure and a secure supply of CNG or LNG currently represents an obstacle to customers' adoption of NGV technology. TGI, by providing access to fueling infrastructure and a secure supply of CNG or LNG pursuant to the proposed rate offerings, removes that obstacle.

In this Section, TGI will address the three key benefits, identified above, that potential customers such as Waste Management will see as a result of TGI's CNG and LNG Service offering.

3.2.1 OPERATING COST SAVINGS

Terasen Gas has performed an analysis of the up front cost of NGVs (either OEM NGVs or after market conversions) and the savings in operating costs associated with NGVs over time. The results of that analysis demonstrate that the adoption of NGVs can be beneficial to the customer. TGI discusses the elements of its analysis below.

3.2.1.1 Cost of NGVs to Customer

At present, OEM NGVs command a price premium over their conventional fuelled equivalents. The below Table 3-4 shows this price differential of each target market segment. In general, this premium is recovered over time through the fuel savings of natural gas. Depending on fuel consumption, a typical payback would be between 4-6 years for heavy-duty trucks. The table also shows today's approximate cost of engine conversion (using after market conversion kits) for use in Light and Medium Duty vehicles. This cost has increased significantly from the $2,000 - $3,000 per installation in the late 1990s.[21]

[21] Based on conversations with conversion specialist Excel Fuels Installations. Prices do not include incentive funding, grants, or subsidies.

Table 3-4: NGVs Price Premium over Conventional Vehicles

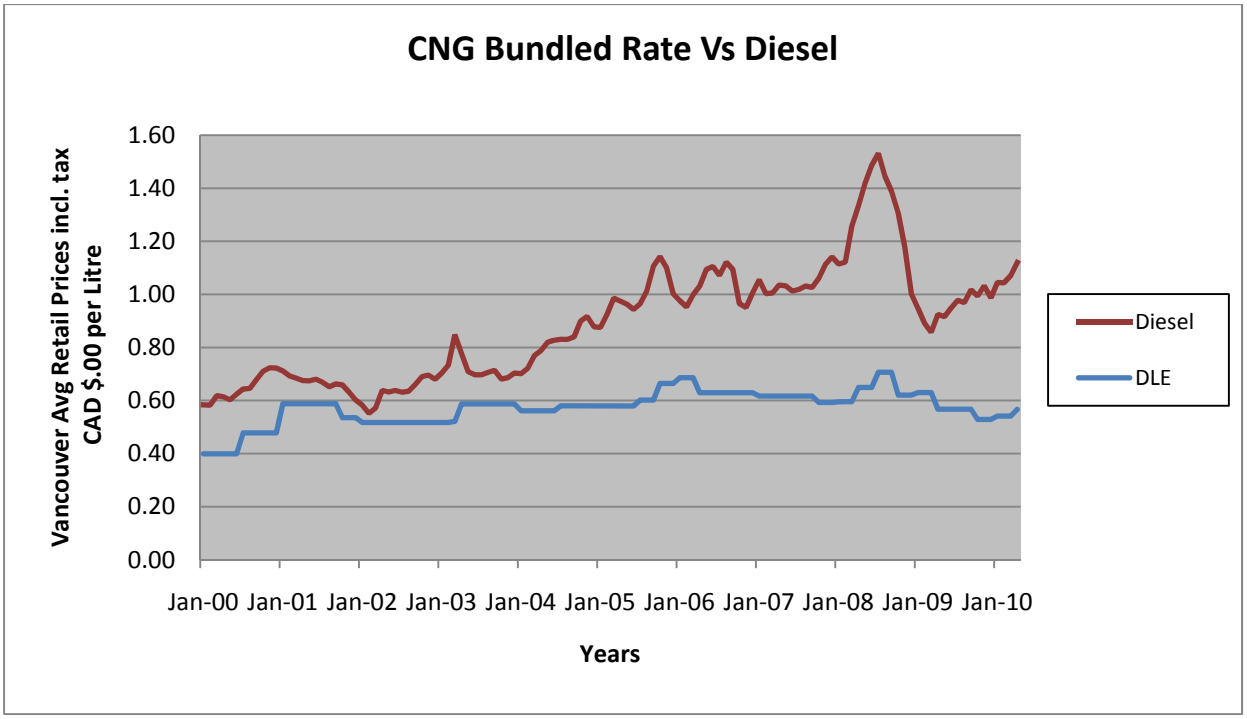
	Conventional Vehicle			Natural Gas Vehicle			NGV
Vehicle Category	**Product**	**Fuel Type**	**MSRP**	**Product**	**Fuel Type**	**MSRP**	**Price Premium**
Passenger Car	Honda Civic	gasoline	$20,820	Honda Civic GX	CNG	$29,600	$8,780
Light Duty Vehicle	engine conversion	diesel	-	engine conversion	CNG	$5,000 to $7,000	$5,000 to $7,000
Medium Duty Vehicle	engine conversion	diesel	-	engine conversion	CNG	$8,000 to $10,000	$8,000 to $10,000
Heavy Duty Vehicle	vocational truck	diesel	$250,000	vocational truck ISL - G	CNG	$305,000	$55,000
Heavy Duty Vehicle	tri-drive tractor	diesel	$145,000	tri-drive tractor GX	LNG	$223,000	$78,000
Transit Bus	New Flyer	diesel	$435,000	New Flyer CNG	CNG	$504,000	$69,000

3.2.1.2 Pricing Comparisons Between Fuels

Natural gas has historically enjoyed a pricing advantage over other motor vehicle fuels (diesel and gasoline). The operating cost savings attributable to the favourable price differential between natural gas and other motor vehicle fuels create the opportunity for overall savings for customers, despite the relatively higher cost of OEM NGVs and after market conversions. As an illustration, TGI explains in this section the magnitude of the differential between CNG and diesel, and CNG and gasoline, in previous years, and how that would have translated into savings for customers. The market indications show that natural gas is likely to retain its price advantage over incumbent fuels for the foreseeable future, meaning that this opportunity for customers to benefit will continue to exist provided the appropriate NGV fueling infrastructure is in place to serve these customers.

Figure 3-1 below illustrates the advantage of natural gas over diesel over the past 10 years. In the period between 2001 and 2003 the gap narrowed to the point where it became difficult to pay back the incremental cost of the NGVs. Since 2005, however, the gap has widened.

Figure 3-1: Proposed Offering Would Have Historically Beaten Diesel on Price



Notes:

- Average pump prices for low sulphur diesel in Vancouver include all applicable taxes. Terasen Gas CNG prices include $5 per GJ compression charge and applicable Rate Riders.
- CNG pricing is based on Rate Schedule 6 historical pricing with an additional $5/GJ to cover the costs associated with compression and dispensing the fuel.
- CNG pricing is converted to Diesel Litre Equivalent basis for ease of comparison to diesel. The conversion is based on energy content values published in the NRCan GHGenius model[22]. (Diesel at 38.653 MJ/litre – yields conversion factor of 25.9)

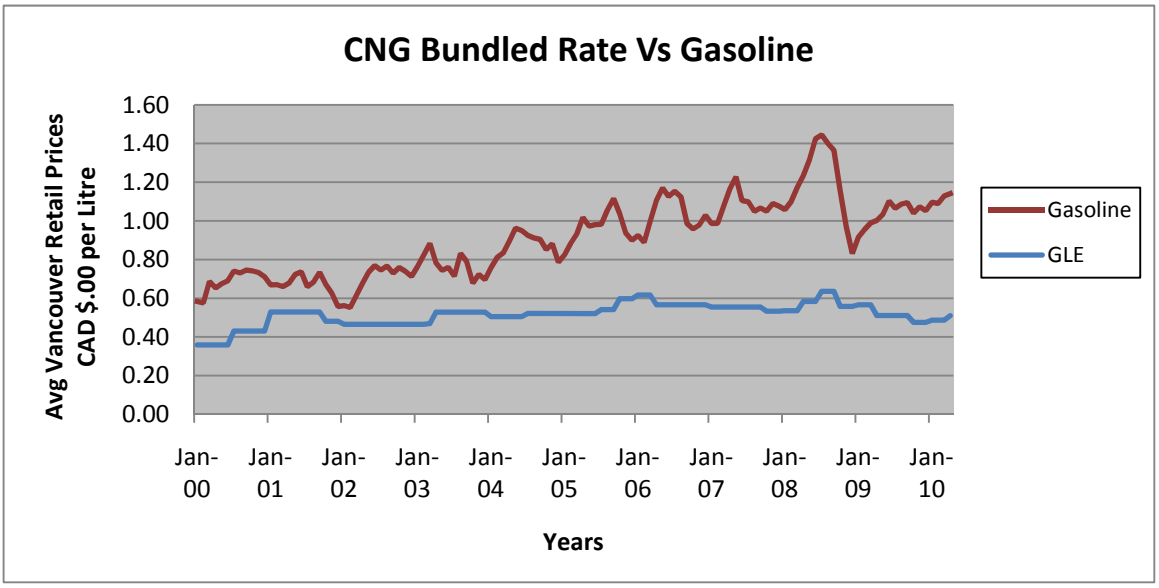
The graph shown above in Figure 3-1 demonstrates that a CNG offering as proposed in this Application, if priced at approximately $5/GJ, would have consistently been less expensive than diesel for the entire preceding decade. The $5/GJ is an approximation based on a high-level analysis of the cost of service of many large NGV projects.[23] Such an offering would currently have a price advantage over diesel of approximately $0.40/litre, or 40% as of the date of the filing of this Application. These fuel savings can offset the upfront price premium for NGVs (see Table 3-4) over time. The typical payback for a heavy duty fleet operator switching from diesel

[22] http://www.ghgenius.ca/downloads.php
[23] Terasen Gas has selected $5/GJ based on historic diesel fuel consumption and fueling station capital cost estimates provided by large fleet operators in BC. The proposed rate structure is described in Section 2 of this Application.

to CNG is approximately four to six years. The combined price advantage and stability is something that Terasen Gas believes would be very attractive to fleet managers.

TGI's near-term focus is commercial, return-to-base, heavy duty fleet vehicles which operate on diesel. Since there are a number of return-to-base fleets which also run light duty vehicles on gasoline, a comparison of CNG versus gasoline is also included. Figure 3-2 below illustrates the advantage of natural gas over gasoline over the past 10 years. In the period between 2001 and 2003 the gap narrowed to the point where it became difficult to pay back the incremental cost of the NGVs. Since 2005, however the gap has widened.

Figure 3-2: Proposed Offering Would Have Historically Beaten Gasoline on Price



Notes:

- Average pump prices for regular unleaded gasoline in Vancouver include all applicable taxes. Terasen Gas CNG prices include $5 per GJ compression charge and applicable Rate Riders.
- CNG pricing is based on Rate Schedule 6 historical pricing with an additional $5/GJ to cover the costs associated with compression and dispensing the fuel.
- CNG pricing is converted to Gasoline Litre Equivalent basis for ease of comparison to diesel. The conversion is based on energy content values published in the NRCan GHGenius model[24]. (Gasoline at 34.686 MJ/litre – yields conversion factor of 28.8)

The graph shown above in Figure 3-2 demonstrates that a CNG Service offering as proposed in this Application, if priced at approximately $5/GJ, would have consistently been less expensive than gasoline for the entire preceding decade. Such an offering would currently have a price advantage over gasoline of approximately $0.60/litre, or 55% as of the date of the filing of this Application, even more significant than the price advantage of natural gas over diesel. The

[24] ibid

typical payback period for light duty NGVs is generally longer than heavy duty NGVs. This is one reason why light duty vehicles are not part of TGI's near-term target market.[25] The combined price advantage and stability is something that Terasen Gas believes would be very attractive to fleet managers.

3.2.1.3 Natural Gas Likely to Maintain Price Advantage Over Diesel Oil

The market indications, as reflected in the forward market prices, show that natural gas is likely to retain its price advantage over incumbent fuels for the foreseeable future, meaning that the payback period remains favourable for the adoption of NGV in place of diesel.

Historically natural gas prices have been heavily influenced by oil prices due to the short term substitutability of crude oil products, such as fuel oil, with natural gas for industrial and commercial processes and electricity generation. As illustrated in Figure 3-3[26], price fluctuations in crude oil prices can have major impacts on natural gas prices regardless of the fundamental supply and demand factors that underpin gas prices. This was observed during mid-2008 when crude oil rallied to over $145 US per barrel by July, pulling up natural gas prices to almost $14 US/MMBtu. Prior to this time, natural gas prices were typically bounded by fuel oil as the ceiling and heating oil as the floor, and breakouts from this range were seldom. During the hurricane season of 2005, hurricanes Katrina and Rita disrupted natural gas production in the Gulf of Mexico to such an extent that natural gas prices temporarily rose above heating oil prices.

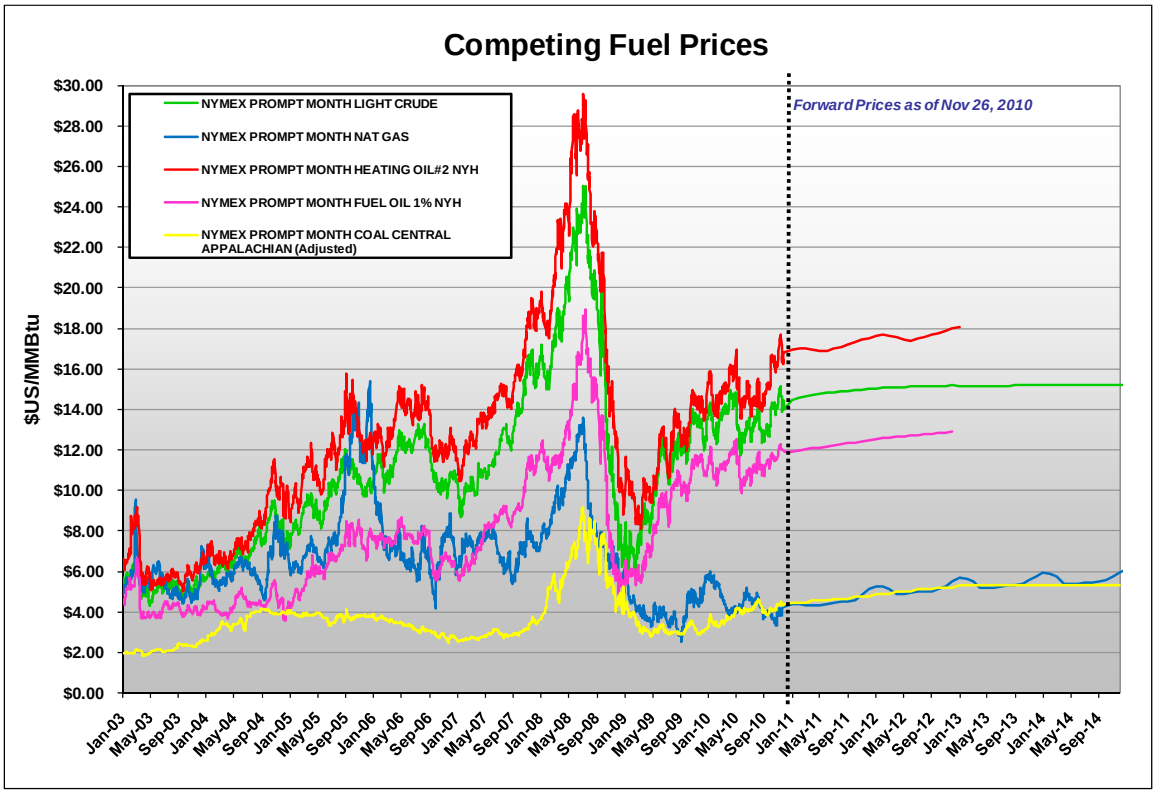
Since the collapse of oil prices after mid 2008, natural gas prices have disconnected from oil and related oil product prices. Natural gas prices have traded below those of fuel oil and the ratio of natural gas to oil prices has widened from the historical average of about ten to one to about twenty to one. The reason for this disconnection lies with the supply and demand balances for natural gas and crude oil. Natural gas is based on supply and demand factors in North America. Currently, natural gas prices are the lowest in many years due to weakened industrial demand due to the recent recession and strong production from unconventional (especially shale gas) supplies. Crude oil, on the other hand, is a globally traded commodity, and prices are dependent on international supply and demand factors. Currently, the crude oil supply and demand balance is tight, meaning that demand is strong relative to available supply. Strong economic growth from China and India has increased the demand for oil in recent years. Furthermore, geopolitical events affecting global crude oil supply have created a risk premium associated with crude oil, somewhat inflated prices. Examples of geopolitical risks include disruptions by Nigerian militants on pipeline infrastructure, tensions between Iran and the U.S. over Iran's nuclear program and conflicts between North and South Korea. Furthermore, the Organization of Petroleum Exporting Countries' ("OPEC") influence on supply and oil prices is also significant. OPEC has indicated that its preference is for crude oil prices to remain near

[25] Please see Appendix A-1 for additional details
[26] As presented on page 19 of the Terasen Utilities 2010 Long Term Resource Plan

$80 US per barrel. Any significant deviations in crude oil prices from this level are likely to be met with supply adjustments by OPEC.

Consequently, with depressed natural gas prices, the price of coal is becoming increasingly relevant by acting as the floor for natural gas prices due to the ability of many power generators to switch between coal and gas fired electric generation.

Figure 3-3: Historic and Settled Future Commodity Prices – Oil and Natural Gas



As can be seen from the above graphs in Figure 3-1, Figure 3-2 and Figure 3-3, the market indications, as reflected by forward prices, show that natural gas is likely to retain its price advantage over incumbent fuels for the foreseeable future. Natural gas production declines in 2011 in response to low gas prices, recovery in industrial demand, growth in power generation demand and stricter environmental regulations placed on coal-fired generation going forward may lead to higher gas prices in the future. Furthermore, because of these factors, the natural gas supply and demand balance may be tighter in the future than it is currently and periods of price spikes due to supply disruptions or weather events may occur. However, because of the different supply and demand factors that influence natural gas and oil prices, natural gas is likely to retain its price advantage, on average, over oil and related product prices for the foreseeable future.

3.2.2 REGULATED PRICE OF CNG AND LNG IS LIKELY TO BE LESS VOLATILE THAN PRICE OF DIESEL OR GASOLINE

The second key benefit associated with NGV service offered by TGI is that it tends to be subject to less price volatility than diesel or gasoline. Although the underlying volatility of natural gas , oil and gasoline made similar, how these prices get reflect to customers may be somewhat different. For example, the NGV service relates to the fact that the regulated commodity and delivery rates under Rate Schedule 6 are set on a quarterly and annual basis, whereas diesel and gasoline are priced according to constant fluctuation more akin to a spot market. For fleet operators, a fixed fueling charge[27] such as $5 / GJ contributes to a smoother, more predictable net fuel price on a diesel litre equivalent basis.[28]

3.2.3 COMPETITIVE ADVANTAGE DUE TO ENVIRONMENTAL BENEFITS

There will be businesses that wish to employ measures to reduce their carbon footprint as a matter of principle. TGI's service offerings provide an option for these customers. Further, the reduced carbon output associated with CNG and LNG relative to diesel may also create competitive advantages that complement the fuel cost savings outlined above.

Businesses may be able to capitalize on the reduced carbon footprint for marketing purposes. An increasing number of municipalities and businesses have introduced procurement policies which favour clean air standards for garbage trucks and refuse haulers. Fleet operators running NGVs may hold a significant advantage in winning competitive bid contracts due to the GHG savings associated with NGVs.[29]

On that same note, other organizations may be interested in the reduced GHG emissions for their fleet in order to reduce their carbon footprint for compliance purposes, such as a public service organizations or municipalities that have signed on to be carbon neutral.

3.2.3.1 Ownership and Value of Carbon Credits

There may be additional value in monetizing GHG emission reductions as offsets should there be a suitable protocol for fuel switching from a higher carbon fuel such as diesel to natural gas. Current industry practice would see the benefit of the GHG emission reductions be attributed to the customer whose carbon footprint is being reduced, which, in this case, would be the end user. It is unlikely that validating and verifying emission reductions on an individual project basis would be cost effective for participating customers. Therefore, TGI may consider negotiating in future NGV agreements that Terasen Gas is entitled to any GHG emission

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[27] Fueling charge would typically escalate at 2% per year over the term of the service agreement. Please refer to Section 2 of this Application for more details.

[28] The Company's response to BCUC IRs 1.11.1 and 1.11.2 in the 2010 Long Term Resource Plan proceeding contained additional detailed analysis of this price relationship.

[29] One large fleet operator, Waste Management stated "clients that want us to associate with us if we undertake these kinds of green initiatives. It's a competitive differentiator for us." http://www.vancouversun.com/news/Waste+Management+converting+garbage+trucks+from+diesel+natural/3590341/story.html#ixzz15ffJ5LPU

reductions as a result of the provision of the proposed NGV service offerings or EEC incentives for NGVs. Therefore, if multiple projects qualify, TGI could undertake, on an aggregate basis, third party validation and verification and the establishment of accepted protocols for these projects. Treatment of any carbon credits resulting from TGI's proposed NGV service offering or EEC NGV initiatives has not been resolved at this time.

3.2.4 SUMMARY

In summary, the expansion of NGV service offerings will be beneficial to potential NGV customers. The economic advantage of natural gas over conventional fuels is large and growing. Natural gas market fundamentals support the continuation of this economic advantage. The volatility of natural gas pricing under Rate Schedule 6 is less than gasoline or diesel pricing. The fact that NGV is a lower carbon alternative to diesel may create further competitive advantage for NGV operators that complement the fuel cost savings. These advantages all speak to the suitability of the Company providing an alternative that will permit more BC fleets to adopt NGV.

3.3 Proposed NGV Services Support B.C.'s Energy Objectives

The Company's proposed CNG and LNG Services require some investment in facilities, the cost of which is recovered in the contractual rates charged to the NGV customers using the facilities. In this Application, which is the first of such investments, TGI is seeking a section 44.2 "public interest" approval for the expenditures associated with the WM Agreement. The Commission, in considering the section 44.2 approval that the Company is seeking in respect of the Waste Management facilities, must consider "British Columbia's energy objectives" as defined by the *Clean Energy Act ("CEA")*. Other government policy provides context as well. TGI's investment to facilitate the WM Agreement supports British Columbia's energy objectives and government policy generally, primarily by promoting the adoption of NGVs and facilitating a reduction in Waste Management's GHG emissions[30]. TGI's future investments in refueling stations for NGV fleet customers will similarly support legislated energy objectives and government policy.

This Section addresses:

- Government policy impacting the transportation sector;
- The GHG emissions associated with the transportation sector; and

[30] GHGs are gases that, once dissipated into the atmosphere, trap infrared radiation from the sun that has been reflected from the earth's surface. In effect, the gases act like a greenhouse – hence the name. Ultimately too much GHG emission may contribute to a warmer planet and climate change. For the purpose of this Application, the most relevant GHGs are carbon dioxide (CO_2) and nitrous oxides (NO_x), which are emitted from combustion of transportation fuels.

- How TGI's investment in the facilities required to provide CNG Service to Waste Management promotes British Columbia's energy objectives.

3.3.1 GOVERNMENT POLICY IMPACTING THE TRANSPORTATION SECTOR

Federal, provincial, regional, and municipal governments are increasingly focused on addressing climate change and pollution. Governments at all levels are adopting policies favouring low-carbon energy as a key part of the solution to help achieve these goals. This Section discusses government's policy, objectives and direction at each level of government.

3.3.1.1 British Columbia Provincial Government

The provincial government has continually demonstrated interest in the implementation of more environmentally-friendly and efficient use of energy. In recent years the focus has been primarily on GHG emissions. As discussed in more detail in subsection 3.3.2 of this application, displacement of vehicles fueled by gasoline and diesel by NGVs would result in significant reduction of GHG emissions in British Columbia, as well as a reduction in other forms of pollution caused by the combustion of gasoline and diesel. The following sub-sections detail the specific provincial government actions that support, and are supported by, the Company's efforts to help displace conventionally fuelled vehicles with NGVs.

3.3.1.1.1 2007 Energy Plan

The framework for provincial energy policy is the 2007 BC Energy Plan[31]. The policies set out in the 2007 BC Energy Plan have been given effect in several pieces of legislation, including the recently passed CEA that sets out "British Columbia's energy objectives" applicable to the regulation of public utilities.[32]

The 2007 BC Energy Plan built on the 2002 Energy Plan,[33] which had focused on low electricity rates, energy security, private sector involvement in new electricity development, and environmental responsibility. The 2007 BC Energy Plan committed British Columbia to addressing climate change by harnessing clean and renewable energy to reduce overall GHG emissions, and to a renewed focus on the efficient use of energy sources. Recently, the provincial government's commitment to reducing GHG emissions and increasing the development of clean energy were re-affirmed in the February 9th, 2010 Speech from the Throne and through the passing of the *CEA*.

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[31] "Energy Plan 2007: A Vision for Clean Energy Leadership". http://www.energyplan.gov.bc.ca/PDF/BC_Energy_Plan.pdf

[32] S.B.C. 2010, c. 22. A copy of the First Reading version of the *Clean Energy Act* is available at: http://www.leg.bc.ca/39th2nd/1st_read/gov17-1.htm
At the time of filing this Application this was the only version of the *Clean Energy Act* available on the Legislature's website.

[33] "Energy Plan 2002: Energy For Our Future: A Plan for BC". http://www.llbc.leg.bc.ca/public/pubdocs/bcdocs/357957/

The 2007 Energy Plan identified the transportation sector as "a major contributor to climate change and air quality problems". The 2007 Energy Plan went on to observe that, based on current practices, "The fuel we use to travel around the province accounts for about 40 per cent of British Columbia's greenhouse gas emissions". This statement not only observes a problem, but helps identify the solution: displacing incumbent fuels with cleaner-burning fuels in the transportation sector presents the greatest opportunity by volume for a reduction in province-wide GHG emissions. The 2007 Energy Plan went on to note that "The government is committed to reducing greenhouse gas emissions from the transportation sector and has committed to adopting California's tailpipe emission standards from greenhouse gas emissions and champion the national adoption of these standards", a clear statement of direction that the British Columbia provincial government is serious about not just encouraging, but demanding that the transportation sector move to cleaner options. An example of a preferred cleaner option was then identified in the 2007 Energy Plan with the statement "Natural gas burns cleaner than either gasoline or propane, resulting in less air pollution." Finally, the provincial government encouraged the use of new and innovative solutions by stating that "British Columbia will focus on research and development, demonstration projects, and marketing strategies to promote British Columbia's technologies to the world."

The Provincial Government has given effect to policies set out in the 2007 BC Energy Plan in legislation. Several examples follow.

3.3.1.1.2 Renewable Portfolio Standards

Renewable Portfolio Standards are requirements that any given supply, or portfolio, of a energy must be composed of a standard minimum amount of energy from a sustainable source. An example of the adoption of a Renewable Portfolio Standard by the British Columbia Provincial Government was the 2008 introduction of the *Greenhouse Gas Reduction (Renewable and Low Carbon Fuel Requirements) Act*.[34] This act created the legal structure required to impose an escalating minimum percentage of renewable fuel in gasoline and diesel sold within the province. As of January 1, 2010, the renewable component required is 5%, and the Carbon Tax applicable to gasoline and diesel has been reduced proportionately to reflect the reduced non-renewable component of these fuels.[35]

The LCFRR mandates a 10% reduction in the carbon intensity of motor vehicle fuels used in B.C. The required reductions are phased in over time with the 10% reduction required by 2020.

Natural gas is a low carbon intensity motor vehicle fuel. The methodology adopted within the provincial regulation combines measures of the base carbon intensity of the fuel with measures of the efficiency of the engine technology that is used with the fuel. This results in an effective carbon intensity in use. Selected values for various fuels are presented in Table 3-5 below:

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[34] S.B.C. 2008, c. 16.
[35] Renewable Fuels Notice – Carbon Tax. http://www.sbr.gov.bc.ca/documents_library/notices/Renewable_Fuels_Notice_Carbon_Tax.pdf

Table 3-5: Natural Gas is Less Carbon Intensive Than Conventional Fuels

Fuel	Base Carbon Intensity (gms CO_2e /MJ)	Engine Efficiency Factor	Adjusted Carbon Efficiency (gms CO_2e /MJ)
Gasoline	90.56	1.0	90.56
Ultra Low Sulphur Diesel	93.56	1.2	77.97
CNG	62.16	1.1	56.51
CNG (Digester Gas)	-3.25	1.1	-2.95
LNG	61.69	1.2	51.41
LNG (Digester Gas)	-3.25	1.2	-2.71

Source: LCFRR Intentions Paper[36]

Some key points to note:

- Conventional CNG has a net carbon intensity value that is 38% lower than reformulated gasoline and 28% lower than ultra-low sulphur diesel.
- Conventional LNG has comparable reductions in net carbon intensity

Emerging sources of Biomethane such as CNG from anaerobic digesters is fully carbon neutral, and potentially even carbon negative.

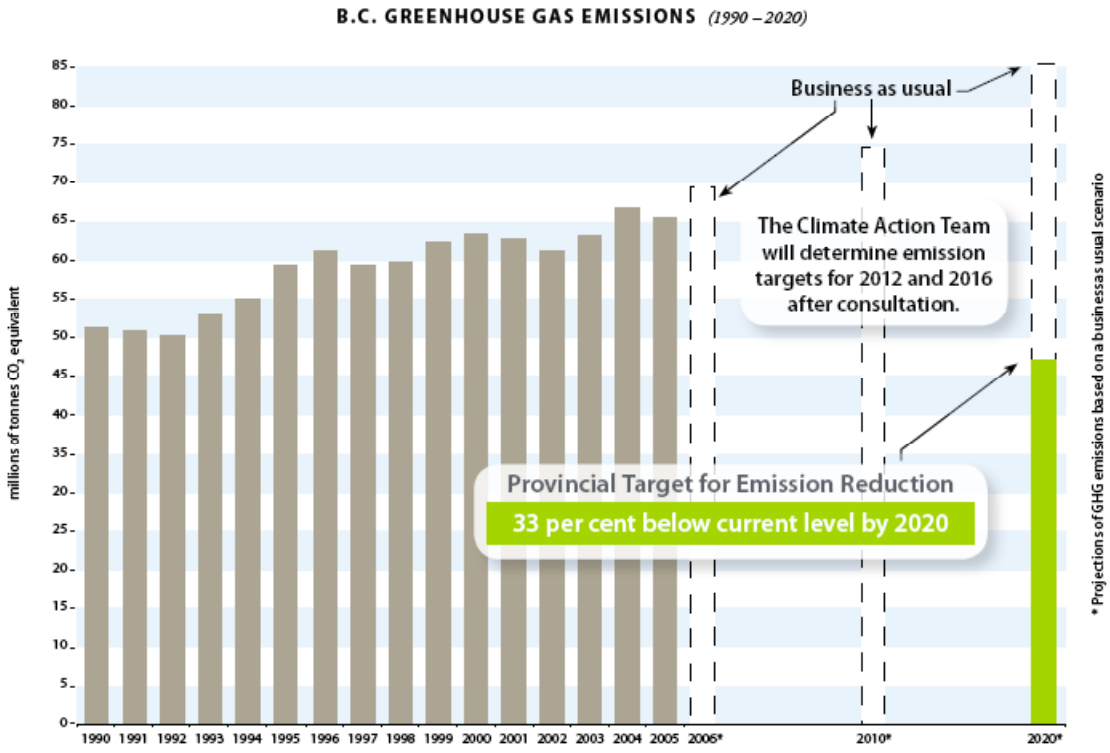
3.3.1.1.3 Greenhouse Gas Reductions Targets Act

The *Greenhouse Gas Reduction Targets Act* ("GGRTA"), enacted in 2007, mandates reductions of provincial GHG emissions of thirty-three percent by 2020 and eighty percent by 2050 using 2007 as the baseline.[37] The GGRTA also requires all departments of the provincial government to become GHG neutral by 2010.

In recent years, BC's provincial government and municipalities have taken steps to develop targets and action plans to support reductions in GHG emissions. The actions of Canada's federal government, while not (yet) reflected in formal policy or legislation, reinforce this focus on cutting GHG emissions through reducing consumption of carbon based fuels. All levels of government recognize that GHG emissions reduction is a pressing need, which gives rise to an increased focus on energy policy and energy issues. The BC Government has established aggressive goals for GHG emission reductions. Figure 3-4 shows the emission reduction targets for B.C. in 2020[38].

[36] LCRFF Intentions Paper http://www.empr.gov.bc.ca/EEC/Strategy/BCECE/Documents/LCFRR%20Intentions%20Paper%20Final.pdf
[37] S.B.C. 2007, c. 42
[38] BC Ministry of Energy, Mines and Petroleum Resources 2009

Figure 3-4: B.C. GHG Emissions from 1990 to 2020



The Province passed Bill 44 (2007 Greenhouse Gas Reduction Target Act) in the 3rd Session of the 2007 Legislative Session. Part 1 of Bill 44 outlines BC GHG emission targets levels as being:

> *"By 2020 and for each subsequent calendar year, BC greenhouse gas emissions will be at least 33% less than the level of those emissions in 2007; and by 2050 and for each subsequent year, BC greenhouse gas emissions will be at least 80% less than the level of those emissions in 2007."*[39]

On November 25, 2008 GHG interim targets were set by Ministerial Order as follows:

- 2012 – six per cent below 2007; and
- 2016 – eighteen per cent below 2007 levels.

[39] This means that GHG's emissions within BC must be reduced by 33% from 2007 levels by 2020. This may come in the form of a physical reduction or purchasing an offset that qualifies under the regulations.

3.3.1.1.4 Carbon Tax Act

The Carbon Tax Act, passed in 2008, further signaled the provincial government's commitment to the reduction of GHG emissions.[40] As stated on the British Columbia

Ministry of Finance website, the purpose of the carbon tax "*is to ensure that a consistent long term price signal is provided to consumers so that they continue to make the choices required to reduce their fossil fuel use and emissions*."[41] The level of the carbon tax varies according to the carbon intensity of the fuel. The implementation of this tax therefore encourages the use of natural gas over gasoline and diesel through a lower rate of taxation.

3.3.1.1.5 Utilities Commission Act and Clean Energy Act

The *UCA* requires the Commission to ensure that utilities undertake efficiency and conservation measures in their operations, and to consider the British Columbia's energy objectives (as defined in the *CEA*, in specified approval processes. TGI details later in this Section how the investment in NGV fueling infrastructure to serve fleets supports British Columbia's energy objectives.

3.3.1.1.6 Natural Gas Road Tax Exemption

The British Columbia Provincial Government has explicitly encouraged the use of NGVs in the treatment of road taxes. Motor fuel tax is not applied to the natural gas used to power NGVs[42]. This explicit endorsement through subsidization of the use of natural gas as a vehicle fuel is further evidence of the government's support for NGVs, and how the aims of this application are supportive of government policy and energy objectives.

3.3.1.2 Municipal Governments in British Columbia

Local governments have responded to the provincial policy initiatives in respect of GHG reduction. On September 26, 2007, sixty-two communities across the province announced that they had signed on to the B.C. Climate Action Charter, committing to become carbon neutral by 2012.[43] By the end of 2009, 176 municipalities in B.C. (out of 188 in total) had signed the Climate Action Charter. Replacing conventionally-fueled fleet vehicles with NGVs provide municipalities an opportunity to achieve significant GHG emissions reductions.

3.3.1.3 Canadian Federal Government

Like the British Columbia provincial government, the Canadian federal government has shown increasing concern for GHG emissions, the use of renewable energy and the efficient use of energy. Examples of this concern have been demonstrated in recent environmental legislation

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[40] S.B.C. 2008, c. 40.
[41] British Columbia Ministry of Finance: Myths and Facts About The Carbon Tax http://www.fin.gov.bc.ca/tbs/tp/climate/A6.htm
[42] http://www.sbr.gov.bc.ca/documents_library/bulletins/mft-ct_005.pdf Page 7 of 12
[43] http://www.cd.gov.bc.ca/ministry/whatsnew/climate_action_charter_update.htm

and throne speeches. Specific support of the increased use of NGVs has been building within the federal government, and is discussed below.

3.3.1.3.1 Marbek Report – Study of Opportunities for Natural Gas in the Transportation Sector

In 2009 the Fuels Policy and Programs division of Natural Resources Canada ("NRCan") commissioned Marbek, an environmental consulting firm, to produce a study[44] examining the potential benefits of and market size for increased usage of NGVs in Canada. The report found that not only was there a significant market opportunity for increased utilization of NGVs in Canada, but federal government encouragement of this market transformation could produce substantial environmental benefits including but not limited to substantial reduction of GHG emissions.

3.3.1.3.2 Natural Resources Canada ("NRCAN") Working Group

As a follow up to the Marbek study, NRCan launched a roundtable forum for potential participants in the NGV industry and other interested parties to determine what steps can be taken to encourage the adoption of NGVs in Canada. This working group was announced in March of 2010[45].

3.3.1.4 Summary of Government Policy

Governments at all levels are adopting policies in favour of low-carbon energy as a key part of the solution to help achieve their GHG emission reduction goals. The proposals in this Application are both consistent with and adherent to these policy directives, and allow Terasen Gas to be a part of the solution to these environmental challenges.

3.3.2 TRANSPORTATION SECTOR GHG EMISSIONS

Government policy relating to the reduction of GHG emissions in the Province presents a significant challenge to retaining and attracting customers who consume natural gas to produce heat. However, at the same time the policy supports the use of natural gas as a fuel in the transportation sector, which has lower associated GHG emissions than gasoline or diesel. In this Section, Terasen Gas discusses the GHG emissions that are associated with the transportation sector.

What makes B.C. unique relative to other jurisdictions regarding the output of GHG is the sources of these emissions. BC has only 2 per cent of its GHG emissions coming from the electricity sector, while at the same time producing fossil fuel (primarily natural gas) which creates additional emissions in BC. About 17% of BC GHG emissions come from the direct consumption of natural gas. This creates some challenges for BC in meeting its stated goals

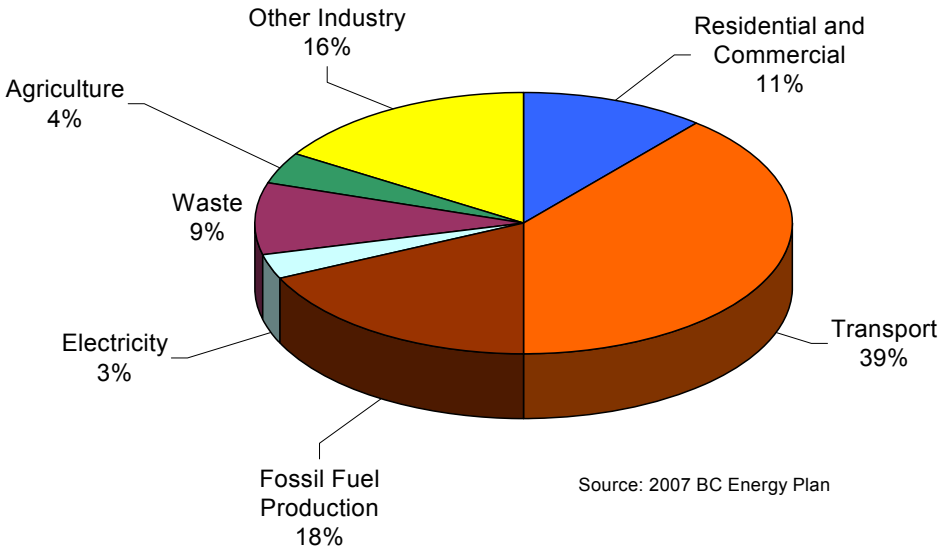
[44] "Study of Opportunities for Natural Gas in the Transportation Sector", March 2010 http://www.cngva.org/media/4302/marbek_ngv_final_report-april_2010.pdf

[45] Further description of the working group can be found on the NRCAN website at http://www.nrcan-rncan.gc.ca/com/consultation/concon-eng.php

with economic and market ready customer solutions. The use of natural gas in NGV is a solution that meets these criteria for customers.

Figure 3-5 below indicates that the single largest source of greenhouse gas in B.C. is the transport sector. Terasen Gas believes that reducing GHG emissions in the transportation sector is necessary in order to realistically achieve the provincial government's stated objectives.

Figure 3-5: B.C. Greenhouse Gas Emissions by Sector[46]



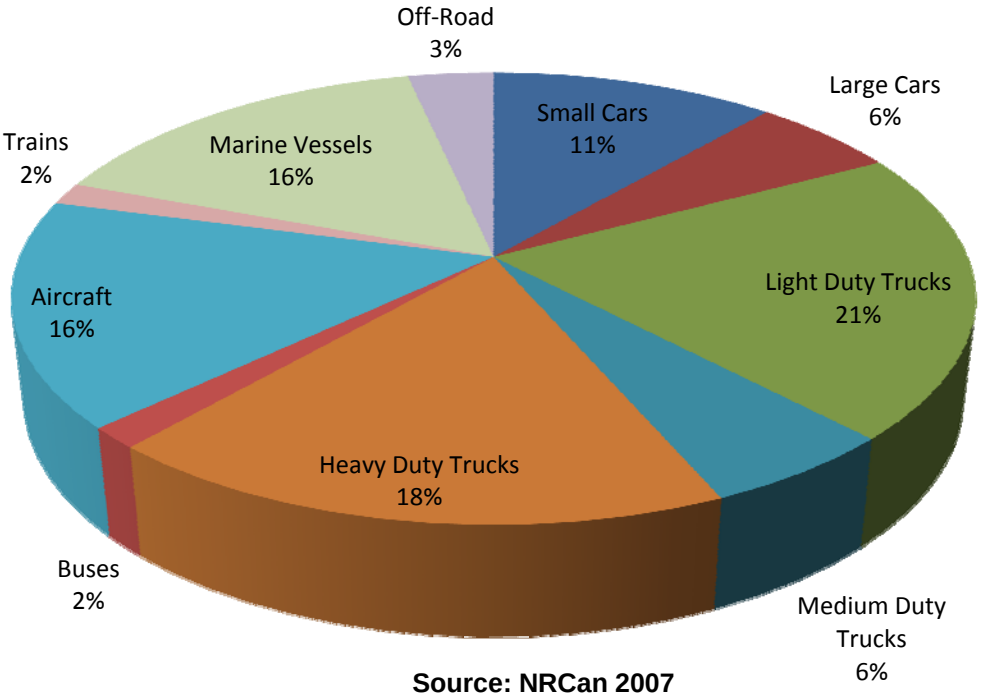
According to the 2007 BC Energy Plan, overall emissions of GHGs in BC as of 2007 was estimated at 67 million tonnes.[47] The BC Provincial GHG Inventory Report indicates that BC's transportation sector produced over 25 million tonnes ("Mt") of this total.[48] Figure 3-6 below breaks down the 25 million tones of GHG emissions from the transportation sector by each segment.

[46] 2007 BC Energy Plan – A Vision for Clean Energy Leadership, http://www.energyplan.gov.bc.ca/PDF/BC_Energy_Plan.pdf

[47] BC Provincial GHG Inventory Report 2007. http://www.env.gov.bc.ca/cas/mitigation/ghg_inventory/pdf/pir-2007-full-report.pdf

[48] Natural Resources Canada, Office of Energy Efficiency, 2007: http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/trends_tran_bct.cfm

Figure 3-6: Trucking segments represent nearly 44% of B.C.'s transportation GHG emissions



Source: NRCan 2007

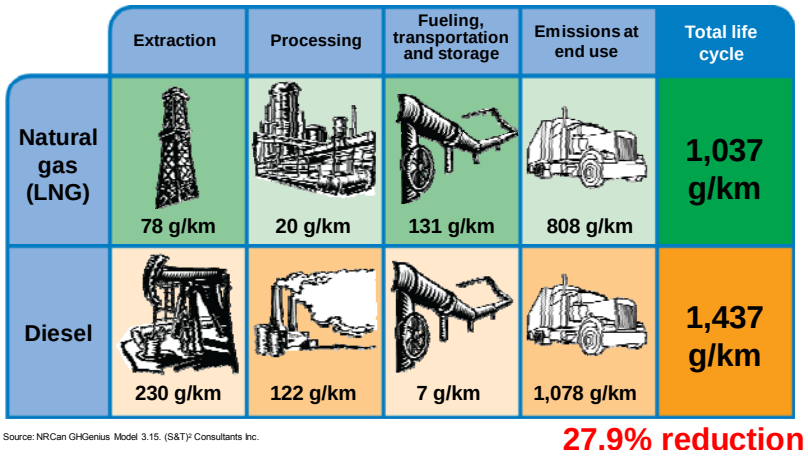
The above graph illustrates that the trucking segments (light trucks, medium truck and heavy trucks) makes up approximately 44% (or 11.4 Mt) of the total transportation emissions profile, or 17% of all GHG emissions in the province.

Data from NRCan indicates heavy duty NGV's emit 23 - 27% less GHG emissions than their diesel counterparts;[49] therefore adoption of NGVs in the trucking sector would have a significant impact on overall GHG emissions in BC.

For example, Figure 3-7 illustrates the GHG emission reduction on a lifecycle or "wells-to-wheels" approach of LNG versus diesel. This considers not only vehicle operation, but fuel stock production, processing, transport and storage.

[49] Based on BC emissions factors from Natural Resources Canada's GHGenius model 3.18 available at www.ghgenius.com

Figure 3-7: Lifecycle GHG Benefit – Westport GX-Equipped Truck – BC 2010



Source: Natural Resources Canada - *GHGenius 3.18*

Vehicle assembly, transport and materials add small incremental emissions to the lifecycle analysis, resulting in a 26.8% overall reduction. Using the same lifecycle model, the emission benefits from a vocational garbage truck running on CNG is approximately 23.2%. A light duty vehicle switching from gasoline to CNG creates a reduction of 25.6%.

Public and government interest in the environmental impact of fuel consumption, particularly as it relates to GHG emissions, should be beneficial to the growth in use of natural gas as a vehicle fuel because:

- Natural gas burns cleaner than conventional fuels and generates fewer air contaminants such as oxides of nitrogen, sulphur oxides, carbon monoxide and particulate matter. In general this means that natural gas engines require less post combustion treatment to meet emissions requirements.
- As discussed in the preceding section, natural gas is a low carbon fuel that creates far fewer greenhouse gas emissions.

In conjunction with vehicle operators, Terasen Gas has developed detailed estimates of GHG emissions reductions that will be achieved for the trucks that are most commonly used in the trucking segments. As the emissions data are reported in grams per km travelled, overall GHG emissions reductions depend on the number of vehicles operating on natural gas and the annual distance travelled by such vehicles. The results of these models indicate that GHG reductions ranging from 10 to 126 tonnes per vehicle per year are achievable by switching to natural gas.

If successful in achieving a 30 PJ market penetration, which is 6.5% of the target market, the use of NGVs should deliver 865,000 tonnes of GHG emissions reductions. Thus the use of NGVs in BC will achieve large reductions in overall GHG emissions and this will help meet

British Columbia's targets as set out in legislation, as discussed in further detail in subsection 3.3.1.1.3 of this Application.

3.3.3 TGI'S INVESTMENT SUPPORTS BRITISH COLUMBIA'S ENERGY OBJECTIVES

The Commission must consider "British Columbia's energy objectives", specified in the *Clean Energy Act*, in determining TGI's application pursuant to section 44.2 for approval of expenditures for the cost of the facilities required to provide service to Waste Management under the WM Agreement. These legislated policy objectives contemplate public utilities being engaged in achieving government policy through utility investments (sections 44.2 and 45) and supply acquisition (section 71).

A number of the "British Columbia's energy objectives", quoted below, support this Application:[50]

> (d) to use and foster the development in British Columbia of innovative technologies that support energy conservation and efficiency and the use of clean or renewable resources;
>
> (g) to reduce BC greenhouse gas emissions
>
> > (i) by 2012 and for each subsequent calendar year to at least 6% less than the level of those emissions in 2007,
> >
> > (ii) by 2016 and for each subsequent calendar year to at least 18% less than the level of those emissions in 2007,
> >
> > (iii) by 2020 and for each subsequent calendar year to at least 33% less than the level of those emissions in 2007,
> >
> > (iv) by 2050 and for each subsequent calendar year to at least 80% less than the level of those emissions in 2007, and
> >
> > (v) by such other amounts as determined under the *Greenhouse Gas Reduction Targets Act*;
>
> (h) to encourage the switching from one kind of energy source or use to another that decreases greenhouse gas emissions in British Columbia;
>
> (i) to encourage communities to reduce greenhouse gas emissions and use energy efficiently;
>
> (k) to encourage economic development and the creation and retention of jobs;

In Table 3-6 below,, TGI summarizes how investment in NGV refueling facilities backed by "take-or-pay" contracts like the WM Agreement supports each of the above objectives.

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[50] S.B.C. 2010, c. 22. A copy of the First Reading version of the *Clean Energy Act* is available at: http://www.leg.bc.ca/39th2nd/3rd_read/gov17-3.htm

Table 3-6: Service Agreement Support BC Energy Objectives

British Columbia's Energy Objective	How Proposed Service Offering Supports Energy Objective
(d) to use and foster the development in British Columbia of innovative technologies that support energy conservation and efficiency and the use of clean or renewable resources	Use of low-carbon CNG and LNG engine technology developed and manufactured by BC-based Westport Innovations.
(g) to reduce BC greenhouse gas emissions…	Low-carbon NGVs in WM Agreement result in 23% fewer emissions than diesel equivalent vehicles.
(h) to encourage the switching from one kind of energy source or use to another that decreases greenhouse gas emissions in British Columbia	WM Agreement facilitates Waste Management fuel switching from diesel to CNG. This results in approximately 214 fewer tonnes of CO2e per year.
(i) to encourage communities to reduce greenhouse gas emissions and use energy efficiently	Waste Management is replacing high-carbon, diesel emitting waste haulers - which operate in Lower Mainland communities - with low-carbon NGVs.
(k) encourage economic development and the creation and retention of jobs	Supports economic development and job creation for BC-based NGV engine manufacturer Westport Innovations, CNG station manufacturer IMW industries, and various engine conversion installers.

The proposed services are not detrimental to any of the other British Columbia's energy objectives.

3.3.4 CONCLUSION

The *Clean Energy Act* and government policy generally places a new focus on NGVs, laying the groundwork for increase in utilization of this technology in British Columbia. As British Columbia's energy objectives are applicable in the context of the regulation of public utilities, these amendments speak to the government's objective of involving public utilities in the targeted reduction of GHG emissions through the efficient development of cleaner uses of energy, such as displacing incumbent fuels with NGVs. The Company's proposed investment in the facilities to provide service to Waste Management under the WM Agreement supports British Columbia's energy objectives and government policy. TGI believes that the expenditure in support of providing service to Waste Management is in the public interest and should be approved pursuant to section 44.2 of the Act.

4 THE WASTE MANAGEMENT (WM) AGREEMENT

4.1 Introduction

TGI's proposed CNG and LNG Services provide an economical and reduced-GHG solution for the targeted transportation segment. Under the business model described in Section 2.0, TGI will provide the proposed services where there is a "take-or-pay" contractual commitment from customers that will allow recovery of the cost of service over the term of the contract. The WM Agreement is consistent with that model. Under the WM Agreement, TGI will provide, subject to Commission approval, CNG Service to WM for its fleet of 20 waste collection vehicles[51] based out of Coquitlam, B.C. As described elsewhere in the Application, TGI is seeking distinct approvals in respect of the WM Agreement:

- TGI seeks a rate approval of the WM Agreement pursuant to sections 59-61 of the Act. The WM Agreement sets out the detailed terms and conditions of the CNG Service, including a rate that recovers the incremental cost of service over the term of the agreement. TGI believes that the terms and conditions of the WM Agreement are beneficial to WM, other customers and TGI, and are just and reasonable,
- The provision of CNG Service to WM under the WM Agreement requires TGI to invest approximately $738,000 in CNG facilities and infrastructure. TGI is seeking acceptance of project related expenditures pursuant to section 44.2 of the Act. As set out in Section 2, TGI believes that the WM Agreement will provide economic and environmental benefits[52] to WM as well as present and future TGI system customers. Thus, the investment into facilities and infrastructure required of TGI to provide CNG Service under the WM Agreement is in the public interest.

In this Section, TGI provides:

- Background on WM and an overview of the WM Agreement;
- A summary of key provisions in the WM Agreement;
- A description of the facilities and infrastructure that TGI is constructing pursuant to the WM Agreement;
- A description of the load-building and GHG benefits associated with the WM Agreement and TGI's investment in facilities; and
- An explanation of risks arising from the WM Agreement and how TGI has mitigated them.

[51] Vocational Truck segment, see Appendix A-1 for a further description
[52] See Section 2.0

4.2 Overview

WM is a leading provider of comprehensive waste management services, offering advanced residential, commercial and industrial collection, recycling and disposal services throughout Canada.

In the United States, WM's parent company Waste Management Inc. operates over 800[53] vehicles using natural gas.[54] WM operates over 2,000 vehicles in Canada, 215 of which are based in British Columbia, including 98 vehicles based out of WM's Coquitlam, BC facility where TGI proposes to construct a CNG fueling station.[55]

In May of 2010, TGI received an expression of interest from WM in regards to its plan to add 20 CNG waste collection vehicles to its commercial vehicle fleet based out of WM's Coquitlam, BC facility. The vehicles will be used for the collection of commercial, residential and industrial waste and the transportation of waste to the WM's Coquitlam facility, where the vehicles will refuel at a fueling station that TGI proposes to install, own and maintain. TGI will also provide the CNG Service for WM's vehicles. WM will purchase, own and maintain a minimum of 20 waste collection vehicles equipped with natural gas engines.

The fueling station will consume approximately 21,000 GJ of natural gas annually, displacing 468,000 litres of diesel fuel and reducing GHGs by approximately 214 tonnes annually. Such a reduction is equivalent to taking 41 cars off the road or removing the emissions impact of 221 typical residential customers.[56] Implementation of the WM Agreement will result in the creation of the first heavy duty commercial NGV fleet in BC.

WM's proposal to obtain funding for its purchase of NGVs met the terms and conditions required for Innovative Technologies Energy Efficiency and Conservation ("EEC") incentive funding for low-carbon fuel switching, which were approved on April 16th, 2009 in *Commission Order G-36-09*. The WM Agreement defines the terms and conditions under which TGI will provide EEC funding to WM for the incremental cost of purchasing natural gas vehicles over equivalent diesel vehicles. EEC funding for WM is based on the purchase of WM's initial 20 vehicles.

The agreement contemplates completion of the installation of fueling station by January 24, 2011.

4.3 Key Provisions of the WM Agreement

The terms of the WM Agreement were the product of negotiations between commercial parties and are thus fair to both parties. The compression dispensing rate is sufficient to cover the cost of service over the term of the contract, and other terms adequately protect ratepayers from risk.

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[53] Includes approximately 500 LNG vehicles and 300 CNG vehicles
[54] See Appendix D: Waste Management Inc., 2010 Corporate Fact Sheet
[55] Based on conversations with Waste Management of Canada fleet manager
[56] Number derived using the US Environmental Protection Agency, Greenhouse Gas Equivalency Calculator.

For these reasons, TGI believes that the terms and conditions of service, as reflected in the WM Agreement, are just and reasonable and should be approved. The key provisions of the WM Agreement are summarized below.

The detailed terms of the WM Agreement are confidential, and the WM Agreement has been filed under separate cover as **Confidential** Appendix D. TGI believes that confidentiality of this information is necessary in order to protect WM's cost information and to protect TGI's ability to negotiate future NGV contracts with fleet operators in a manner which best serves the interests of TGI's customers. TGI asks that all participants file information requests on this section on a **confidential basis** unless the information requests do not disclose any details about the WM Agreement that do not appear in this section.

4.3.1 QUANTITY

The WM Agreement provides for a minimum "take-or-pay" monthly consumption volume of 1,583 GJ of CNG to cover the full cost of service. Based on data provided by WM, TGI anticipates that CNG consumption by WM's 20 CNG vehicles could be up to 1,750 GJ per month, or approximately 21,000 GJ per year.[57] Over the 10 year term of the WM Agreement, approximately 210,000 GJ could be consumed by WM, which is equivalent to heating approximately 2,200 homes.[58]

4.3.2 TERM

The initial term of the WM Agreement is 10 years. At the end of this period, TGI has the right to renew the WM Agreement for an additional 10 years. Further details are filed confidentially in Appendix D.

4.3.3 PRICE

The CNG Service price that TGI will charge WM is provided to the Commission in Appendix D filed confidentially. This price has been calculated based on the capital cost of the fueling station over an amortization period of 20 years, and the minimum 'take-or-pay' quantity of 1,583 GJ per month. The rate design is described in greater detail in Section 5 of this Application.

In addition to the price paid by WM for the CNG Service provided by fueling station, WM will be charged for all natural gas delivered to its Coquitlam, BC facility under normal delivery rates. TGI anticipates that WM will purchase such natural gas under Rate Schedule 25. If WM uses this Rate Schedule they will be responsible for securing their own commodity.

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[57] Calculation: Diesel at 38.653 MJ/litre – yields conversion factor of 25.87.
Therefore, 468,000 litres / 25.87 MJ= 18,090 GJ * (Efficiency loss of 17%) = 21,165 GJ.

[58] Based on a home utilizing 95 GJs per year, the average of TGI's current Rate 1 (Lower Mainland Residential) customers.

4.3.4 OTHER

There is also a provision in the WM Agreement to allow for public access to the fueling station, pending a separate, negotiated agreement between WM and TGI, and subject to any necessary future Commission approvals. The intention of this provision is to preserve the potential to allow public access to the fueling station as a secondary market. This approach would encourage increased utilization of the fueling station facilities.

4.4 Description of the Facilities Addition

Providing CNG Service to WM requires new fueling station infrastructure. The WM Agreement contemplates TGI designing, installing, owning and maintaining a CNG fueling station on WM's property, which is located at 2330 United Boulevard, Coquitlam, B.C. and owned by WM. The fueling station will be installed on the south side of the WM property, immediately north of Rogers Avenue. TGI will connect the fueling station to the existing TGI distribution system located in the municipal right of way using a metering station. .

In consultation with WM, TGI designed the fueling station to service WM's initial fleet of 20 CNG vehicles. The fueling station's design also incorporates equipment redundancy to meet reliability requirements. This effectively provides surplus capacity which is available should WM elect to add additional CNG vehicles to its fleet.

4.5 Fueling Station Technology

In order to provide CNG Service, TGI has procured a twin compressor system from IMW Industries which consists of two compressors, a drive motor with associated controls, and an enclosure. Six time-fill posts and one time-fill control panel were also purchased. Each fill post is designed with four fill hoses. The WM Agreement provides that appropriate commissioning and employee training is required as part of the installation of the fueling station, and are included in the costs described in the following subsection.

TGI has determined a natural gas dryer / dehydrator is necessary to account for potential changing temperature conditions. Its purpose is to provide dry pipeline gas free of condensation in order to prevent corrosion inside the high-pressure compressor. A standard, single tower dryer from PSB Industries will be installed.

This equipment is consistent with what is discussed in Section 2 (Rate Proposals) and Appendix B (GT&Cs) describing the infrastructure needed for a typical fueling station.

4.6 TGI's Costs

TGI has calculated the final cost estimates with respect to the fueling station infrastructure that TGI will install pursuant to the WM Agreement. Table 4-1 provides a summary of the expected installed capital costs for such fueling station infrastructure.

Table 4-1: Waste Management Project Capital Cost Summary

Item	2010 Cost
CNG Dispensing Equipment (compressor, dehydrator, shipping)	$ 437,660
Civil Work, Electrical Work	$ 176,229
Field Piping	$ 52,550
Engineering, Project Management, Commissioning	$ 71,505
Total	**$ 737,944**

Based on engineering estimates, the annual maintenance costs of the fueling station are estimated to be $21,000 per year starting in 2012 with an annual escalation of 2% per year. This amount includes safety inspections, as well as preventative and routine maintenance as recommended by the manufacturer. All of these costs have been incorporated into the CNG Service price that will be charged to WM.

4.7 WM Agreement Benefits

The WM Agreement will deliver benefits to both TGI system customers through additional consumption load and WM through operating cost savings and the reduction of GHG emissions.

4.7.1 OPERATING COST SAVINGS

As discussed in Section 3.2.1 of this Application, the favourable price differential between natural gas and diesel fuel creates an opportunity for overall savings for return-to-base fleet operators despite the relatively higher cost of NGVs. WM will benefit from fuel savings of approximately 30 – 40%.

4.7.2 LOAD BUILDING BENEFITS

TGI anticipates that consumption of natural gas by its initial 20 CNG vehicles could be up to 21,000 GJ per year.[59] Over the 10 year term of the WM Agreement, approximately 210,000 GJ of natural gas may be consumed, which is equivalent to heating approximately 220 homes in one year or 2,200 homes over 10 years.[60] This consumption level could increase if industry standard distances (see Table 4-2 below) are adopted or if additional vehicles are added to WM's CNG fleet in subsequent years.

Unlike residential customers, whose demands of the TGI system fluctuate, WM is expected to be a high load factor customer with relatively even load throughout the year.

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[59] Calculation: Diesel at 38.653 MJ/litre – yields conversion factor of 25.87.
Therefore, 468,000 litres / 25.87 MJ= 18,090 GJ * (Efficiency loss of 17%) = 21,165 GJ.

[60] Based on a home utilizing 95 GJs per year, the average of TGI's current Rate 1 (Lower Mainland Residential) customers.

4.7.3 GHG REDUCTION BENEFITS

Implementation of the WM Agreement will result in a reduction in GHG emissions as a result of the displacement of diesel fuel by natural gas. Based on WM's usage estimate of 468,000 litres of diesel fuel for 20 vehicles, TGI calculates the annual consumption at the fueling station to be approximately 21,000 GJ per year. WM estimates each truck will travel a distance of 31,200 kilometers per year, resulting in a GHG emission reduction of 214 tonnes of carbon dioxide equivalent gas ("CO_2e") per year.[61] As this distance-traveled estimate is conservative, a total closer to the industry average (between 40,000 and 50,000 kilometers per year) could be achieved.[62] If the vehicles travel an average distance of 45,000 kilometers per year, the GHG reduction could exceed 300 tonnes of CO_2e per year.

Table 4-2: Annual CO_2e reduction

	Expected Distance Traveled (31,200 Kms)	Longer Distance Traveled (45,000 Kms)
Tonnes of CO_2e from Diesel	922	1330
Tonnes of CO_2e from Natural Gas	708	1022
Tonnes of CO_2e reduced	214	308

These reductions would be the equivalent of taking 41 passenger vehicles (based on expected distance figures) or 59 passenger vehicles (based on longer distance figures) off the road.[63]

4.8 WM Agreement Specific Risks and Mitigation

A number of measures have been incorporated into both the WM Agreement and the design of the fueling station to mitigate a range of potential risks. TGI has identified a number of risks and mitigating factors specific to the WM Agreement in the section below.

For a more general discussion of risks associated with the proposed business model, please see Section 6.0 Risks and Risk Mitigation.

4.8.1 RISK OF STRANDED ASSETS

The costs related to the design and installation of the fueling station are relatively modest, and the risk of stranded assets is small in this case. There are several reasons for this.

First, the majority of the fueling station assets owned by TGI are mobile. If the WM Agreement is not renewed at the end of the initial term or the WM agreement is terminated prior to expiry,

[61] GHG calculation based on data from Natural Resource Canada, GHGenius version 3.18. BC regional factors for heavy duty vehicle are as follows: diesel 1477 g/km, and CNG 1135 g/km.
[62] Natural Resources Canada, Office of Energy Efficiency, 2007: http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/trends_tran_bct.cfm
[63] Numbers derived using the US Environmental Protection Agency, Greenhouse Gas Equivalency Calculator.

there is potential risk to TGI as the fueling station assets are amortized over a 20-year period and are installed on the WM's property. However, the physical nature of these assets reduces the stranding risk. Compressor enclosures and components are delivered as skid-mounted systems, allowing for ease of mobility.[64] TGI's experience developing fueling station cost estimates indicates that approximately 50% - 70% of the fueling station capital consists of mobile assets, with the balance being local site engineering design which would not be transferrable. Thus, TGI would be able to recover the bulk of the mobile assets and relocate them for use in other projects.

Second, TGI may be able to sell fueling station assets into other jurisdictions, such as California, if general market conditions are favourable. Such conditions would include a wide price differential between natural gas and conventional fuels, continued availability of OEM vehicle options, and government policy favouring NGV development.

4.8.2 TIMING OF CONSTRUCTION RISK

TGI began construction of the fueling station in November 2010. Completion and final commissioning is expected in mid January of 2011. This timing creates a narrow construction timeline for TGI to install the fueling station. The construction process is largely uncomplicated, as the fueling station structure has been ordered to arrive skid-mounted and ready for connection to the TGI's distribution system. Other activities such as site preparation and foundation development involve a high degree of construction certainty. TGI is proceeding with construction prior to approval of this Application to meet WM's required in-service timeline. Potential delays in the timeline may result in WM's prolonged use of diesel vehicles, an inability of WM to use the purchased NGV trucks right away, and a delay of the 'take-or-pay' clause start date until the fueling station is complete.

4.8.3 OPERATIONAL RISK

As a well-proven technology, a CNG fueling station carries a limited number of equipment and behavioral risks. TGI has adopted a significant number of measures to mitigate such risks, which include equipment design, preventative safety measures, codes and standards, engineering practices, site development and training, and regular equipment maintenance. TGI believes the WM Agreement and the fueling station do not present any unique operational risks when compared to other CNG fueling station projects in the industry.

General operational risks and mitigation are discussed in greater detail in Section 6 Risks and Risk Mitigation.

[64] IMW Industries, http://www.imw.ca/products/compressor-enclosures.php

4.8.4 FACILITIES COST RISK

The relatively modest investment required of TGI pursuant to the WM Agreement means that there is minimal exposure to significant cost overruns. For example, costs overruns ranging from 10-20% would result in an increase to TGI's costs ranging from $73,700 to $147,400. In addition, there is minimal risk that the project costs for the fueling station could be higher than expected. For example, TGI has undertaken detailed and comparative quotations to ensure a high degree of accuracy when determining cost estimates and the project engineering team has completed multiple CNG projects within TGI's operating territory, providing us with a high degree of confidence in their ability to complete projects on budget without compromising quality. TGI has also procured its largest fueling station component[65], the compression equipment, on a fixed price contract.

4.9 Conclusion

The WM Agreement represents an excellent opportunity to create economic and environmental benefits for WM, while benefitting existing and future TGI system customers. TGI believes that the successful development and operation of the WM fueling station will create further opportunities to work with new partners in the future and encourage the adoption of NGVs over the near and long-term.

[65] Actual CNG station represents approximately 40% of the total project cost.

5 COST OF SERVICE, ACCOUNTING TREATMENT AND RATE DESIGN

As discussed in Section 2, TGI's business model is to attach NGV load where it is cost effective and beneficial to customers to do so. The proposed GT&Cs for CNG and LNG Service, and the WM Agreement submitted for approval with this Application, reflect a principled and thorough approach to determining the cost of service and cost recovery. Under TGI's approach, the incremental TGI revenue requirement is offset by the incremental revenue earned from charging a contractual cost of service-based rate to the NGV customer. The NGV customer thus pays a fair rate for a beneficial service, while existing natural gas customers benefit from the increased throughput, producing lower delivery rates all else equal.

This Section explains:

- the general cost recovery principles applied;
- the costs that will be incurred by TGI, which must be recovered from the NGV customer over the term of the service agreement;
- the associated accounting and cost of service treatment; and
- the rate design of the fueling charge that provides for cost recovery from the NGV customer.

The GT&Cs are included in Appendix B. A comprehensive set of financial schedules for the WM Agreement is provided in Confidential Appendix D of this Application.

5.1 General Cost Recovery Principles

TGI developed the cost recovery provisions of the proposed GT&Cs for CNG and LNG Services according to three cost recovery principles. The principles have been developed so that the fueling charges incorporated into each service agreement will be just and reasonable, from the perspective of the customer taking service, existing and future natural gas customers and the Company. The three cost recovery principles are as follows:

1. The forecast cost of service over the term of each contract is fully recovered on a contract by contract basis.
    - The derivation of an inclining volumetric fuel charge based on (a) a take or pay commitment, and (b) the present value of the cost of service over the term of the contract, are used to achieve alignment with this principle.
2. The cost of service is appropriately calculated.
    - The calculation of the cost of service is consistent with general regulatory principles for rate making and generally accepted accounting standards to achieve alignment with this principle.

3. The proposed fueling charge is reasonable and relevant for CNG and LNG Service customers.
    - Contract terms set to match the lifetime of the initial fleet of vehicles served by the station and the use of a predictable fuel charge achieves alignment with this principle.

Additional information on the cost of service and cost recovery principles and mechanisms can be found below in subsection 5.1.2, Accounting Treatment and Cost of Service Calculation and subsection 5.1.3,

CNG and LNG Service Rate Design .

5.1.1 DETERMINING COST OF SERVICE TO BE RECOVERED IN RATES

The proposed GT&Cs require TGI to conduct a comprehensive analysis of the forecast capital and operating and maintenance costs, which will provide the cost estimate used for the cost of service calculations for each contract. The forecast cost of service determined through this analysis will be recovered in the contractual rate charged to the NGV customer. This was the approach taken with the WM Agreement.

The total costs to be used in the cost of service model include:

1. The capital investment, including any associated labour, material, capitalized overhead and other costs necessary to serve the Customer, less any contributions in aid of construction by the Customer or third parties, grants, tax credits or non-financial factors offsetting the full costs that are deemed to be acceptable by the British Columbia Utilities Commission;
2. Incremental operating and maintenance expenses necessary to serve the Customer;
3. Depreciation expense related to the capital assets associated with the contract;
4. Applicable property tax;
5. Calculated income tax expense; and
6. A return on rate base equal to the most recently approved rate (as approved by the British Columbia Utilities Commission).

5.1.2 ACCOUNTING TREATMENT AND COST OF SERVICE CALCULATION[66]

All contracts will be evaluated on a cost of service basis applying general regulatory principles for determining the specific project cost of service. All forecast costs will be accounted for using the BCUC Uniform Code of Accounts and applicable Orders of the Commission. The cost of service model contemplated in the GT&Cs determines, on a contract by contract basis, the fueling charge that the customer will pay for the CNG or LNG Service. In the determination of

[66] Please refer to Confidential Appendix E, Schedule 1

future TGI revenue requirements, the incremental revenue requirement associated with the forecast cost of serving an NGV customer is offset by the incremental revenue earned from charging the contractual cost of service-based rate to the NGV customer described in section 5.1.3.

A detailed description of the determination of the cost of service components, including rate base, follows.

5.1.2.1 Capital Costs

Forecast capital costs are an input in the cost of service model incorporated in the proposed GT&Cs. As discussed in Section 2, Rate Proposals, the capital investment associated with each contract is based on the required fueling station assets such as:

- CNG - Compression, high pressure storage and dispensing
- LNG - Cryogenic storage and dispensing.
    - Under a LNG Service Agreement, in the event that a customer requires transportation and delivery of the LNG to the LNG fueling station, the cost to provide such service and the recovery of such costs will be determined under the terms and conditions of the Service Agreement between Terasen Gas and the Customer

The cost of service model contemplated in the GT&Cs uses forecast costs. The forecast capital costs have a high degree of precision for several reasons:

1. TGI has undertaken detailed and comparative quotations to ensure a high degree of accuracy when determining cost estimates.
2. The project engineering team has completed numerous projects within the Company's operating territory, providing us with a high degree of confidence in their ability to complete projects on budget without compromising quality.
3. The Company has procured the largest component of project costs, the fueling station, on fixed price contracts.

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The forecast capital costs also include capitalized overhead. The cost of service model applies the currently approved capitalized overhead rate to the annual gross operating and maintenance expense to determine capitalized overhead for each contract.[67]

[67] The TGI rate is applied as per item 27 of the TGI, 2010-2011 Revenue Requirements Application, Negotiated Settlement Agreement prescribes a 14% capitalized overhead rate to be applied to gross O&M

5.1.2.2 Operating and Maintenance Expense[68]

Another input in the cost of service model incorporated in the proposed GT&Cs is forecast O&M.

The incremental operating and maintenance expense for each NGV Fueling project reflects the material and labour expenses associated with maintaining the fueling stations as well as incremental administrative costs associated with the contract. TGI expects that most customers will be existing customers and as such incremental billing and administrative costs will be minimal. TGI has included, and will continue to include, the estimated O&M in the cost of service analysis. As discussed below, TGI has designed, and will continue to design, NGV rates that will recover these costs.

The operating and maintenance expense is inflated by two percent over the previous year, for each year subsequent to the first year of the forecast. The gross operating and maintenance expense embedded in the cost of service is reduced by the capitalized overhead.

5.1.2.3 Depreciation Expense

Depreciation expense is another input in the cost of service model. The GT&Cs contemplate TGI employing depreciation rates approved by the Commission.

At this time, Terasen Gas is seeking Commission approval for the use of the depreciation rates identified in the table below. The estimated useful life of the CNG and LNG fueling assets are sourced from engineering estimates and result in depreciation rates in Table 5-1 below:

Table 5-1: Useful Life and Resulting Depreciation Rates for CNG and LNG Fueling Assets

Asset	Estimated Useful Life (years)	Depreciation Rate (%)
CNG Dispensing Equipment	20	5%
LNG Dispensing Equipment	20	5%
Foundations	20	5%
Pumps	10	10%
Dehydrator	20	5%
Capitalized Overhead[69]	Average	2.7%

The cost of service model treats capitalized overhead as a project capital cost and applies the average TGI rates for depreciation expense to the capitalized overhead.

[68] Confidential Appendix E, Schedule 2
[69] Based on the average 2011 TGI depreciation rate, excluding general plant

The cost of service model begins calculating depreciation expense when the assets are available for use and assumes that the asset is retired once the net book value reaches zero. The general formula used for the calculation of annual depreciation expense is as follows:

(Opening Balance + Additions x Days in Service/365) x Depreciation Rate

5.1.2.4 Property Tax

The GT&Cs contemplate property tax as an input in the cost of service model.

Property tax expense is a function of revenues earned on gas consumed within municipal boundaries, property assessment values and property tax rates set by the various taxation authorities. The property tax expense forecast will be different for each CNG or LNG Service contract; the applicability of tax on revenues earned, applicable assessed values and tax rates that are contingent on the municipality in which the CNG or LNG assets reside.

Due to the movable nature of the LNG and CNG compression equipment, only assets that form the foundation or platform will be subject to assessment and any applicable municipal general, school and other mill rates. The revenue component of property tax, if applicable, is calculated by multiplying the second preceding year's revenues by one percent (e.g. 2013 expense = 2011 revenue x 1%).

5.1.2.5 INCOME TAXES[70]

TGI is subject to corporate income taxes imposed by the Federal and BC governments and as such the proposed GT&Cs contemplate including these costs in the calculation of the cost of service. Consistent with approved practices, current income taxes have been calculated using the taxes payable basis. The tax rates reflect current substantively enacted tax legislation in the Canada Income Tax Act and the BC Income Tax Act, shown in Table 5-2 below:

Table 5-2: Forecast Income Tax Rates for 2011 and Beyond

Year	Rate
2011	26.5%
2012 +	25.0%

In the determination of income tax expense, TGI's cost of service model adjusts income for differences between when items are deductible for tax and accounting purposes as follows:

- Earned Return
- Deduct: Interest

[70] Confidential Appendix E, Schedule 3

- Add: Depreciation Expense
- Deduct: Capital Cost Allowance (CCA)
- Deduct: Overhead Capitalized Expensed for Tax Purposes

Two of the timing differences, CCA and overhead capitalized expensed for tax purposes, are discussed in further detail in the following subsections.

5.1.2.5.1 Capital Cost Allowance (CCA)[71]

The fueling station and associated assets are eligible expenditures for CCA income tax deductions and as such, the taxable income calculation includes the maximum allowable CCA deduction. The cost of service model treats capitalized overhead assets as capital cost allowance Class 51 additions (self constructed assets). The general formula for the CCA deduction is as follows:

(Opening Un-depreciated Capital Cost (UCC) Balance + (Additions x ½)) x CCA Rate

The cost of service model applies the enacted CCA rates. The current rates are shown in Table 5-3 below:

Table 5-3: CCA Class and Rates for CNG and LNG Fueling Assets

Asset	CCA Class	CCA Rate
CNG Dispensing Equipment	8	20%
LNG Dispensing Equipment	8	20%
Foundations	1.3	6%
Pumps	8	20%
Dehydrator	8	20%
Capitalized Overhead	51	6%

5.1.2.5.2 Capitalized Overhead for Tax Purposes

The capitalized overhead rate permitted for tax expense purposes is less than the approved capitalized overhead rate for regulatory purposes. This results in a timing difference deduction to the taxable income calculation as follows:

Capitalized Overhead x [(Regulatory Rate – Rate for Tax Purposes) / Regulatory Rate][72]

[71] Confidential Appendix E, Schedule 4
[72] Capitalized Overhead x [(14% - 8%)/14%]; Capitalized Overhead x [6%/14%]

5.1.2.6 Rate Base and Earned Return

Rate base and earned return are a required input in the cost of service model, and are reflected in the proposed GT&Cs. The rate base associated with each CNG or LNG Service contract is comprised of the mid-year balance of the net plant in service, a thirteen month adjustment to reflect the expected available for use date and an allowance to account for working capital.[73]

5.1.2.6.1 Net Plant in Service ("NPIS")[74]

The NPIS is the net capital investment for the LNG or CNG Fueling assets, capitalized overhead, as well as allowance for funds used during construction ("AFUDC") when applicable.[75] The net capital investment is composed of the initial investment less accumulated depreciation.

As noted above, the model begins calculating depreciation expense when the assets are available for use and assumes that the asset is retired when the net book value reaches zero.

5.1.2.6.2 Thirteen Month Adjustment

Since rate base is calculated on a mid-year basis, a thirteen month adjustment is required to appropriately reflect the forecast available for use date of the assets for each CNG or LNG Service contract. The thirteen month adjustment is calculated as follows for the first year of service:

[Ending NPIS x (Number of Days In Service / 365)]- Mid Year NPIS

5.1.2.6.3 Working Capital

The cost of service model uses a simple method to determine an approximate allowance for cash working capital included in the rate base by applying a ratio[76] of TGI cash working capital to closing gross plant in service to the closing gross plant in service balance of the CNG or LNG fueling assets for each year.

5.1.1.1.1 Earned Return

The cost of service model applies the most recently approved capital structure and rates of return to calculate the earned return.

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[73] Confidential Appendix E, Schedule 5
[74] Confidential Appendix E, Schedules 6, 7 and 8
[75] Allowance for funds used during construction ("AFUDC") is a return on the company's invested capital or project financing costs for projects under construction that have not been put into service and the rate is the after tax weighted average cost of capital. AFUDC is capitalized on projects under construction where costs are greater than $50,000 and construction is anticipated to be three months or longer in duration.
[76] This ratio is approximately -0.20% and is based on figures from the 2010/11 TGI Negotiated Settlement Contract.

The WM Agreement, for which TGI seeks approval, contemplates service commencing in 2011; therefore, the 2011 approved TGI return on rate base is applied to the rate base of the contract to determine the equity return and financing costs. [77]

Table 5-4: Calculation of Forecast Earned Return

Component	%	Embedded Cost	Return on Rate Base (%)
	(A)	(B)	(A) x (B)
Equity	40.00%	9.500%	3.80%
Long Term Debt	58.37%	6.945%	4.05%
Short Term Debt	1.63%	4.500%	0.07%
Total	**100.00%**		**7.93%**

5.1.3 CNG AND LNG SERVICE RATE DESIGN

TGI's rate design for CNG and LNG services is incorporated in the proposed GT&Cs. The rate design yields a customer-specific rate that will be incorporated into the applicable service agreement. The resulting rate generates sufficient incremental revenue to offset the incremental forecast revenue requirement determined as outlined in the previous section. As a result, the NGV customer pays a fair cost of service-based rate to obtain a valuable service. Existing natural gas customers benefit from the increased throughput, producing lower delivery rates all else equal. The overall rate charged is just and reasonable.

5.1.3.1 Overview of Rate Design

Under the proposed GT&Cs, the methodology used to determine the CNG or LNG Service charge for each contract results in a volumetric charge that increases every year and is based on three key components:

1. A fixed annual escalation rate for the contract (ex. each year the contract rate increases by a fixed rate of 2%)
2. The take or pay commitment of the contract (i.e. minimum contract demand)
3. The present value of the forecast cost of service over the term of the contract.

The annual contract rate escalation is fixed for each contract through negotiations with the customer and is set at a level that is intended to represent general inflation levels and to provide a stable and predictable charge.

[77] 2010/11 TGI Negotiated Settlement Agreement and Terasen Utilities Return on Equity and Capital Structure Application, BCUC Order No. G-141-09 and BCUC Order No. G-158-09.

The CNG or LNG Service rate design results in annual differences between the forecast cost of service and revenue collected; however, the mechanism for setting the contract rate achieves full recovery of the forecast cost of service over the contract term.

TGI has included in the WM Agreement a notional annual revenue versus cost of service tracking account. TGI is not requesting approval of a deferral account; rather the purpose of displaying this notional account is to validate the rate design and demonstrate that over the term of the contract any revenue deficiency that may occur in the early years of the contract is offset by the revenue surplus that results in the later years of the contract.[78]

5.1.3.2 Derivation of the Fueling Charge[79]

The CNG or LNG Service fueling charge for each contract is derived by determining the present value of the cost of service over the term of the contract using the after tax TGI Weighted Average Cost of Capital (WACC) as a discount factor and applying the inflation factor specific to each contract.

The calculation of the after tax WACC is as follows:

(ROE x Equity Thickness) + [(Long Term Debt Rate x Long Term Debt Thickness) + (Short Term Debt Rate x Short Term Debt Thickness)] x (1- Tax Rate)

Using the approved 2011 capital structure and tax rate, the 2011 after tax WACC rate is as follows:

= (9.50% x 40%) + [(6.945% x 58.37%) + (4.500% x 1.63%)] x (1-26.5%)

= 3.8% + [(4.05%) + (0.07%)] x (73.5%)

= 3.8% + [4.12%] x (73.5%)

= 3.8% + 3.03%

= 6.83%[80]

The year one contract rate is set to recover the cost of service over the contract term; therefore, the present value of the cost of service must be equal to the sum of:

Annual payment x [(1+inflation) ^ year / (1+WACC) ^ year], for each year of the contract.

[78] Confidential Appendix E, Schedule 9
[79] Confidential Appendix E Schedule 11
[80] The after tax WACC rate for 2012 onward is adjusted for the reduced tax rate of 25%, resulting in an after tax WACC rate of 6.9%

Please refer to Confidential Appendix E, Schedule 11, for the detail calculation of the year one contract rate in addition to the subsequent year's rates.

5.1.4 SUMMARY

TGI's proposed GT&Cs for CNG and LNG Services incorporate an approach to determining the cost of service and recovery mechanism for each service agreement, which results in fair and reasonable fueling charges that recover the forecast cost of service. The model allows the NGV customer to obtain the benefits associated with NGV service, while existing natural gas customers benefit from the increased throughput, producing lower delivery rates all else equal. Overall, TGI believes that the rates are just and reasonable.

6 RISKS AND RISK MITIGATION

6.1 Introduction

New station projects present cost and operational risks that must be managed. In this section, the Company addresses the following points:

- Terasen Gas intends to manage construction cost risks primarily through "take-or-pay" service agreements.
- The risk of stranded assets is addressed through both contractual provisions and constructing facilities in a manner that allows them to be relocated and used elsewhere.
- From an operational perspective, CNG stations are a proven technology which pose minimal risks. LNG station technology is also well understood and has been proven in other jurisdictions such as California.[81] Terasen Gas also has direct experience in the liquefaction, handling, and storage of LNG through its Tilbury Island LNG Plant.

Specific issues and mitigation strategies applicable to the WM Agreement were discussed in Section 4.0.

6.2 Cost Risk

NGV station projects require relatively modest capital investments[82] by Terasen Gas. Capital cost risk will be mitigated by the following practices:

- Project management using experienced Terasen Gas project engineering staff.
- Operational design expertise capitalizing on over 50 man-years of experience with NGV stations.
- Fixed price purchasing relationships with experienced equipment suppliers such as IMW Industries and Chart Industries.
- Contractual relationships with customers requiring them to provide suitable sites for the stations.
- Where applicable capital cost, building contingency provisions into the project estimates.

The Company believes that these practices will ensure that supply project cost risks are minimized.

[81] Clean Energy News Release, June 30, 2010. http://www.cleanenergyfuels.com/2010/5-30-10.html
[82] Terasen Gas estimates capital investments will range between $250,000 and $2,000,000 per project.

6.3 Risk of Stranded Assets

As described in Section 2.0, the rate charged to customers for service fully recovers the cost of service over the term of the service agreement. TGI has also sought to mitigate the risk associated with the service agreement expiring before the full capital cost of the station has been recovered; however, there could be some capital risk to Terasen Gas customers.

The following is an example of how the stranding risk arises. A fleet operator may sign a service agreement with Terasen Gas for a period of 10 years where the station infrastructure asset life is 20 years. If the customer does not buy additional vehicles during the initial term and elects to discontinue the use of natural gas as its transportation fuel, a portion of the depreciated station cost would remain unrecovered. In this example, the capital cost of this station will be partially recovered through the rate structure charged over the first ten years, leaving 10 years of unrecovered cost.

The cost recovery risk associated with the long life of the assets can be mitigated in various ways. For instance:

- Firstly, NGV stations are mobile and portable, making their relocation to another suitable project a realistic option. The Company estimates that approximately 50% - 70% of the capital is mobile assets with the balance being local site individually engineering-designed which would not be transferrable.
- Secondly, NGV station assets may be sold into other jurisdictions should the B.C. market not develop as expected.[83]
- Thirdly, Terasen Gas can seek to negotiate contractual terms that mitigate risk, such as those employed in the WM Agreement.

These methods have been employed to mitigate the risk to TGI customers associated with the Company's investment in the Waste Management facilities as discussed in Section 4.0.

6.4 Operational Risk

The Company is well-positioned to deal with any operational risk specific to the fueling infrastructure. Existing staff are competent to deal with gas safety issues and the operation and maintenance of station equipment including the basic components that make up the fueling infrastructure. Terasen Gas will have access to key equipment manufacturers such as IMW Industries and Chart Industries for maintenance and operational advice. Ongoing maintenance will be performed according to manufacturers' recommended schedules. Ongoing monitoring and operational data analysis will also be done in order to ensure optimum equipment performance. Terasen Gas will refine procedures and processes to ensure fueling station equipment is managed to the same level as all other existing assets.

[83] Please see Appendix A-2

Operational risks which are specific to each fuel type (CNG and LNG) are described below:

6.4.1 CNG OPERATIONAL RISKS

The compression and dispensing equipment is a well proven technology with a limited scope of operational risks. As a high pressure gas, CNG carries the potential for natural gas leaks at the dispenser or hose. In extreme cases, risks may include an explosion, rupture or fire at the compressor or point of refueling. The overall impact from these risks may be operational down-time, repairs or replacement of equipment, personal injury, or death. These factors are mitigated significantly by equipment design, preventative safety measures, codes and standards, engineering practices, site development and training, and ensuring equipment is well maintained.

6.4.2 LNG OPERATIONAL RISKS

Terasen Gas has formed a relationship with Chart Industries to provide LNG station equipment. Their LNG technology has been well proven in many fueling stations throughout the US for customers such as Waste Management Inc., the City of San Diego, and the City of Los Angeles.[84] Terasen Gas also has direct experience in the liquefaction, handling, and storage of LNG through its Tilbury Island LNG Plant. TGI is the owner and operator of the Tilbury Island LNG Plant and the Terasen group will own and operate the Mt. Hayes LNG storage facility.

As LNG is a cryogenic liquid, any physical contact or spillage constitutes personnel and equipment risks. The equipment manufacturer designs its stations with built-in safety features to protect against a catastrophic failure which could impact employees or the environment. For these reasons, it is vitally important that LNG stations be owned and managed by experienced personnel from a stable, reputable organization like Terasen Gas. Finally, the station infrastructure is equipped with alarm systems, built-in safety features on critical items and emergency shutdown features to address this issue.[85]

Alarm systems include methane and fire detection, as well as emergency shutdown buttons. Control systems can be programmed to automatically call the fire department when either or both warnings are activated. Cryogenic tanks are vacuum jacketed to minimize heat leak into the cold liquid, which in turn minimizes the buildup of pressure. All tanks incorporate several means of controlling pressure. Fail-safe valves that isolate the storage tank in the event of an automatic shutdown protect all main LNG connections.

6.5 Conclusion

Terasen Gas has identified a number of potential risks associated with the NGV business model, and has identified appropriate steps to mitigate those risks.

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[84] http://www.nexgenfueling.com/customers.html
[85] http://www.nexgenfueling.com/p_fs_safety.html

7 STAKEHOLDER CONSULTATION

7.1 Introduction

Over the two years leading up to the filing of this Application, Terasen Gas has consulted a number of stakeholders regarding the Company's interest in pursuing the development of a compression service for refueling of NGVs. Terasen Gas believes the consultation described below has provided valuable information that has been considered in the proposals made in this Application.

7.2 Customers

Terasen Gas has consulted with customers and other potential project partners to gather information that assisted in the design of the NGV service offering. The list of customers is below. In addition, Terasen Gas consulted with representatives of the Commercial Energy Consumers Association of British Columbia and the British Columbia Public Interest Advocacy Centre on behalf of the British Columbia Old Age Pensioners Organization *et al* ("BCOAPO"). A number of organizations submitted letters of support for this Application.

Customer Organizations

Aldon Waste Systems	Langley Schools
Arrow Trucking	Lordco
BC Ferries	MetroVan
BC Transit	Mission Public Schools
City of Abbotsford	Municpality of Whistler
City of Burnaby	Prince George Taxi
City of Kelowna	Reg. District of Nanaimo
City of Port Coquitlam	Remple Disposal
City of Richmond	School District No.23 Kelowna
City of Surrey	Seaspan
City of Vancouver	Surrey Fraser Docks
Columbia Shuswap Reg. District	TransLink
District of Lake Country	UBC
District of Mission	Vedder Transportation Group
District of Squamish	Waste Control Services
DP World	Waste Management
EuroAsia Transload	Wastech
First Canada ULC	YVR Airport Authority
Greater Victoria Harbour Authority	

Technology Suppliers

DMA Technical Services Inc.	JenMar Concepts
Eco Fuel Systems Inc	Kraus Global
enviroMech Industries	Max-Quip Inc
IMW Industries	Technocarb Alternative Fuel Power

Associations

BC Trucking Association	Can. Natural Gas Vehicle Alliance
Can. Association of Fleet Supervisors	Canadian Trucking Alliance

Fuel Providers

Enbridge Gas,Ontario	Gaz Metro, Quebec
Atco Gas, Alberta	Spectra Energy
Encana Corporation	

Dealers

Pacific Coast Heavy Truck Group	Metro Motors (Ford)
First Truck Center Vancouver Inc.	Richport Ford
Honda Canada	

Terasen Gas has received letters of support for this Application from the below organizations. Copies of these letters can be found in Appendix F.

1. BC Ferries
2. BC Transit
3. City of Surrey
4. City of Vancouver
5. Canadian Natural Gas Vehicles Alliance
6. Columbia Shuswap Regional District
7. Cummins Westport Inc.
8. IMW Industries
9. Langley School District
10. Lordco Auto Parts
11. Metro Ford

12. District of Lake Country
13. Regional District of Nanaimo
14. Regional School District No. 23 (Kelowna)
15. Technocarb Equipment
16. Max-Quip Inc.
17. Waste Management Inc.
18. Wastech Services Ltd.

7.3 Government

At the provincial level, the Company has met with representatives of the Ministry of Energy, the Ministry of Environment, Ministry of Small Business and Revenue, and the Ministry of Transportation. These briefings highlighted the main points of the proposed projects and the proposed program, and were met with generally supportive responses. Additionally, Terasen Gas has consulted with the Ministry of Natural Resources at the federal level.

7.4 First Nations

The Company is of the view that the project proposed in the Application does not have the potential to adversely impact aboriginal rights and title. The facilities required to serve Waste Management are located on privately owned, fee-simple land. The site is fenced, and is located in a developed industrial area. TGI believes that the Crown's duty to consult and, if necessary accommodate, does not arise in this circumstance.

Although TGI has not communicated with First Nations in respect of the Waste Management facilities, the Company is committed to the strong relationships we enjoy with the First Nations groups in our service area. TGI will evaluate future NGV projects for the potential need to consult First Nations. In the event that such consultations are appropriate, Terasen Gas will include details of these consultations in the filing of those future project agreements.

7.5 Conclusion

The extensive stakeholder consultations conducted by Terasen Gas in the two years prior to filing this Application, have yielded feedback reflected in aspects of this Application. The feedback has been generally positive and supportive.

8 APPROVALS SOUGHT

In this section, Terasen Gas identifies the approvals sought in this Application. A draft form of the Order containing all of the approvals sought by Terasen Gas can be found in Appendix G. Terasen Gas submits that the WM Agreement and the proposed GT&Cs are just and reasonable, and the expenditures associated with the provision of CNG Service to WM under the WM Agreement are in the public interest. As such, TGI respectfully seeks the following orders from the Commission:

8.1 Approval of the WM Agreement

1. An order pursuant to sections 59-61 of the Act approving the WM Agreement.
2. If the Commission is unable to approve the WM Agreement on a permanent basis by **January 14, 2011**, then TGI also requests an interim order pursuant to section 89 of the Act on or before **January 14, 2011** approving the WM Agreement on an interim basis pending the final determination of this Application.

8.2 Expenditure Schedule For WM Project

1. An order pursuant to section 44.2 of the Act accepting the estimated expenditures outlined in Section 4 of the Application for the Waste Management project.

8.3 Order related to TGI's General Terms and Conditions

1. An order pursuant to sections 59-61 of the Act approving the proposed amendments to TGI's General Terms and Conditions, specifically, the addition of a new section 12B relating to the CNG Service and LNG Service as described in Section 2 of the Application and as set out in Appendix B.

8.4 Orders related to Cost Recovery

1. An order pursuant to sections 59-61 of the Act approving:
   a) Depreciation rates applicable to NGV refueling assets as identified in Section 4.6.3.2;
   b) A non-rate base deferral account attracting AFUDC to capture the NGV Fueling Service Application costs incurred in 2010 and 2011 and to recover these costs from all non-bypass customers by amortizing them through delivery rates commencing January 1, 2012 over a three year period.

8.5 Proposed Regulatory Timetable

ACTION	DATE (2010 - 2011)
Intervenor and Interested Party Registration	Monday, December 6, 2010
Commission Information Request No. 1 on Terms and Conditions of WM Agreement only	Friday, December 10, 2010
Terasen Gas Response to Commission Information Request No. 1 on Terms and Conditions of WM Agreement Only	Wednesday, December 22, 2010
Commission Information Request No. 2 (On Remainder of the Application)	Wednesday, January 12, 2011
Anticipated Commission Decision on Terms and Conditions of WM Agreement Only	On or before January 14, 2011
Intervenor Information Request No. 1 (On Remainder of the Application)	Tuesday, January 18, 2011
Terasen Gas Response to Commission Information Request No. 2 and Intervenor Information Request No. 1	Tuesday, February 1, 2011
TGI Written Final Submission	Friday, February 11, 2011
Intervenor Written Final Submission	Tuesday, February 18, 2011
TGI Written Reply Submission	Tuesday, February 25, 2011

9 CONCLUSION

NGVs represent a significant potential market for TGI. The addition of NGV load will provide benefits to existing customers, and will allow potential NGV customers to obtain significant benefits associated with NGVs. The use of natural gas instead of diesel also reduces GHG emissions. The proposed GT&Cs will allow us to serve a market for NGVs in return-to-base fleet operations. The Company has also proposed approval of our contract with our first customer in this market. The WM Agreement, like future agreements entered into under the proposed GT&Cs, results in the customer being charged a rate that will recover the costs of the required assets under a "take-or-pay" arrangement to help to protect all customers from potential financial risks. Approval of the WM Agreement and TGI's expenditures on facilities will not only allow TGI to serve WM's best interests, but will also be in the best interests of all customers as they will enjoy the financial benefit of the increased throughput on our distribution system made possible by the addition of this large customer. Therefore, TGI respectfully requests that the Commission approve the WM Agreement on an expedited basis, and approve the remainder of the relief sought in due course.

Appendix A

Appendix A-1

MARKET FOR NGV FUELING IN BC AND DEMAND FORECAST

TABLE OF CONTENTS

1 MARKET FOR NGV FUELING IN BC AND NGV DEMAND FORECAST

This Appendix supports the analysis presented in Section 3.1 of the Application, where Terasen Gas analyzed the impact various NGV demand scenarios could have on delivery rates, all other things being equal. The Appendix is divided into three parts:

1) An assessment of the market for NGV fueling in BC;
2) The future demand for fueling infrastructure under changing market conditions within Terasen Gas' target market; and
3) A summary of the potential delivery rate benefit presented in Section 3.3 of the Application.

This Appendix is meant to provide context by describing the significant potential for NGV transportation demand (and GHG emission reduction) in BC and why the Company feels there is strong market potential for NGV adoption in BC. This information is provided for background only, as the "take-or-pay" model proposed in this Application ensures that the infrastructure remains in step with demand.

In Section 2 – Assessment of the Market for NGV Fueling in BC, Terasen Gas will:

- Review the size of the overall transportation market in BC from 1990 to 2007;
- Define the size of Terasen Gas' target market in 2007 (~290 PJ); and
- Present a future outlook on the size of the overall and target transportation markets under a business as usual scenario.

In Section 3 - NGV Demand Forecast, Terasen Gas will:

- Define the demand forecast methodology and underlying scenario assumptions;
- Present the future demand growth for each scenario - Reference Case, Low Growth, and Reference Case Plus Passenger Growth;
- Review the implications of the demand forecast; and
- Present mitigation of demand risks associated with market assumptions.

In Section 4 – Potential Delivery Rate Benefit, Terasen Gas will:

- Analyze the impact various NGV demand scenarios could have on delivery rates, all other things being equal.

Please refer to Section 3.1 of the Application for a discussion on the methodology for calculating the impact on delivery rates.

2 ASSESSMENT OF THE MARKET FOR NGV FUELING IN BC

Section 2 of this Appendix analyses the market for NGV fuelling in the overall transportation industry in British Columbia. Terasen Gas is focused on providing fuelling service for commercial, return-to-base fleet vehicles in BC,[1] which represents only a portion of the total potential NGV demand in the province but is nonetheless significant both in terms of NGV demand and GHG emission reduction.

2.1 Source Data for Market Analysis

The analysis presented in this Appendix is based on data from a publicly available database from the Natural Resources Canada Office of Energy Efficiency ("NRCan"). The NRCan database provides detailed information on transportation energy use, fuel type, number of vehicles, and GHG emissions from 1990 through 2007.[2] Therefore, Terasen Gas believes that the NRCan information is the most accurate and current public resource from which to assess the BC transportation market. The NRCan data provides the basis for the Company's assessment of the:

- Size of the overall transportation market in BC from 1990 to 2007;
- Size of Terasen Gas' target market in 2007 (~290 PJ); and
- Future outlook on the size of the overall and target transportation markets under a business as usual scenario.

As NRCan has not revised the study since 2007, Terasen Gas has undertaken a review of other potential industry data sources and has found that no formal third-party research or data is available which contains the information required to accurately assess the BC transportation market.

The following sub-sections will discuss the size of the market (both overall market and Terasen's target market) defined by total energy use, fuel type and number of vehicles. Section 3 of this Appendix will examine the GHG emissions output of the overall, targeted, and future transportation markets.

In addition, Terasen Gas has developed three scenarios which forecast the future demand for natural gas as a transportation fuel – and the required fuelling infrastructure - under changing market conditions. These demand forecasts are detailed in Section 3 of this Appendix.

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1 "Commercial vehicle" refers to a vehicle that may be used for transporting goods or passengers. http://en.wikipedia.org/wiki/Commercial_vehicle

2 Natural Resources Canada, Office of Energy Efficiency, 2007: http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/trends_tran_bct.cfm
Transportation Sector data includes British Columbia and Territories. ("NRCan 2007")

2.2 Overall Transportation Market in BC

NRCan determined the BC transportation market to consist of the following sectors: passenger cars (small and large cars), light duty trucks (passenger and freight light trucks), medium duty trucks, heavy duty trucks, motorcycles, buses (school, urban transit and inter-city buses), aircraft (passenger and freight air) trains (passenger and freight rail), marine vessels and off road vehicles.[3] The following Table 2-1 defines these transportation sectors by gross vehicle weight rating ("GVWR") and lists examples within each category. Throughout this Application, Terasen Gas uses the same vehicle classifications in Table 2-1 to describe any and all vehicle category references.[4]

Table 2-1: Transportation Sector Vehicle Classifications from NRCan 2007 database

Category	Gross Vehicle Weight Rating (GVWR)	Examples
Passenger Cars:		
Small	Car < 1,181 KG	compact cars
Large	Car > 1,182 KG	four door sedans, taxis, utility fleets
Light Duty Trucks[5]	Truck <3,856 KG	F150, SUV, courier vans, maintenance vans
Medium Duty Trucks	Truck 3,856 to 14,969 KG	postal vans, moving vans, cube vans
Heavy Duty Trucks	Truck >14,970 KG	garbage trucks, tractor trailers, Class 8 trucks
Buses	-	school, urban transit, inter-city buses
Trains	-	passenger and freight rail
Aircraft	-	passenger and freight air
Marine Vessels	Vessel > 3,000 T	coastal ferries, large tugboats
Off Road Vehicles	-	ATVs, snowmobiles, golf carts
Motorcycles	-	Two and three wheeled motorcycles

Source: NRCan 2007

Terasen Gas has analyzed the overall transportation market by total energy use, fuel type and number of vehicles. Energy use offers insight to which vehicle categories consume the most energy, as well as the energy consumed by the transportation market in BC. Analyzing the market by fuel type illustrates the composition of the transportation fuels and shows the Province's dominant use of conventional fuels. Assessing the transportation market by its number of vehicles provides an overview of which vehicle categories have the largest number of vehicles in BC.

2.2.1 MARKET SIZE BY ENERGY USE (GJ)

The size of the transportation fuels market can be quantified in terms of total energy use from various fuel types. As shown in Table 2-2, BC's transportation sector has grown from 268.2

[3] Off road includes vehicles not registered for on-road travel such as ATVs, snowmobiles, golf carts and some military vehicles.
[4] Vocational Trucks are introduced as a vehicle category in Section 2.3 of this Appendix
[5] Light Duty Trucks include passenger light and freight light trucks.

petajoules ("PJ") in 1990 to 369.6 PJ in 2007. During this period, the highest growth categories were light duty trucks, heavy duty trucks, air, and marine. Since 2000, the heavy duty truck category (6.3%) and marine vessels (6.0%) have exhibited the highest compound annual growth rates ("CAGR").

Table 2-2: BC's Total Energy Use by Transportation Sector since 1990

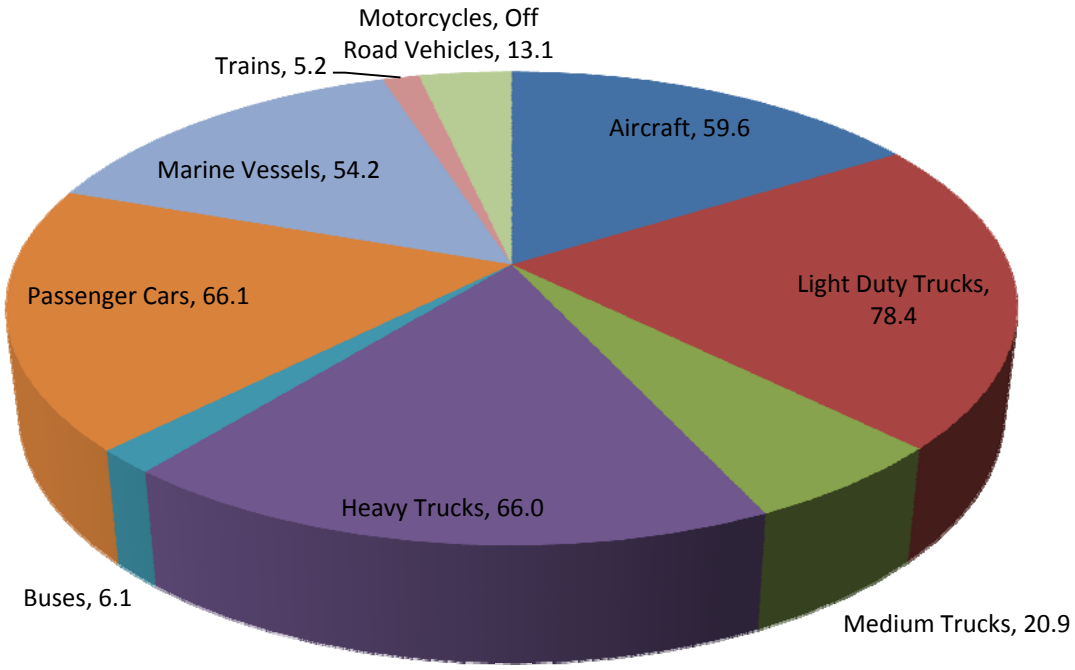
	Energy Use (PJ)					CAGR (%)[6]
Category	**1990**	**1995**	**2000**	**2005**	**2007**	**2000 - 2007**
Small Cars	46.9	49.3	45.2	42.9	43.6	-0.5%
Large Cars	30.9	26.9	23.6	21.8	22.5	-0.7%
Light Duty Trucks	44.4	59.6	70.3	75.7	78.4	1.6%
Medium Duty Trucks	18.6	25.5	30.9	28.9	20.9	-5.4%
Heavy Duty Trucks	27.6	38.0	43.1	59.5	66.0	6.3%
Buses	6.8	6.2	5.7	6.1	6.1	1.0%
Rail	18.6	21.2	16.2	5.3	5.2	-15.0%
Air	38.4	47.8	67.4	60.2	59.6	-1.7%
Marine	29.0	36.7	36.2	51.4	54.2	6.0%
Off Road	6.6	8.5	11.3	13.6	12.7	1.7%
Motorcycles	0.4	0.4	0.5	0.4	0.4	-3.1%
Total:	**268.2**	**320.2**	**350.4**	**365.8**	**369.6**	**0.8%**

Source: NRCan 2007

6 "CAGR" refers to Compound Annual Growth Rate. Calculated as: CAGR % = (2007 value – 2000 value)^(1/7)-1

The composition of the BC transportation market in 2007 is summarized below in Figure 2-1.

Figure 2-1: BC's Total Energy Use by Transportation Sector in 2007 was 369.6 PJ



Total : 369.6 PJ
Source: NRCan 2007

When combined, the trucking sector (light, medium, and heavy duty) represents 44.7% (or 165.3 PJ) of the overall transportation sector as measured by energy use.

The transportation sector in BC consumes primarily conventional fuels - gasoline and diesel. Terasen Gas believes that this is due to number of reasons, including overall familiarity with conventional fuels, fuel incumbency, ease of access to these fuels, mass production and distribution of conventional-fuelled vehicles by global automakers, and a lack of viable fuel alternatives. These factors appear to have caused the transportation fuel market to continue to primarily utilize gasoline and diesel despite the economic and environmental advantages of natural gas, which are be discussed in more detail in Appendix A-2, Section 2, NGVs in BC & Other Jurisdictions. Table 2-3 shows the composition of BC's transportation by fuel type consumed.

Table 2-3: BC's Transportation Fuel Consumption By Energy Source in 2007

Category	Fuel Type (PJ)						
	Gasoline	Diesel	Natural Gas	Electricity	Propane	Heavy Fuel Oil	Aviation Fuel
Small Cars	42.9	0.4	0.004	-	0.2	-	-
Large Cars	21.2	0.2	0.03	-	1.2	-	-
Light Duty Trucks	75.8	0.3	0.05	-	2.2	-	-
Medium Duty Trucks	7.2	13.7	-	-	-	-	-
Heavy Duty Trucks	-	66.0	-	-	-	-	-
Buses	0.2	5.3	0.1	0.5	-	-	-
Trains	-	5.2	-	-	-	-	-
Aircraft	-	-	-	-	-	-	59.7
Marine Vessels	-	12.2	-	-	-	42.1	-
Off Road Vehicles	12.6	-	-	-	-	-	-
Motorcycles	0.4	-	-	-	-	-	-
Total:	**160.3**	**103.3**	**0.2**	**0.5**	**3.6**	**42.1**	**59.7**

Source: NRCan 2007
Note: The totals in this table sum to 369.7 PJ. Before rounding, the raw data sums to 369.642 PJ, which was also stated above in Figure 2-1.

When combined, gasoline and diesel make up over 70% of the fuels market. Passenger (small and large) cars and light duty trucks are fueled almost entirely by gasoline. The most concentrated diesel markets are heavy duty trucking and buses, which consume 100% and 87% diesel respectively. Industry specific fuels like heavy fuel oil and aviation fuel are consumed by marine vessels and aircraft respectively. In 2007, natural gas represented approximately 0.05% of BC's transportation fuel market.

2.2.2 MARKET SIZE BY NUMBER OF VEHICLES

As described in the previous subsection, the transportation market can be quantified in terms of total energy use. Since some categories inherently have higher energy intensity[7] than others, comparative data for the total number the vehicles is needed to form a more complete picture of the transportation sector.

Category growth is a function of both energy intensity and number of vehicles. The number of vehicles depends on three main factors: existing stock, retired or replaced vehicles and new vehicle additions. The frequency of vehicle replacements depends on its usage and maintenance within each category. In general, cars are replaced every 10 to 20 years, trucks 7 to 12 years, buses 15 to 20 years, and other large sector vehicles like trains, aircraft and marine vessels every 30 to 50 years.[8] New vehicle growth depends upon factors such as general economic conditions and population growth, among others. Table 2-4 shows the number of vehicles by category and the CAGR from 2000 to 2007.

[7] "Energy intensity" refers to energy consumption on a per unit basis.
[8] BC Trucking Association, 2008 Establishment and Vehicles Statistics, New Flyer press release October 31, 2003 http://www.newflyer.com/index/PR_Translink, BC Ferries press release April 21, 2009 http://www.bcferries.com/bcferries/faces/attachments?id=97209

Table 2-4: Number of Vehicles in the BC Transportation Sector

Category	Number of Vehicles					CAGR (%)[9]
	1990	1995	2000	2005	2007	2000 - 2007
Small Cars	794,662	781,935	799,462	815,261	889,485	1.5%
Large Cars	371,640	316,808	309,304	306,051	334,388	1.1%
Light Duty Trucks	493,409	595,528	758,896	892,612	970,226	3.6%
Medium Duty Trucks	86,362	95,291	129,273	112,059	114,312	-1.7%
Heavy Duty Trucks	27,363	28,992	24,548	30,085	30,690	3.2%
Buses	8,884	8,926	8,905	9,251	9,828	1.4%
Motorcycles	46,556	42,302	47,781	41,400	49,137	0.4%

Source: NRCan 2007
Note: Vehicle Data for Trains, Aircraft and Marine Vessels, and Off Road Vehicles not provided in NRCan database

Even though passenger cars and light duty trucks have the highest volumes of vehicles in the province, their energy intensity is much lower on a per vehicle basis than other categories such as heavy duty trucks or buses. Light duty trucks (3.6%) and heavy duty trucks (3.2%) have exhibited the highest CAGR since 2000 based on the number of vehicles.

In summary, one of the largest categories in terms energy use is the heavy duty trucking segment, which operates entirely on diesel fuel. This category has also exhibited strong growth over the past decade. Heavy duty vehicles are also replaced more frequently than other vehicles, at approximately every eight years. Based on this analysis, Terasen Gas believes the heavy duty trucking category represents a very large and significant market opportunity in the BC transportation sector. The fueling characteristics of a vehicle are also important in determining market opportunities. More specifically, commercial fleet vehicles which operate return-to-base fueling activities present an attractive market opportunity for Terasen Gas, as discussed in Section 2.0 of the Application. Based on this qualifier, Terasen Gas also considers the (urban and inter-city) bus category to be an attractive market opportunity in the near-term. Long-term opportunities where commercial, return-to-base fleet vehicles exist are described in the following sub-section.

2.3 Terasen Gas Target Market

Terasen Gas is focused on providing fueling service for commercial, return-to-base fleet vehicles in BC. The complete rationale behind this strategy is discussed in Section 2.0 of the Application. Fueling infrastructure, discussed in Section 2.0, may include both or either of CNG or LNG Service. Based on usage and fueling behavior, some segments are better suited for LNG than CNG, and vice versa. Terasen Gas is targeting the following opportunities within BC's transportation market:

[9] "CAGR" refers to Compound Annual Growth Rate. Calculated as: CAGR % = (2007 value – 2000 value)^(1/7)-1

Near-term Opportunities:

- Heavy duty trucks (LNG) – tractor trailers, Class 8 vehicles
    - Vocational trucks[10] (CNG) - garbage trucks, dump trucks, waste haulers
- Buses (CNG) – transit and intercity buses

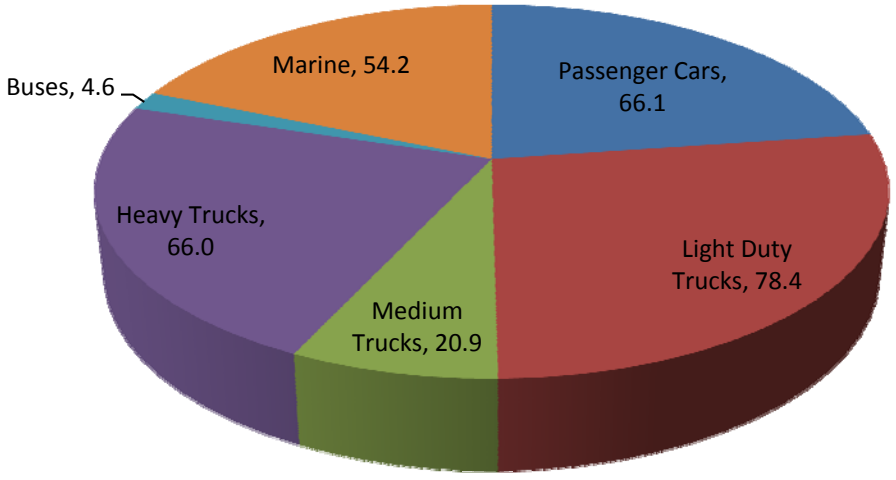
Long-term Opportunities:

- Light duty trucks (CNG) – courier vans, maintenance vans, fleet pickup trucks
- Medium duty trucks (CNG) - postal vans, moving vans, cube vans
- Marine Vessels (LNG) – coastal ferries, large vessels

If favourable NGV market conditions continue to occur over the long-term, opportunities in the passenger car segment (small and large cars) may also grow, but this is not a category of strategic focus for Terasen Gas due to low fuel consumption levels, and longer capital payback[11] periods for customers. This segment is included in the subsequent section for the purposes of providing a thorough analysis to drive future volume forecasts.

The Company's near-term and long-term opportunities represent a combined market size of 290 PJ. This market size is based on the NRCan 2007 market size (PJ) and includes all opportunities within the Company's near and long-term scope. This is shown in Figure 2-2.

Figure 2-2: Terasen Gas Target Market Size is 290 PJ



Total : 290.2 PJ
Source: NRCan 2007

[10] Industry associations such as the Canadian Natural Gas Vehicles Alliance commonly refer to heavy duty work vehicles as vocational trucks. Terasen Gas has included these as a sub-category within the heavy duty truck segment since the proposed fuel type and usage application are different.

[11] Payback refers to the incremental vehicle cost of NGVs, and also the station capital cost

The current fuel composition of this reachable market is 33% diesel, 51% gasoline, 15% heavy fuel oil, 1.2% propane, 0.2% electricity, and 0.06% natural gas.[12] When isolated, the near-term opportunities presently operate on approximately 91% diesel fuel.

2.4 Projected Target Market Size – Business as Usual

To estimate the 20 year future market outlook[13] for its target market, Terasen Gas has chosen Gross Domestic Product ("GDP") [14] as a proxy for demand growth.[15] Transportation market growth comes from new vehicle additions replacing retired vehicles, as well as general population and economic growth.

Since the trucking sector represents a large portion of the Company's target market, the Company believes its market characteristics are most representative of the target market. The British Columbia Trucking Association ("BCTA") believes that "trucking's contribution to the GDP reflects the economy in general - more trucks on the road means that people are spending money on the goods that they need".[16]

According to BC Stats, the British Columbian provincial GDP has grown at an average of 3.0% per year since 2000.[17] A correlation test shows a reasonable positive correlation between BC's GDP growth rate and total number of vehicles.[18] In its March 2010 budget update, the BC government forecast a GDP growth rate of 2.3% in 2011 and an annual average growth rate of 2.8% from 2012-2014.[19] Therefore, Terasen Gas has decided to apply a more conservative estimate of 2.0% per year to produce the outlook demonstrated in Table 2-5 below.

The subsequent section describes the future outlook assuming existing market conditions remain constant. Using the 2% annual growth factor, the Company's target market size will increase to 458 PJ by 2030.

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[12] These numbers are derived from Table 2-3: BC's Transportation Fuel Consumption By Energy Source in 2007. The percentages have been recalculated for the Terasen Gas target market.
[13] Consistent with the 20 year demand forecast in the Company's 2010 Long Term Resource Plan
[14] As defined by BC Stats, the central statistics agency of the British Columbia Government
[15] GDP is a general indicator of economic activity and productive activities of individuals, businesses, and governments http://www.bcstats.gov.bc.ca/data/bus_stat/bcea/bcea_faq.asp#Q2
[16] Vancouver Sun, Paul Landry, September 3, 2010, http://communities.canada.com/VANCOUVERSUN/blogs/communityofinterest/archive/2010/09/03/overcoming-the-challenges-of-geography-amp-distance.aspx
[17] BC Stats, BC GDP http://www.bcstats.gov.bc.ca/data/bus_stat/bcea/bcgdp.asp
[18] Historically, the combined total number of light, medium and heavy duty trucks and buses number of vehicles in the B.C. transportation market has grown at an average rate of 2.8% per year since 2000. Source is NRCan 2007.
[19] http://www.bcbudget.gov.bc.ca/2010/bfp/2010_Budget_Fiscal_Plan.pdf

Table 2-5: Projected transportation energy use in B.C. by 2030 based on 2% annual increase

Category	Projected Total Energy Use for the Transportation Sector (PJ)					
	Actual 2007[20]	2011	2015	2020	2025	2030
Overall transportation market	369.6	400.1	433.1	478.2	527.9	582.9
Terasen Gas target market	290.2	314.1	340.0	375.4	414.5	457.7

Under a business as usual environment, Terasen Gas assumes the target market's fuel composition will remain consistent with 2007 levels. This fuel composition is discussed in the previous sub-section.

Applying the same 2% annual growth factor to each vehicle category, produces the following Table 2-6:

Table 2-6: Projected number of vehicles in target market by 2030 based on 2% annual increase

Category	Projected Total Number of Vehicles					
	Actual 2007[21]	2011	2015	2020	2025	2030
Passenger Cars	1,223,873	1,324,759	1,433,962	1,583,210	1,747,992	1,929,924
Light Duty Trucks	970,226	1,050,204	1,136,774	1,255,091	1,385,722	1,529,949
Medium Duty Trucks	114,312	123,735	133,935	147,875	163,266	180,259
Heavy Duty/Vocational Trucks	30,690	33,220	35,958	39,701	43,833	48,395
Buses[22]	4,022	4,354	4,712	5,203	5,744	6,342
Marine Vessels[23]	72	78	84	93	103	114

These two projections provide a baseline for measuring market penetration, which is discussed later in Appendix A, Section 3.

2.5 Conclusion

The available information demonstrates that significant market opportunities exist in the commercial, return-to-base fleet vehicles. These include providing fuel service for heavy duty trucks, vocational trucks and buses over the near-term. Over the long-term, other target categories include light duty trucks, medium duty trucks and marine vessels. The Company has developed its market development strategy accordingly in order to maximize the benefit to all customers.

20 NRCan 2007
21 NRCan 2007
22 Does not include school buses.
23 Marine data from Transport Canada, 2006, http://www.tc.gc.ca/media/documents/marinesafety/stats2006.pdf

3 NGV DEMAND FORECAST

Section 3 of this Appendix[24] describes future demand for fueling infrastructure under changing market conditions, within Terasen Gas' target market. The Company's target market size is described in Section 2 of this Appendix.

This section is organized in the following order:

1. Demand forecast methodology and underlying scenario assumptions;
2. Future demand growth expressed in number of vehicles, total energy use from natural gas, and number of fueling stations for each scenario - Reference Case, Low Growth, and Reference Case Plus Passenger Growth;
3. Implications of the demand forecast with respect to emissions reductions, the conventional fuels market, and the Company's capital cost requirements, and
4. Mitigation of demand risks associated with market assumptions.

This Demand Forecast in this Appendix aligns with the Company's proposed rate structure presented in Section 2.0 of the Application.

3.1 Methodology and Underlying Scenario Assumptions

Market demand estimates have been developed for each of the target market segments for the period from 2010 to 2030. For each market segment three scenarios have been created:

- Low Growth ("Low Growth")
- Reference Case ("Reference Case")
- Reference Case Plus Passenger Growth ("Plus Passenger")

These assessments have been developed using the following methodology:

1. Forecast total energy requirements in the target market segment over the forecast timeframe.
2. Assess the strength of the value proposition for natural gas within that segment versus competitive options.
3. Determine the number of vehicles available in each target market segment and the amount of fuel required per vehicle.

[24] The demand forecast presented in this Appendix is based on the data submitted in the Company's 2010 Long Term Resource Plan, filed on July 15, 2010 (Section 4, pp. 105). Any discrepancies in forecast data between the LTRP and this Appendix are due to updates in project information, refinement of baseline assumptions, and the availability of new data sources. The primary data source, the NRCan 2007 database is consistent across both forecasts. The only notable change was in the GHG Implications section, where an updated version of the NRCan GHGenius model (v.3.18) was used to calculate GHG outputs from each scenario. This Appendix also discusses fueling station forecasts and related capital costs which were not discussed in the LTRP.

4. Determine the number of fueling stations required to service each target market segment.
5. Develop market segment penetration estimates that reflect the strength of the value proposition in that specific segment.
6. Calculate the aggregate natural gas energy requirement.

The estimates for all three scenarios reflect:

- The fuel pricing advantage for natural gas,
- Increased utility support for NGV programs and infrastructure,
- Government policy initiatives as described in Section 3.3,
- The increasing availability of OEM vehicles appropriate for each target segment.

The specific differences within the three scenarios are described in more depth in the following section.

A number of challenges exist in developing a demand forecast. For example, historic sales of NGV medium and heavy-duty trucks sold in BC are negligible, providing little market data to inform future demand forecast for station infrastructure. Terasen Gas does not believe any published data sources exist which examine the number of current or future fueling stations in BC. Terasen Gas has therefore used a number of other information sources and techniques to develop a range of three alternative future demand scenarios. These scenarios are largely developed by incorporating historical natural gas transportation load, potential future incentive funding as well as external factors such as market acceptance, OEM vehicle availability, government policy, government incentives, and macro-economic conditions. The scenarios allow a discussion of the benefits and implications for increasing throughput on the Company's natural gas system and reductions in GHG and other transportation related emissions.

Terasen Gas will continue to develop its methodologies for forecasting demand for these solutions. As demonstration projects and first adopters in the province show success and the remaining challenges to implementing complete solutions are solved, we expect that NGV solutions will be adopted at a faster pace as fleet operators seek out their environmental benefits and operational cost advantages. As that occurs, Terasen Gas will validate and refine the underlying assumptions on fuel consumption, market uptake, and fueling infrastructure requirements. The Company will also integrate new secondary information sources such as analyst reports, white papers, and other NGV related studies.

In Section 2 of this Appendix, Terasen Gas assessed the size and composition of its target market based on data from the Natural Resources Canada Office of Energy Efficiency database.[25] To develop reasonable estimates on vehicle consumption for each vehicle segment in the target market, Terasen Gas has also used market information acquired from pilot projects,

[25] Natural Resources Canada, Office of Energy Efficiency, 2007: http://www.oee.nrcan.gc.ca/corporate/statistics/neud/dpa/handbook_tran_ca.cfm?attr=0

project engineering work, industry partners, and suppliers. For some target market categories, the Company believes industry data is more representative of our target market than data provided by Natural Resources Canada.

Under all three scenarios, the NGV consumption in GJ is determined by applying a conversion factor – referred to as Diesel Litre Equivalents ("DLE") [26] – to the fuel consumption data for conventional fuel vehicles. This conversion creates a comparable assessment of the energy use from diesel versus natural gas. These values are held constant for each of the scenarios.

Table 3-1 shows assumptions[27] for natural gas consumption per vehicle, the average annual distance travelled per vehicle, the number of vehicles which could be serviced by one station (or station capacity), and station capital cost estimates.

Table 3-1: Natural Gas Consumption, Average Distance Travelled, and Station Capacity for B.C. Vehicle Categories

Category	Scenario Assumptions		
	Annual Consumption (GJ)	Total Average Number of Kms per Year	Station Capacity
Passenger Cars	100	17,500	150
Light Duty Trucks	170	20,000	75
Medium Duty Trucks	450	20,000	50
Heavy Vocational Trucks	880	40,000	50
Heavy Duty Trucks	2,500	300,000	30
Buses	1,840	70,000	50
Marine	92,000	65,000	1

Note: Does not include school buses

The data in Table 3-1 is used in the following analysis to calculate natural gas fuel demand, and station infrastructure demand. The annual distance traveled is used for the GHG emission reductions estimate.

3.1.1 EXISTING NUMBER OF NGVS AND STATIONS

The starting point for the market demand is the existing stock of NGVs in BC. As described in Section 2 of this Appendix, the light duty truck segment is an estimate based on historic sales under Rate Schedule 6. The total number of NGVs in BC, estimated at approximately 600 vehicles, is summarized below:

- 520 light duty vehicles; consisting of 470 light duty trucks (under Rate Schedule 6) and 50 light duty Terasen Gas fleet vehicles[28];

[26] The conversion is based on energy content values published in the NRCan GHGenius model. (Diesel at 38.653 MJ/litre – yields conversion factor of 25.9).
[27] Assumptions described in the 2010 Long-Term Resource Plan, Appendix B-8
[28] Terasen Gas fleet vehicles are scheduled for regular operations in the fall of 2010.

- 30 medium duty delivery vans (under Rate Schedule 6); and
- 50 urban transit buses (under Rate Schedule 25) from Coast Mountain Bus Company in Port Coquitlam.

These vehicles are served by 16 public and private CNG fueling stations as described in Appendix A-2, Section 2, NGVs in BC and Other Jurisdictions. These stations are not included in the following Section, as only new incremental station infrastructure is considered.

3.2 Demand Scenarios

While many NGV demand scenarios are possible, Terasen Gas has identified a combination of factors that we believe provide a reasonable range of future demand for transportation fuel solutions. The "Reference Case" scenario provides a most likely case compared to the others, reflecting current conditions based on the best available industry information combined with current energy and emission policies. The near-term adoption is primarily in heavy duty trucks, vocational trucks, and buses, as well as long-term adoption in the light duty trucking and marine vessel categories. The "Plus Passenger Demand Growth" scenario examines the potential additional demand above the Reference Case scenario if a renewed commitment by the government and/or transportation industry toward passenger vehicle NGV solutions is made. The "Low Demand Growth" scenario models a minimum amount of NGV demand growth, based on the momentum of recent carbon legislation and the efforts of businesses to competitively differentiate based on environmental stewardship practices. Near-term adoption is primarily in heavy duty trucks and vocational trucks, and long-term adoption in the light duty trucking and bus categories. No adoption in the medium duty trucks and marine vessels are included in the Low Growth scenario.

The remainder of this Sub-section is organized as follows:

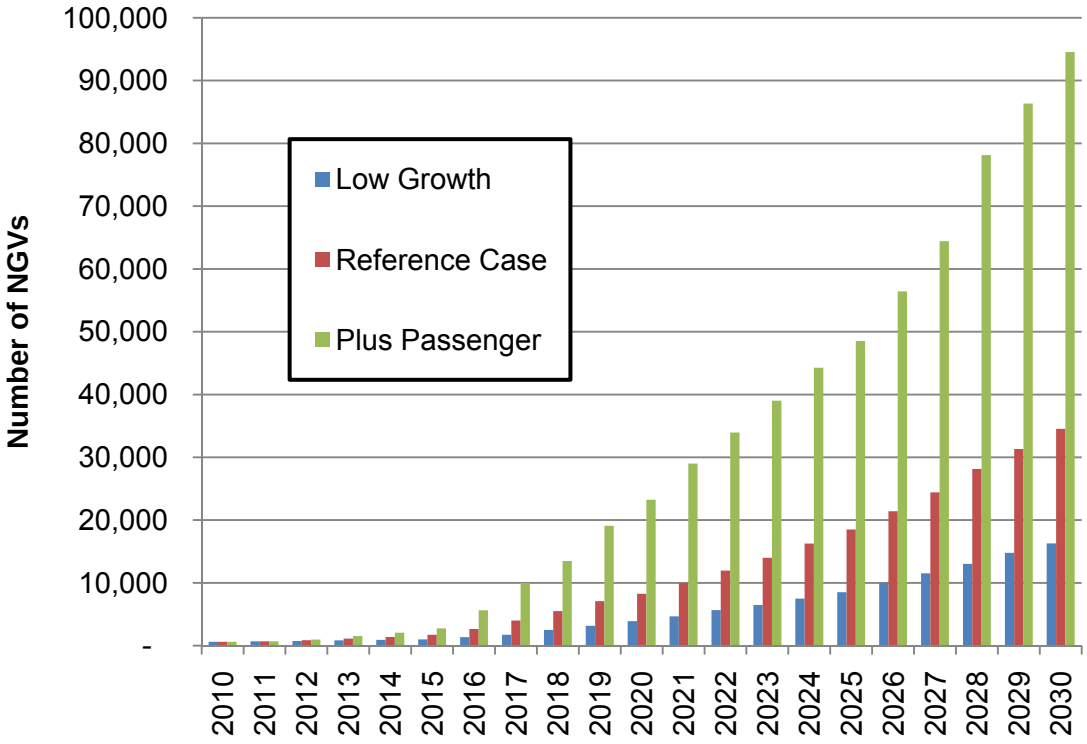
- Summary of fueling station and fuel consumption demand under each scenario;
- Reference Case assumptions and detailed demand forecast;
- Summary of Low Demand and Plus Passenger scenario assumptions, and demand forecasts.

3.2.1 SUMMARY OF DEMAND FROM THREE SCENARIOS

Terasen Gas has incorporated the underlying assumptions for each target segment with each scenario's assumed market conditions to produce the following natural gas transportation demand forecast.

The Company has created an estimate on the total cumulative number of NGVs, starting from its existing level of 630 vehicles in 2010 until 2030. Figure 3-1 shows this increase under each scenario.

Figure 3-1: Comparative Demand Scenarios – Total Number of NGVs



By 2030, Terasen Gas has forecast:

- 34,540 NGVs under the Reference Case;
- 16,280 NGVs under the Low Growth scenario; and
- 94,540 NGVs under the Reference Case Plus Passenger Growth scenario.

Terasen Gas estimates that there is potential for 34,540 NGVs to represent approximately 0.9% of the Company's target transportation market (3.7 million vehicles) by 2030.[29] In comparison, BC could reach the present-day size of the Utah NGV market (approximately 8,000 NGVs)[30] by 2020.

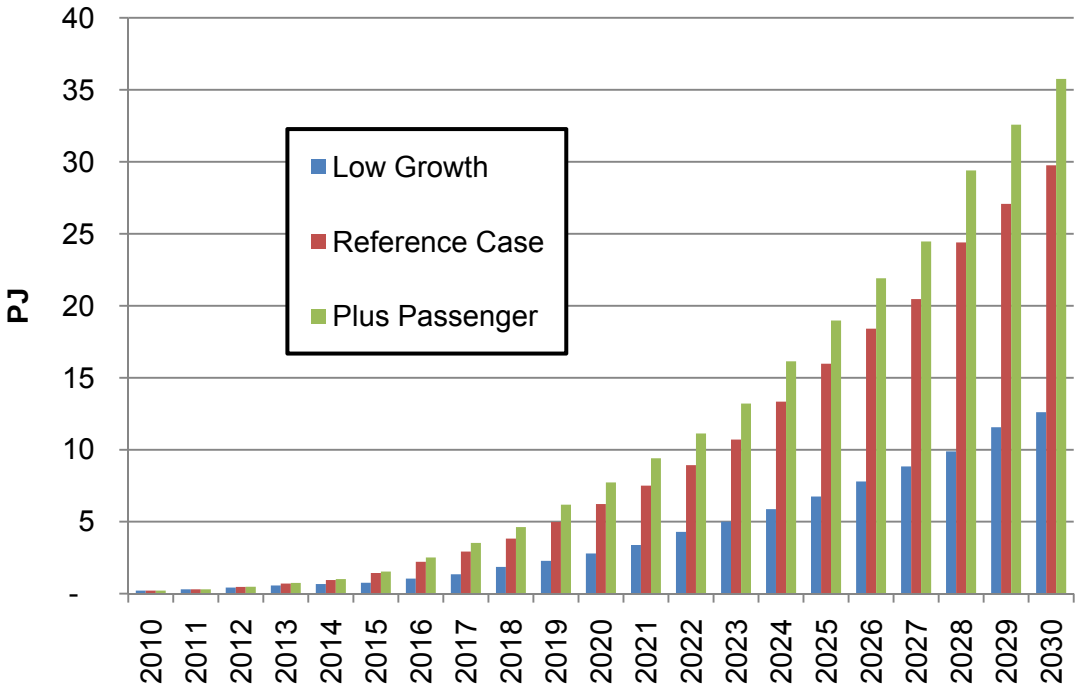
Described later in this Section, the Plus Passenger scenario adds 60,000 passenger cars to the Reference Case scenario by 2030, creating a much larger total number of NGVs. However, the corresponding natural gas consumption does not follow such a steep rate of incline due to the low volume that passenger vehicles consume.

Figure 3-2 shows the load growth expected in each of the three NGV demand scenarios.

[29] Estimation based on the assumption that the current target market size grows at approximately 2% per year, equal to rate of GDP growth, based on current 5 year B.C. Ministry of Finance GDP forecast.

[30] Utah NGV adoption began to increase in the early 1990s and reached approximately 6,000 in the early 1990s. Total number of NGVs have fluctuated over the past 15 years.

Figure 3-2: Comparative Demand Scenarios - Fuel Consumption



By 2030, Terasen Gas forecasts there is market potential for:

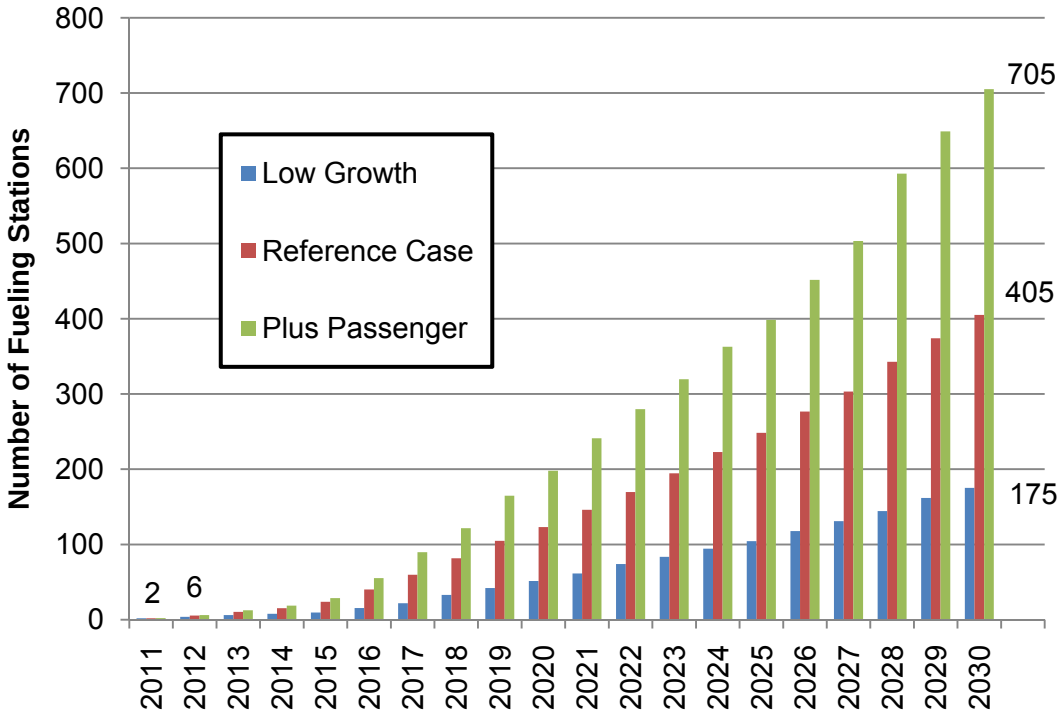
- 30 PJ of total energy use under the Reference Case;
- 13 PJ of total energy use under the Low Growth scenario; and
- 36 PJ of total energy use under the Plus Passenger Growth scenario.

30 PJ of natural gas demand for transportation represents about 6.5% of the Company's target transportation market (458 PJ) in 2030.[31] Capturing 6.5% of the transportation fuel market over the next 20 years is an aggressive target, but could occur if market barriers continue to be overcome as a reasonable expectation for this low carbon alternative to conventional fuel.

Directly related to Figure 3-2 above, Terasen Gas anticipates an increase in demand for the number fueling stations by 2030.

[31] Estimation based on the assumption that the current target market size grows at approximately 2% per year, equal to rate of GDP growth, based on current 5 year B.C. Ministry of Finance GDP forecast.

Figure 3-3: Comparative Demand Scenarios – Total New Fueling Stations



Note: No new stations are forecast for 2010. All three scenarios forecast 2 stations in 2011 and 6 stations in 2012.

By 2030, the number of fueling stations required to serve the anticipated number of NGVs and their natural gas volume is forecasted to be:

- 405 stations under the Reference Case;
- 175 stations under the Low Growth scenario; and
- 705 stations under the Plus Passenger Growth scenario.

Terasen Gas estimates that the 405 stations would represent 3.2% of the total target transportation market (12,768 stations) under the Reference Case.[32]

A detailed discussion of the Reference Case is provided in the following subsection.

3.2.2 REFERENCE CASE SCENARIO

Terasen Gas believes that the Reference Case scenario is the most likely of the three NGV demand scenarios developed, as it is based on the current positive external opportunity for increased adoption of NGV solutions as described above. This scenario is based on the best possible information available today on expected vehicle growth in the defined target segments,

[32] The 12,768 stations is a multiple of the total number of NGVs (3,694,982).

continued incentive funding expectations, favourable natural gas prices and availability of fueling infrastructure. The assumptions underlying this scenario are:

- Adoption of NGV solutions over the long-term across all the identified target market segments except passenger cars;[33]
- Incentive funding[34] will continue to be a driver to reduce the initial incremental capital cost across the entire target market segments excluding passenger cars;
- In the later years, there is increased adoption and uptake of NGVs from the success of the initial pilot projects;
- Public policy will continue to support the use of natural gas as a transportation fuel to meet climate action legislative targets;
- Natural gas commodity prices will continue to maintain or increase its advantage against conventional fuel types as more shale gas comes online;
- Economies of scale from OEM vehicle manufacturers and station manufacturers will help push the initial capital costs for natural gas fuelled equipment down over the longer term;
- Availability of targeted fueling infrastructure supporting the expected demand and uptake; and
- Availability of OEM vehicles and improvements in conversion technology across light duty and medium duty vehicles.

Long-Term Demand Growth

As described in Section 2 of this Appendix the Company's near-term target market is Heavy Duty Trucks, Vocational Trucks and Buses, and long-term opportunities exist in Light Duty Trucks, Medium Duty, and Marine Vessels.

Under the Reference Case, Terasen Gas has forecast net cumulative transportation growth of 34,540 vehicles by 2030 which results in approximately 30 PJ in fuel consumption. Table 3-2 shows the expected level of adoption over the 20 year planning horizon.

Table 3-2: Reference Case projects 34,540 total NGVs by 2030

	Total Number of NGVs - Reference Case					
Category	2010 Current	2011	2015	2020	2025	2030
Light Duty Trucks	550	550	1,000	5,000	10,000	20,000
Medium Duty Trucks	30	30	100	500	1,500	2,000

[33] Passenger vehicles are not pursued as a near-term target by Terasen Gas due to their low fuel consumption and limited fueling infrastructure, and thus a limited economic incentive to switch from gasoline to natural gas.
[34] From Terasen Gas EEC Innovative Technologies and potential government sources

Heavy Vocational Trucks	-	25	200	1,000	3,000	5,000
Heavy Duty Trucks	-	9	200	1,000	3,000	6,000
Buses	50	75	250	750	1,000	1,500
Marine Vessels	-	-	1	5	20	40
Cumulative Total:	630	689	1,751	8,255	18,520	34,540

Note: Passenger Car segment is not pursued by Terasen Gas in the Reference Case Scenario

The total number of vehicles each year is multiplied by the per vehicle consumption across each vehicle category to estimate the total annual NGV demand. Figure 3-3 illustrates the overall transportation demand forecast based on the data from the above table.

Table 3-3: Reference Case projects NGV Consumption of 30 PJ by 2030

Category	Terasen Energy Use (GJ) - Reference Case					
	2010	2011	2015	2020	2025	2030
Light Duty Trucks	70,046	70,046	146,546	826,546	1,676,546	3,376,546
Medium Duty Trucks	13,500	13,500	45,000	225,000	675,000	900,000
Heavy Vocational Trucks	-	20,000	160,000	800,000	2,400,000	4,000,000
Heavy Duty Trucks	-	22,500	500,000	2,500,000	7,500,000	15,000,000
Buses	128,393	174,393	496,393	1,416,393	1,876,393	2,796,393
Marine Vessels	-	-	92,000	460,000	1,840,000	3,680,000
Cumulative Total:	211,939	300,439	1,439,939	6,227,939	15,967,939	29,752,939

Consistent with the Company's target market focus, the natural gas fuel composition comes primarily from vocational trucks, heavy duty trucks and buses. These three categories make up 73% of the 30 PJ forecast. The corresponding number of fueling stations required to support this demand is shown below in Table 3-4.

The Reference Case forecasts a demand of 34,540 NGVs by the end of 2030, which would require an estimated 405 stations to provide fueling service. Of those stations, 143 would provide LNG service and the remaining 262 CNG service.[35] A summary of the station infrastructure is shown in Table 3-4.

Table 3-4: Reference Case demand for 405 total fueling stations by 2030

Category	Total Number of New Stations - Reference Case				
	2011	2015	2020	2025	2030
Light Duty Trucks (CNG)	-	5	51	91	158
Medium Duty Trucks (CNG)	-	1	8	20	25
Heavy Vocational Trucks (CNG)	1	4	17	41	61
Heavy Duty Trucks (LNG)	1	7	30	68	118
Buses (CNG)	1	4	12	15	20

[35] Please see Table 3-1 for the fuel type consumption assumptions for each vehicle category

Marine Vessels (LNG)	-	1	4	13	23
Cumulative Total:	3	23	122	248	405

Note: Does not include existing public or private stations in B.C.

Station Redundancy

When station capacity is available, fleet operators who already operate an NGV fueling station may add more vehicles without major additional infrastructure upgrades. To account for this station redundancy in its forecast, Terasen Gas has added a reduction factor of 0.95 which starts in 2016 and declines by 0.05 per year until 2025 where it remains constant at 0.50 until 2030. This adjustment creates a more accurate projection of the station demand forecast.

Market Penetration

Terasen Gas has analyzed market penetration based number of NGVs, energy use, and number of stations.

In Section 2 of this Appendix, the Company estimated the future size of the target market by number of NGVs and total energy use by 2030. These outlooks provide baselines from which to determine the Company's future market share. Under the Reference Case, the market share estimates by 2030 are summarized below in Tables 3-5 and 3-6.

Table 3-5: Market share based on 34,540 NGVs by 2030

Category	Market Share by Number of Vehicles - Reference Case (%)					
	2010	2011	2015	2020	2025	2030
Light Duty Trucks	0.05%	0.05%	0.09%	0.40%	0.72%	1.31%
Medium Duty Trucks	0.02%	0.02%	0.07%	0.34%	0.92%	1.11%
Heavy Duty / Vocational Trucks[36]	0.00%	0.10%	1.11%	5.04%	13.69%	22.73%
Buses	1.17%	1.72%	5.31%	14.41%	17.41%	23.65%
Marine Vessels	-	0.00%	1.19%	5.38%	19.42%	35.09%
Cumulative Total:	0.03%	0.03%	0.06%	0.27%	0.55%	0.93%

Table 3-6: Market share based on 30 PJ of total energy use by 2030

Category	Reference Case Estimated Total Market Share (%)					
	2010	2011	2015	2020	2025	2030
Light Duty Trucks	0.08%	0.08%	0.16%	0.81%	1.50%	2.73%
Medium Duty Trucks	0.06%	0.06%	0.18%	0.83%	2.26%	2.73%
Heavy Duty/Vocational Trucks	0.00%	0.06%	0.85%	3.87%	10.51%	18.27%
Buses	2.65%	3.53%	9.29%	24.01%	28.81%	38.89%
Marine Vessels	-	-	0.14%	0.66%	2.37%	4.30%

[36] Heavy Duty Trucks and Vocational Trucks are combined to align with the NRCan 2007 database categories

Cumulative Total:	0.07%	0.10%	0.42%	1.66%	3.85%	6.50%

Finally, Terasen Gas measured market share by the number of stations. By using the station capacity estimates in Table 3-1, the Company can estimate the number of stations required if its entire target market adopted natural gas for transportation. This provides a baseline from which to determine market share by number of fueling stations. The station redundancy factor was also applied to this forecast for consistency in comparison.

Under the Reference Case, the market share estimates by 2030 are summarized below in Table 3-7.

Table 3-7: Market share based on 405 fueling stations by 2030

	Market Share of Fueling Stations - Reference Case					
Category	**2010**	**2011**	**2015**	**2020**	**2025**	**2030**
Light Duty Trucks	0.0%	0.0%	0.0%	0.4%	1.0%	1.5%
Medium Duty Trucks	0.0%	0.0%	0.1%	0.4%	1.2%	1.4%
Heavy Vocational Trucks	0.0%	0.2%	1.1%	5.8%	18.8%	25.3%
Heavy Duty Trucks	0.0%	0.2%	1.2%	6.0%	18.6%	29.3%
Buses	0.0%	0.6%	4.2%	15.8%	26.6%	32.0%
Marine Vessels	0.0%	0.0%	1.2%	5.9%	24.5%	39.8%

Note: Does not include existing public or private stations in B.C.

Over the long-term, Terasen Gas would operate approximately 25-30% of all natural gas fueling infrastructure in BC within the heavy duty and bus segments, as well as 40% of marine fueling stations. As previously mentioned, these premlinary estimates will be refined and updated as market adoption occurs in the near-term.

In summary, the Company's market share penetration, when considering fuel type (PJ) is approximately 6.5% of the transportation fuels market.

Near-Term Demand Growth

Over the next five years, Terasen Gas anticipates 23 fueling stations will be required to be installed to meet the demand of commerical fleet operators. The incremental number of additions in the near-term are shown below in Table 3-8.

Table 3-8: Incremental Station Additions by 2015 are 23

	Incremental Number of New Stations - Ref Case				
Category	**2011**	**2012**	**2013**	**2014**	**2015**
Light Duty Trucks	-	1	1	1	2
Medium Duty Trucks	-	1	-	0	1

Heavy Vocational Trucks	1	-	1	1	1
Heavy Duty Trucks	1	1	1	1	3
Buses	1	-	1	1	1
Marine Vessels	-	-	-	-	1
Incremental Total:	3	3	4	4	9

Note: Does not include existing public or private stations in B.C.

The Company's market penetration in the near-term is very minimal. By 2015, the highest market share is 4.2% within the bus segment. Vocational trucks, heavy duty trucks and marine vessels each represent approximately 1% of their target market segments.

Table 3-9: Market share based on Number of Fueling Stations by 2015

	Market Share based on Fueling Stations - Reference Case					
Category	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Light Duty Trucks	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Medium Duty Trucks	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Heavy Vocational Trucks	0.0%	0.2%	0.3%	0.6%	0.9%	1.1%
Heavy Duty Trucks	0.0%	0.2%	0.4%	0.5%	0.7%	1.2%
Buses	0.0%	0.6%	1.1%	2.2%	3.2%	4.2%
Marine Vessels	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%

3.2.3 LOW DEMAND GROWTH SCENARIO

Given the current provincial policy environment, existing incentive funding for implementing NGV solutions and growing industry interest in employing these incentives, Terasen Gas believes that at minimum, a modest level of NGV growth will occur even in a less favourable environment than outlined in the previous scenario. The Low Demand Growth scenario depicts the lower bound of future consumption that could reasonably occur. The drivers that would cause this lower level of future demand for natural gas as a transportation fuel are:

- Incentive funding leads to market growth and vehicle additions but fails to stimulate wider adoption beyond the funded projects;
- Natural gas prices remain favourable versus conventional fuels but are insufficient to drive higher levels of growth;
- Public policy measures to encourage the use of natural gas as a transportation fuel are less aggressively pursued;
- Limited new OEM models are made available for this market in BC, particularly in the light duty truck category.

Terasen Gas forecasts net cumulative transportation growth of 13 PJ of energy use, 16,280 vehicles and approximately 175 fueling stations by 2030 under the Low Demand Growth

scenario. Due to the high level of public and government focus on reducing emissions from the transportation sector, we believe this scenario is less likely to occur than the Reference Case scenario.

3.2.4 PLUS PASSENGER DEMAND GROWTH SCENARIO

The business model that Terasen Gas discusses in Appendix A-2, Section 2, NGVs in BC and Other Jurisdictions, incorporates a public access feature to new fueling contracts that are negotiated with the anchor tenant fleet. By rebuilding the NGV model with an anchor tenant (likely a heavy-duty operation or a large light duty fleet), with a feature for public access, allows public fueling infrastructure to be built up again over the coming years. Terasen Gas believes there is potential for the passenger car market to benefit from this revised business model and as new conversion and OEM vehicles become available for this market, the fueling infrastructure will be built up in a sustainable manner to serve this market. The Plus Passenger scenario is used to illustrate the potential for demand additions in the passenger vehicle market. Under this scenario penetration levels within the selected target markets are held at the same levels as the Reference Case. The additional detail regarding the addition of the passenger car segment is as follows:

- The passenger car segment ramps up to 60,000 vehicles and an additional 300 stations by 2030. These stations would be new stations operating separately from commercial, return-to-base fleets created to serve the public, passenger segment. This number of NGVs represents 5.76% of the total passenger car segment by 2030. Addition of the passenger car segment adds 6 PJ of demand;[37]
- NGV adoption levels increase to a level where the demand for public access fueling extends to the passenger vehicle market; and
- Electric vehicle adoption levels do not increase significantly.

Terasen Gas forecasts a net cumulative transportation growth of 36 PJ of energy use, 94,540 NGVs, and approximately 705 new fueling stations by 2030 under the Plus Passenger Demand Growth scenario. While reachable, this scenario envisions additional government and transportation industry intervention (such as new OEM vehicles) to advance the adoption of NGV solutions in the B.C. passenger vehicle market to capture almost 6% of that market by 2030. This additional market capture is not anticipated in the near-term and is not part of the Company's present strategy. Therefore it is considered less likely to occur than the Reference Case Scenario.

[37] Calculation: 100 GJ per vehicle x 60,000 NGVs by 2030 = 6 PJ

3.3 Scenario Implications

The addition of 405 fueling stations and 30 PJ of natural gas will impact multiple aspects of the overall transportation market. With minimal capital investments, Terasen Gas can add significant environmental benefits to the province by reducing the amount of diesel in the transportation sector.

3.3.1 STATION CAPITAL REQUIREMENTS

Terasen Gas has made estimates on the cost of station capital for each of the vehicle categories based on conversations with fleet operators and preliminary quotations from engineering contractors. The Company will update and refine these assumptions as engineering costs are finalized and initial projects are completed. The station capital estimates are summarized below in Table 3-10.

Table 3-10: Station Capital Assumptions

Category	Station Capital Assumption
Passenger Cars	$ 250,000
Light Duty Trucks	$ 250,000
Medium Duty Trucks	$ 400,000
Heavy Vocational Trucks	$ 750,000
Heavy Duty Trucks	$ 750,000
Buses	$ 1,000,000
Marine	$ 1,500,000

Under the Reference Case, Terasen Gas expects a total of 23 fueling station additions over the next five years. Multiplied by the assumptions in Table 3-10, Terasen Gas anticipates it will require the following incremental capital investments to fund infrastructure projects.

Table 3-11: Station Capital Requirement of $16 million Over Next Five Years

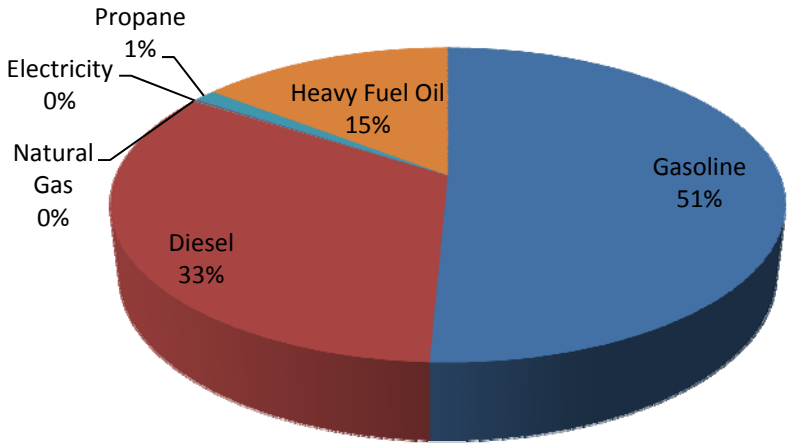
	2011	2012	2013	2014	2015
Number of Stations	3	3	4	4	9
Station Capital	$2,500,000	$1,400,000	$2,750,000	$2,750,000	$6,400,000

This capital forecast is consistent with the Reference Case station forecast in Table 3-8, where the type of station installed differs from year-to-year. As described in Section 2.0, these capital investments will be recovered through a fueling service rate structure charged to the fleet operators who use the station.

3.3.2 SHARE OF THE MOTOR FUELS MARKET

Section 2 of this Appendix described the Company's target market by fuel type. Figure 3-4 summarizes this breakdown by fuel type in 2007.

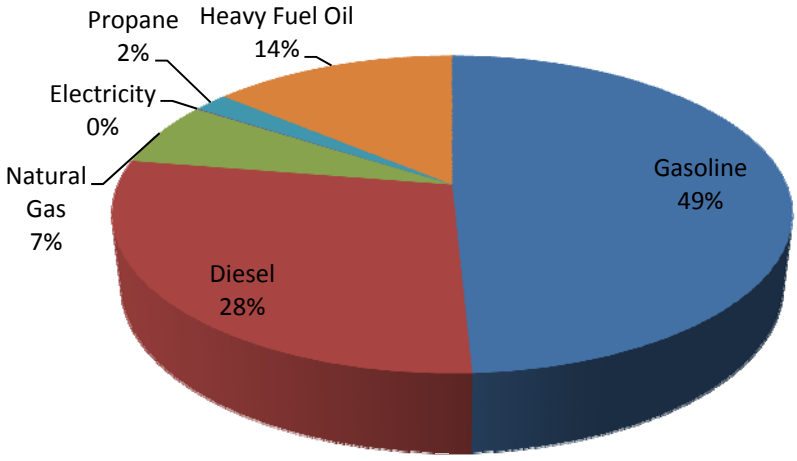
Figure 3-4: Target Market by Fuel Type in 2007



Source: NRCan 2007

The Company's strategic focus on diesel vehicles means a displacement in the market share for fuels. Figure 3-5 illustrates the composition of the target market under the Reference Case holds at 30 PJ.

Figure 3-5: Target market with displacement of diesel under Reference Case by 2030



Diesel fuel has decreased by 5%, or 23 PJ, when compared to the 2007 market data. Gasoline has been impacted by less than 4 PJ, which is not very significant compared to an overall

projected market of 458 PJ in 2030.[38] As a result, environmental benefits in the form of improved air quality and quantifiable GHG emission reductions will occur as a result of natural gas displacing these two conventional fuel types.

3.3.3 GHG EMISSION REDUCTIONS

Terasen Gas has developed its GHG emission estimates on a per kilometer basis using emission factors from Natural Resources Canada's GHGenius model.[39] The BC emission factors reported in this model are:

- Passenger Cars / Light Duty Trucks:
  - Gasoline to CNG is a 25.6% reduction in CO_2e
- Medium Duty Trucks / Heavy Duty Trucks / Buses:
  - Diesel to CNG is a 23.2% reduction in CO_2e
  - Diesel to LNG is a 26.8% reduction in CO_2e

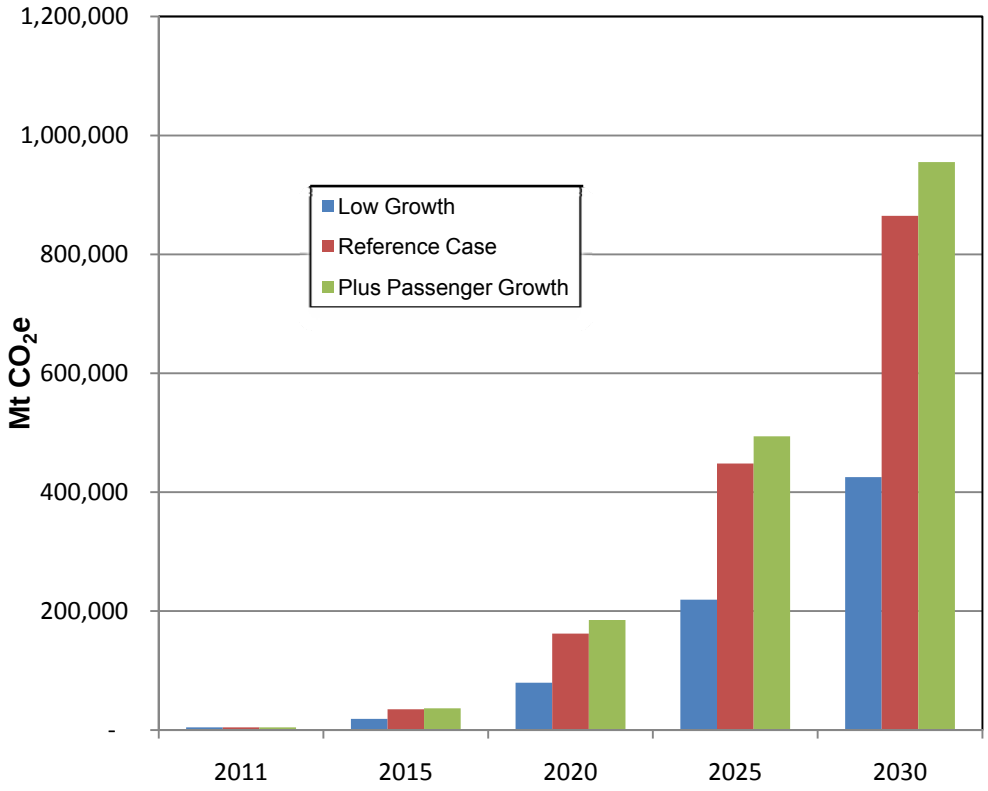
The GHGenius model does not provide emissions factors for marine vessels, so Terasen Gas calculated its output using the emissions data from the heavy duty / bus category.

Figure 3-6 shows the total cumulative GHG savings (in metric tonnes, or "Mt") for each of the three demand scenarios at 5 year increments over the planning horizon.

[38] Any discrepancies amongst data comparisons are due to rounding.

[39] Based on BC emissions factors: Light Duty: 333 grams per kilometre for gasoline, and 247 grams per kilometer for CNG; and Heavy Duty 1,477 grams per kilometre for diesel, 1,135 g/km for CNG and 1,082 g/km for LNG, published in GHGenius 3.18. Software available from Natural Resources Canada at www.ghgenius.com

Figure 3-6: Comparative Demand Scenarios - Total Cumulative GHG Reductions (Mt CO2e)



By 2030, Terasen Gas has forecast:

- 864,795 Mt of CO2e under the Reference Case;
- 425,244 Mt of CO2e under the Low Growth Scenario Case; and
- 955,305 Mt of CO2e under the Plus Passenger Growth Scenario.

Under the Reference Case, approximately 17% of diesel demand can be replaced by natural gas in this scenario, contributing approximately 77% of the total 865,000 Mt of CO_2e emissions.[40] The amount of GHGs reduced in the Reference Case is the same amount created by burning approximately 368 million litres of gasoline, or taking 165,000 passenger vehicles off the road.[41] The Low Demand scenario results in less than half the GHG reductions possible in the Reference Case.

[40] The 30 PJ demand has displaced fuel from diesel (77%), gasoline (13%), heavy fuel oil from marine vessels (9%) and other sources (1% from electricity and propane).
[41] Number derived using the US Environmental Protection Agency, Greenhouse Gas Equivalency Calculator.

3.4 Mitigation of Demand Risks Associated with Market Factors

Terasen Gas has determined that certain market factors are critical to achieving a high degree of NGV adoption. In other jurisdictions these factors have transformed the market for NGVs. As discussed in this Application, Terasen Gas believes that effective management of these factors will create a favourable NGV market in B.C. notwithstanding the following risks:

3.4.1 AVAILABILITY OF VEHICLES RISK

To successfully encourage NGV adoption, consumers must have a sufficient offering of OEM vehicles available for purchase. As described in Appendix A-2, Section 1, NGV Engine Availability & Technology Overview, heavy-duty offerings from Freightliner, Peterbilt, Mack, Autocar and Kenworth and transit bus options from New Flyer presently service the target market categories in BC. An increasing number of manufacturers like Ford and Honda are also introducing light duty NGVs to the North American market. The presence of these manufacturers, combined with proven technology[42] from engine manufacturer Cummins-Westport, leads Terasen Gas to conclude a sufficient number of OEM vehicle options will be available for fleet and return-to-base customers. In the long-term, light duty OEM vehicle options available in North America may also become available in BC.

The Company's market strategy is focused on serving NGVs in markets where vehicle offerings already exist. While the trend has been toward increased vehicle availability in these segments, continued vehicle availability is required for successful development of NGV markets in BC. The risk is that OEM vehicle manufacturers might withdraw their offerings.

Terasen Gas is monitoring this risk by developing close relationships with equipment manufacturers and major customers. Terasen Gas, along with natural gas engine manufacturer Westport Innovations, its subsidiary Cummins-Westport, and compression station manufacturer IMW Industries have formed an ad hoc working group called *The BC NGV Team*. Discussions with these parties provide Terasen Gas with greater insight to industry information and trends with respect to market adoption of NGVs. Another working group organized by Natural Resources Canada, *Launching Natural Gas Roadmap*[43], interfaces Terasen Gas with numerous industry counterparts across Canada.

A close relationship with suppliers can yield accurate information and allow more time to react to potential announcements of vehicle withdrawal, production delays, or model cancellation. If the Company foresees significant limitations of vehicle availability, it can plan to adjust sales strategies and operational activities accordingly. In a similar fashion, maintaining and forming relationships with local dealerships can also serve to mitigate the risk of vehicle availability.

[42] See Appendix A-2, Section 2, NGVs in BC & Other Jurisdictions.
[43] http://www.cngva.org/en/home/canadas-industry/natural-gas-for-transportation-deployment-roadmap.aspx

Overall, OEM vehicle availability continues to improve in BC.[44] Numerous heavy duty options exist, and announcements of new light duty options suggest availability will continue to grow in the future.

3.4.2 PRICE COMPETITIVENESS RISK

As discussed in Section 3.2 of the Application, Terasen Gas expects the price differential between natural gas and petroleum-based fuels like diesel and gasoline to remain relatively constant over the near-term. In some cases, the ratio of oil to gas is expected to widen given the abundance of gas supply in North America.[45] This gap preserves the cost advantage for NGVs over conventionally fuelled vehicles. A risk exists if the gap narrows to a degree that fuel switching is not economically viable.

Fortunately, mitigating factors exist. Firstly, the 20 – 40% price advantage that exists at today's prices[46] provides a buffer against price volatility. Secondly, B.C.'s carbon tax - which increases on an annual basis - will affect petroleum products to a greater degree than natural gas.[47]

Over the past decade the price advantage of natural gas over conventional fuels has widened substantially. Furthermore, the addition of large resources of unconventional gas in BC and throughout North America is an indicator that natural gas should remain competitive.

3.4.3 INCENTIVE FUNDING RISK

Part of the Company's NGV strategy is to limit incremental vehicle cost by offering funding incentives from the EEC program and/or government funding. While Terasen Gas believes that incentive funding is important to achieving near-term opportunities, long-term opportunities could be met with minimal funding if NGV market transformation follows accordingly.

Terasen Gas has received funding approval for NGVs in 2010 and 2011 through the Innovative Technologies portfolio in the EEC program. The Company plans to submit a request for on-going funding as part of the 2012 Revenue Requirement Application. To determine what level of ongoing funding should be implemented; Terasen Gas examined the potential impact on natural gas demand and GHG emissions in three scenarios of future funding for EEC programs in its 2010 Long Term Resource Plan.[48]

To support new energy objectives such as the Clean Energy Act, [49] Terasen Gas expects government funding for NGV initiatives will be introduced in the near-term, however funding amounts and timelines are undefined at the time of this Application.

44 Please see Appendix A-2, Section 1, NGV Engine Availability & Technology Overview.
45 See Section 3.2 of the Application, Gas The Realistic Choice (Gue), August 23, 2010. http://www.investingdaily.com/tes/17689/natural-gas-the-realistic-choice.html
46 See Section 2.0 of the Application.
47 Province of British Columbia, Ministry of Finance. http://www.fin.gov.bc.ca/tbs/tp/climate/A4.htm
48 BCUC Order No. G-194-08, 2010 Long Term Resource Plan, Section 5.5.
49 http://www.leg.bc.ca/39th2nd/1st_read/gov17-1.htm

If incentive funding levels become insufficient, Terasen Gas believes that another factor will mitigate risk and reduce the barrier of incremental vehicle cost. As global NGV demand increases,[50] Terasen Gas expects manufacturing efficiencies and scale will improve, resulting in a drop in the cost of natural gas engines and vehicles. This would lower the incremental vehicle cost and support adoption, further necessitating fueling infrastructure demand.

Finally, a secondary market for NGVs may surface over time. Lower cost, previously-used NGVs may be attractive for small, independent fleet operators choosing to fuel with natural gas.

3.5 Transportation Demand Scenario Conclusions

The changing nature of market conditions for NGV solutions in B.C. has opened up an important new target customer segment for Terasen Gas. The Company believes that demand growth over the next 20 years will require a supporting network of 405 CNG and LNG fueling stations to service 30 PJ of additional natural gas load. However, significant NGV adoption is unlikely to occur in the province unless adequate station infrastructure is provided. Terasen Gas believes that it can play an important role in supporting the growth of this market within the province by providing the necessary infrastructure to support customer's vehicle needs.

The Reference Case demand forecast arises from the expected market and policy environment that continues to evolve in B.C. together to meet the needs of the commercial, return-to-base, fleet vehicle market segment.

50 See Appendix A-2, Section 2, NGVs in BC & Other Jurisdictions

4 POTENTIAL DELIVERY RATE BENEFIT TO EXISTING NATURAL GAS CUSTOMERS

The below schedules seek to illustrate the potential benefit to all customers that could be enjoyed as a result of the increased throughput made possible by significantly expanded use of NGVs on the Terasen Gas delivery system. Three scenarios are explored, each with different rates of NGV adoption and the resulting expected throughput, and then a forecast impact on delivery rates is calculated. As can be seen from the schedules, all three scenarios would result in substantial savings for all customers, ranging from a 7% to a 21% delivery rate reduction based on 2011 delivery rates. Terasen Gas believes that this illustration shows the value of encouraging growth in the use of NGVs on our delivery system.

Summary

Impact of the CNG and LNG Service Offering

$000's, Unless Otherwise Stated

Impact to Existing Natural Gas Customers: CNG and LNG Service	**2012**	**2015**	**2020**	**2025**	**2030**	**Comments**
Forecast Revenue Requirement Reduction (Increase), $000's						Annual margin from the incremental NGV volumes
Reference Case	384	2,285	12,501	39,829	82,451	(assuming all added load is from existing Rate 6, 16
Low Growth	308	730	5,059	15,865	33,377	or 25 customers) offset by incremental cost of
Plus Passenger	421	2,650	17,973	50,773	104,339	service impact of EEC NGV incentive funding
Approximate Annual Delivery Rate (Decrease) Increase, %						
Reference Case	-0.07%	-0.42%	-2.31%	-7.36%	-15.24%	
Low Growth	-0.06%	-0.14%	-0.94%	-2.93%	-6.17%	
Plus Passenger	-0.08%	-0.49%	-3.32%	-9.38%	-19.29%	
Volume (TJs)						The analysis excludes current transportation load in
Reference Case	264	1,236	6,024	15,764	29,549	2010 of 211,939 GJ from each scenario. Incremental
Low Growth	225	556	2,588	6,543	12,403	volume forecast consistent with long term resource
Plus Passenger	274	1,336	7,524	18,764	35,549	plan.

Reference Case: Potential Delivery Rate Benefit to Existing Natural Gas Customers
Impact of the CNG and LNG Service Offering
$000's, unless otherwise stated

		Reference		2012	2015	2020	2025	2030
1	Annual Volume (GJ)	Reference Case Scenario		264,500	1,236,500	6,024,500	15,764,500	29,549,500
2								
3	Discount Rate	2011 TGI After-Tax WACC	6.84%					
4	Discount Period (years)			2	5	10	15	20
5	2011 TGI Delivery Margin	2010/11 TGI NSA		541,002	541,002	541,002	541,002	541,002
6								
7	*Net Cost of Service Benefit (Cost) to Existing Natural Gas Customers*							
8	Annual Incremental Margin from additional NGV volumes	Annual Benefit, Line 20		601	3,097	16,537	47,539	92,657
9	Annual EEC NGV Incentive Funding Cost of Service	Annual Cost, Line 41		(216)	(812)	(4,037)	(7,710)	(10,206)
10	**Net Annual Cost of Service Benefit (Cost)**	Line 8 + Line 9		**384**	**2,285**	**12,501**	**39,829**	**82,451**
11	**Approximate Annual Delivery Rate (Reduction) Increase, %**	Line 10 / Line 5		-0.07%	-0.42%	-2.31%	-7.36%	-15.24%
12								
13	Present Value of Net Cost of Service Benefit (Cost)	Line 10 / (1 + Line 3) ^ (Line 4)		337	1,642	6,453	14,773	21,972

Reference Case: Delivery Rate Benefit Associated with CNG and LNG Service
$000's, Unless Otherwise Stated
Reference Case Scenario

		Reference	2012	2015	2020	2025	2030
1	Annual NG Volume (GJ)						
2	Rate 6		30,000	116,500	976,500	2,276,500	4,201,500
3	Rate 16		102,500	592,000	2,960,000	9,340,000	18,680,000
4	Rate 25		132,000	528,000	2,088,000	4,148,000	6,668,000
5	Total		264,500	1,236,500	6,024,500	15,764,500	29,549,500
6							
7	Approximate Impact to Rate 25 Demand Volume [1]	Line 4 / 365 x 1.25	452	1,808	7,151	14,205	22,836
8							
9	Volumetric Delivery Rates* ($/GJ)	[2]					
10	Rate 6	2011 approved	3.648	3.648	3.648	3.648	3.648
11	Rate 16	Effective January 1, 2010	3.89	3.89	3.89	3.89	3.89
12	Rate 25	2011 approved	0.645	0.645	0.645	0.645	0.645
13	Rate 25 Demand	2011 approved	15.943	15.943	15.943	15.943	15.943
14							
15	Incremental Margin at Existing Rates	[2]					
16	Rate 6	(Line 2 x Line 10 / 1,000)	109	425	3,562	8,305	15,327
17	Rate 16	(Line 3 x Line 11 / 1,000)	399	2,303	11,514	36,333	72,665
18	Rate 25- Delivery	(Line 4 x Line 12 / 1,000)	85	341	1,347	2,675	4,301
19	Rate 25- Demand	(Line 7 x Line 13 / 1,000)	7	29	114	226	364
20	Total Incremental Margin		**601**	**3,097**	**16,537**	**47,539**	**92,657**
21	Cumulative Incremental Margin		**601**	**6,402**	**58,776**	**219,722**	**590,535**
22							
23	2011 Margin at Existing Rates per TGI NSA	2010/11 TGI NSA	541,002	541,002	541,002	541,002	541,002
24							
25	**Approximate Delivery Rate Benefit, %**	Line 20 / Line 23	**0.11%**	**0.57%**	**3.06%**	**8.79%**	**17.13%**
26							
27	Approximate Impact to a TGI Lower Mainland Residential Customer						
28	2011 Residential Customer Delivery Margin	2010/11 TGI NSA	331,183	331,183	331,183	331,183	331,183
29	Residential Allocation of NGV Benefit	(- Line 20) * (Line 28 / Line 23)	(368)	(1,896)	(10,124)	(29,102)	(56,722)
30							
31	Residential Customer Annual Volume (TJ)	2010/11 TGI NSA	68,579	68,579	68,579	68,579	68,579
32	Delivery Rate Reduction ($/GJ)	Line 29 / Line 31	$ (0.005)	$ (0.028)	$ (0.148)	$ (0.424)	$ (0.827)
33	Approximate Annual Use (GJ)		95	95	95	95	95
34	**Approximate LM Residential Annual Bill Increase/(Decrease) ($)**	**Line 32 x Line 33**	**$ (0.51)**	**$ (2.63)**	**$ (14.02)**	**$ (40.31)**	**$ (78.57)**
35							

36 [1] Compression load is assumed to be consistent; therefore, the peak will not change from a winter month

37 [2] Existing delivery rates are approved 2011 rates for consistency and comparability with the 2011 TGI NSA calculations

Reference Case: Forecast Cost of Service, Energy Efficiency and Conservation (EEC) NGV Funding
$000's, Unless Otherwise Stated
Reference Case Scenario

		Reference	2011	2012	2015	2020	2025	2030
1	EEC NGV Incentive Funding Impact							
2								
3	Key Assumptions							
4	ROE	BCUC Order No. G-158-09	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%
5	Equity	BCUC Order No. G-158-09	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%
6	STD Rate	2010/11 TGI NSA	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%
7	STD %	2010/11 TGI NSA	1.63%	1.63%	1.63%	1.63%	1.63%	1.63%
8	LTD Rate	2010/11 TGI NSA	6.95%	6.95%	6.95%	6.95%	6.95%	6.95%
9	LTD %	2010/11 TGI NSA	58.37%	58.37%	58.37%	58.37%	58.37%	58.37%
10	Return on Rate Base		7.93%	7.93%	7.93%	7.93%	7.93%	7.93%
11	WACC		6.84%	6.90%	6.90%	6.90%	6.90%	6.90%
12	Tax Rate		26.50%	25.00%	25.00%	25.00%	25.00%	25.00%
13								
14	Rate Base Calculation							
15	Amortization Period (Years)		10					
16	Gross Additions		1,100	1,100	2,816	5,082	7,062	8,316
17	Tax	- Line 16 x Line 12	(292)	(275)	(704)	(1,271)	(1,766)	(2,079)
18	Net Additions	Line 16 + Line 17	809	825	2,112	3,812	5,297	6,237
19	Annual Amortization of Net Addition	Line 18 / 10 years	81	83	211	381	530	624
20								
21	Opening Deferral Account Balance	Prev Year, Line 24	-	809	2,950	14,619	25,133	32,353
22	Net Additions	Line 18	809	825	2,112	3,812	5,297	6,237
23	Amortization	Sum of Prev Years, Line 19	-	(81)	(345)	(1,955)	(4,005)	(5,394)
24	Closing Deferral Account Balance	Sum of Lines 21 to 23	809	1,553	4,717	16,475	26,425	33,196
25								
26	Mid Year Unamortized Deferred Charges	(Line 21 + Line 24)/2	404	1,181	3,834	15,547	25,779	32,775
27								
28	Income Tax Expense							
29	Equity Earned Return (Shareholder Earnings)	Line 26 x Line 4 x Line 5	15	45	146	591	980	1,245
30	Add: Amortization Expense	- Line 23	-	81	345	1,955	4,005	5,394
31	Taxable Income After Tax	Line 29 + Line 30	15	126	491	2,546	4,984	6,639
32								
33	Taxable Income	Line 31 / (1 - Line 12)	21	168	654	3,395	6,646	8,852
34								
35	Income Tax Expense	Line 33 x Line 12	6	42	164	849	1,661	2,213
36								
37	Annual Cost of Service Impact of EEC NGV Incentives							
38	Amortization Expense	-Line 23	-	81	345	1,955	4,005	5,394
39	Income Tax Expense	Line 35	6	42	164	849	1,661	2,213
40	Earned Return	Line 26 x Line 10	32	94	304	1,233	2,044	2,599
41	**Total Cost of Service**	Sum of Lines 38 to 40	**38**	**216**	**812**	**4,037**	**7,710**	**10,206**
42	**Cumulative Cost of Service**		**38**	**254**	**2,041**	**15,023**	**45,490**	**91,329**

Low Growth: Potential Delivery Rate Benefit to Existing Natural Gas Customers
Impact of the CNG and LNG Service Offering
$000's, unless otherwise stated

		Reference		2012	2015	2020	2025	2030
1	Annual Volume (GJ)	Low Growth Scenario		224,600	556,500	2,588,000	6,543,000	12,403,000
2								
3	Discount Rate	2011 TGI After-Tax WACC	6.84%					
4	Discount Period (years)			2	5	10	15	20
5	2011 TGI Delivery Margin	2010/11 TGI NSA		541,002	541,002	541,002	541,002	541,002
6								
7	*Net Cost of Service Benefit (Cost) to Existing Natural Gas Customers*							
8	Annual Incremental Margin from additional NGV volumes	Annual Benefit, Line 20		509	1,212	6,801	18,797	37,367
9	Annual EEC NGV Incentive Funding Cost of Service	Annual Cost, Line 41		(201)	(482)	(1,742)	(2,932)	(3,990)
10	**Net Annual Cost of Service Benefit (Cost)**	Line 8 + Line 9		**308**	**730**	**5,059**	**15,865**	**33,377**
11	**Approximate Annual Delivery Rate (Reduction) Increase, %**	Line 10 / Line 5		-0.06%	-0.14%	-0.94%	-2.93%	-6.17%
12								
13	Present Value of Net Cost of Service Benefit (Cost)	Line 10 / (1 + Line 3) ^ (Line 4)		270	525	2,612	5,884	8,895

Low Growth: Delivery Rate Benefit Associated with CNG and LNG Service
$000's, Unless Otherwise Stated
Low Growth Scenario

		Reference	2012	2015	2020	2025	2030
1	Annual NG Volume (GJ)						
2	Rate 6		8,500	8,500	340,000	765,000	1,615,000
3	Rate 16		102,500	250,000	1,250,000	3,750,000	7,500,000
4	Rate 25		113,600	298,000	998,000	2,028,000	3,288,000
5	Total		224,600	556,500	2,588,000	6,543,000	12,403,000
6							
7	Approximate Impact to Rate 25 Demand Volume [1]	Line 4 / 365 x 1.25	389	1,021	3,418	6,945	11,260
8							
9	Volumetric Delivery Rates* ($/GJ)	[2]					
10	Rate 6	2011 approved	3.648	3.648	3.648	3.648	3.648
11	Rate 16	Effective January 1, 2010	3.89	3.89	3.89	3.89	3.89
12	Rate 25	2011 approved	0.645	0.645	0.645	0.645	0.645
13	Rate 25 Demand	2011 approved	15.943	15.943	15.943	15.943	15.943
14							
15	Incremental Margin at Existing Rates	[2]					
16	Rate 6	(Line 2 x Line 10 / 1,000)	31	31	1,240	2,791	5,892
17	Rate 16	(Line 3 x Line 11 / 1,000)	399	973	4,863	14,588	29,175
18	Rate 25- Delivery	(Line 4 x Line 12 / 1,000)	73	192	644	1,308	2,121
19	Rate 25- Demand	(Line 7 x Line 13 / 1,000)	6	16	54	111	180
20	Total Incremental Margin		**509**	**1,212**	**6,801**	**18,797**	**37,367**
21	Cumulative Incremental Margin		**509**	**3,650**	**24,459**	**93,686**	**240,949**
22							
23	2011 Margin at Existing Rates per TGI NSA	2010/11 TGI NSA	541,002	541,002	541,002	541,002	541,002
24							
25	**Approximate Delivery Rate Benefit, %**	Line 20 / Line 23	**0.09%**	**0.22%**	**1.26%**	**3.47%**	**6.91%**
26							
27	Approximate Impact to a TGI Lower Mainland Residential Customer						
28	2011 Residential Customer Delivery Margin	2010/11 TGI NSA	331,183	331,183	331,183	331,183	331,183
29	Residential Allocation of NGV Benefit	(- Line 20) * (Line 28 / Line 23)	(312)	(742)	(4,163)	(11,507)	(22,875)
30							
31	Residential Customer Annual Volume (TJ)	2010/11 TGI NSA	68,579	68,579	68,579	68,579	68,579
32	Delivery Rate Reduction ($/GJ)	Line 29 / Line 31	$ (0.005)	$ (0.011)	$ (0.061)	$ (0.168)	$ (0.334)
33	Approximate Annual Use (GJ)		95	95	95	95	95
34	**Approximate LM Residential Annual Bill Increase/(Decrease) ($)**	**Line 32 x Line 33**	**$ (0.43)**	**$ (1.03)**	**$ (5.77)**	**$ (15.94)**	**$ (31.69)**
35							

36 [1] Compression load is assumed to be consistent; therefore, the peak will not change from a winter month

37 [2] Existing delivery rates are approved 2011 rates for consistency and comparability with the 2011 TGI NSA calculations

Low Growth: Forecast Cost of Service, Energy Efficiency and Conservation (EEC) NGV Funding
$000's, Unless Otherwise Stated
Low Growth Scenario

		Reference	2011	2012	2015	2020	2025	2030
1	EEC NGV Incentive Funding Impact							
2								
3	Key Assumptions							
4	ROE	BCUC Order No. G-158-09	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%
5	Equity	BCUC Order No. G-158-09	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%
6	STD Rate	2010/11 TGI NSA	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%
7	STD %	2010/11 TGI NSA	1.63%	1.63%	1.63%	1.63%	1.63%	1.63%
8	LTD Rate	2010/11 TGI NSA	6.95%	6.95%	6.95%	6.95%	6.95%	6.95%
9	LTD %	2010/11 TGI NSA	58.37%	58.37%	58.37%	58.37%	58.37%	58.37%
10	Return on Rate Base		7.93%	7.93%	7.93%	7.93%	7.93%	7.93%
11	WACC		6.84%	6.90%	6.90%	6.90%	6.90%	6.90%
12	Tax Rate		26.50%	25.00%	25.00%	25.00%	25.00%	25.00%
13								
14	Rate Base Calculation							
15	Amortization Period (Years)		10					
16	Gross Additions		1,100	660	330	2,310	2,310	3,190
17	Tax	- Line 16 x Line 12	(292)	(165)	(83)	(578)	(578)	(798)
18	Net Additions	Line 16 + Line 17	809	495	248	1,733	1,733	2,393
19	Annual Amortization of Net Addition	Line 18 / 10 years	81	50	25	173	173	239
20								
21	Opening Deferral Account Balance	Prev Year, Line 24	-	809	1,902	6,085	9,537	12,738
22	Net Additions	Line 18	809	495	248	1,733	1,733	2,393
23	Amortization	Sum of Prev Years, Line 19	-	(81)	(229)	(856)	(1,535)	(2,104)
24	Closing Deferral Account Balance	Sum of Lines 21 to 23	809	1,223	1,921	6,961	9,735	13,027
25								
26	Mid Year Unamortized Deferred Charges	(Line 21 + Line 24)/2	404	1,016	1,912	6,523	9,636	12,882
27								
28	Income Tax Expense							
29	Equity Earned Return (Shareholder Earnings)	Line 26 x Line 4 x Line 5	15	39	73	248	366	490
30	Add: Amortization Expense	- Line 23	-	81	229	856	1,535	2,104
31	Taxable Income After Tax	Line 29 + Line 30	15	119	302	1,104	1,901	2,593
32								
33	Taxable Income	Line 31 / (1 - Line 12)	21	159	403	1,472	2,534	3,458
34								
35	Income Tax Expense	Line 33 x Line 12	6	40	101	368	634	864
36								
37	Annual Cost of Service Impact of EEC NGV Incentives							
38	Amortization Expense	-Line 23	-	81	229	856	1,535	2,104
39	Income Tax Expense	Line 35	6	40	101	368	634	864
40	Earned Return	Line 26 x Line 10	32	81	152	517	764	1,022
41	**Total Cost of Service**	Sum of Lines 38 to 40	**38**	**201**	**482**	**1,742**	**2,932**	**3,990**
42	**Cumulative Cost of Service**		**38**	**239**	**1,424**	**7,128**	**19,450**	**37,063**

Plus Passenger: Potential Delivery Rate Benefit to Existing Natural Gas Customers
Impact of the CNG and LNG Service Offering
$000's

		Reference		2012	2015	2020	2025	2030
1	Annual Volume (GJ)	Plus Passenger Scenario		274,500	1,336,500	7,524,500	18,764,500	35,549,500
2								
3	Discount Rate	2011 TGI After-Tax WACC	6.84%					
4	Discount Period (years)			2	5	10	15	20
5	2011 TGI Delivery Margin	2010/11 TGI NSA		541,002	541,002	541,002	541,002	541,002
6								
7	*Net Cost of Service Benefit (Cost) to Existing Natural Gas Customers*							
8	Annual Incremental Margin from additional NGV volumes	Annual Benefit, Line 20		637	3,462	22,009	58,483	114,545
9	Annual EEC NGV Incentive Funding Cost of Service	Annual Cost, Line 41		(216)	(812)	(4,037)	(7,710)	(10,206)
10	**Net Annual Cost of Service Benefit (Cost)**	Line 8 + Line 9		**421**	**2,650**	**17,973**	**50,773**	**104,339**
11	**Approximate Annual Delivery Rate (Reduction) Increase, %**	Line 10 / Line 5		-0.08%	-0.49%	-3.32%	-9.38%	-19.29%
12								
13	Present Value of Net Cost of Service Benefit (Cost)	Line 10 / (1 + Line 3) ^ (Line 4)		369	1,904	9,278	18,832	27,805

Plus Passenger: Delivery Rate Benefit Associated with CNG and LNG Service
$000's, Unless Otherwise Stated
Plus Passenger Case Scenario

		Reference	2012	2015	2020	2025	2030
1	Annual NG Volume (GJ)						
2	Rate 6		40,000	216,500	2,476,500	5,276,500	10,201,500
3	Rate 16		102,500	592,000	2,960,000	9,340,000	18,680,000
4	Rate 25		132,000	528,000	2,088,000	4,148,000	6,668,000
5	Total		274,500	1,336,500	7,524,500	18,764,500	35,549,500
6							
7	Approximate Impact to Rate 25 Demand Volume [1]	Line 4 / 365 x 1.25	452	1,808	7,151	14,205	22,836
8							
9	Volumetric Delivery Rates* ($/GJ)	[2]					
10	Rate 6	2011 approved	3.648	3.648	3.648	3.648	3.648
11	Rate 16	Effective January 1, 2010	3.89	3.89	3.89	3.89	3.89
12	Rate 25	2011 approved	0.645	0.645	0.645	0.645	0.645
13	Rate 25 Demand	2011 approved	15.943	15.943	15.943	15.943	15.943
14							
15	Incremental Margin at Existing Rates	[2]					
16	Rate 6	(Line 2 x Line 10 / 1,000)	146	790	9,034	19,249	37,215
17	Rate 16	(Line 3 x Line 11 / 1,000)	399	2,303	11,514	36,333	72,665
18	Rate 25- Delivery	(Line 4 x Line 12 / 1,000)	85	341	1,347	2,675	4,301
19	Rate 25- Demand	(Line 7 x Line 13 / 1,000)	7	29	114	226	364
20	Total Incremental Margin		**637**	**3,462**	**22,009**	**58,483**	**114,545**
21	Cumulative Incremental Margin		**637**	**7,205**	**75,629**	**281,811**	**740,176**
22							
23	2011 Margin at Existing Rates per TGI NSA	2010/11 TGI NSA	541,002	541,002	541,002	541,002	541,002
24							
25	**Approximate Delivery Rate Benefit, %**	Line 20 / Line 23	**0.12%**	**0.64%**	**4.07%**	**10.81%**	**21.17%**
26							
27	Approximate Impact to a TGI Lower Mainland Residential Customer						
28	2011 Residential Customer Delivery Margin	2010/11 TGI NSA	331,183	331,183	331,183	331,183	331,183
29	Residential Allocation of NGV Benefit	(- Line 20) * (Line 28 / Line 23)	(390)	(2,119)	(13,473)	(35,801)	(70,121)
30							
31	Residential Customer Annual Volume (TJ)	2010/11 TGI NSA	68,579	68,579	68,579	68,579	68,579
32	Delivery Rate Reduction ($/GJ)	Line 29 / Line 31	$ (0.006)	$ (0.031)	$ (0.196)	$ (0.522)	$ (1.022)
33	Approximate Annual Use (GJ)		95	95	95	95	95
34	**Approximate LM Residential Annual Bill Increase/(Decrease) ($)**	**Line 32 x Line 33**	**$ (0.54)**	**$ (2.94)**	**$ (18.66)**	**$ (49.59)**	**$ (97.14)**
35							

[1] Compression load is assumed to be consistent; therefore, the peak will not change from a winter month

[2] Existing delivery rates are approved 2011 rates for consistency and comparability with the 2011 TGI NSA calculations

Plus Passenger: Forecast Cost of Service, Energy Efficiency and Conservation (EEC) NGV Funding
$000's, Unless Otherwise Stated
Plus Passenger Case Scenario

		Reference	2011	2012	2015	2020	2025	2030
1	EEC NGV Incentive Funding Impact							
2								
3	Key Assumptions							
4	ROE	BCUC Order No. G-158-09	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%
5	Equity	BCUC Order No. G-158-09	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%
6	STD Rate	2010/11 TGI NSA	4.50%	4.50%	4.50%	4.50%	4.50%	4.50%
7	STD %	2010/11 TGI NSA	1.63%	1.63%	1.63%	1.63%	1.63%	1.63%
8	LTD Rate	2010/11 TGI NSA	6.95%	6.95%	6.95%	6.95%	6.95%	6.95%
9	LTD %	2010/11 TGI NSA	58.37%	58.37%	58.37%	58.37%	58.37%	58.37%
10	Return on Rate Base		7.93%	7.93%	7.93%	7.93%	7.93%	7.93%
11	WACC		6.84%	6.90%	6.90%	6.90%	6.90%	6.90%
12	Tax Rate		26.50%	25.00%	25.00%	25.00%	25.00%	25.00%
13								
14	Rate Base Calculation							
15	Amortization Period (Years)		10					
16	Gross Additions		1,100	1,100	2,816	5,082	7,062	8,316
17	Tax	- Line 16 x Line 12	(292)	(275)	(704)	(1,271)	(1,766)	(2,079)
18	Net Additions	Line 16 + Line 17	809	825	2,112	3,812	5,297	6,237
19	Annual Amortization of Net Addition	Line 18 / 10 years	81	83	211	381	530	624
20								
21	Opening Deferral Account Balance	Prev Year, Line 24	-	809	2,950	14,619	25,133	32,353
22	Net Additions	Line 18	809	825	2,112	3,812	5,297	6,237
23	Amortization	Sum of Prev Years, Line 19	-	(81)	(345)	(1,955)	(4,005)	(5,394)
24	Closing Deferral Account Balance	Sum of Lines 21 to 23	809	1,553	4,717	16,475	26,425	33,196
25								
26	Mid Year Unamortized Deferred Charges	(Line 21 + Line 24)/2	404	1,181	3,834	15,547	25,779	32,775
27								
28	Income Tax Expense							
29	Equity Earned Return (Shareholder Earnings)	Line 26 x Line 4 x Line 5	15	45	146	591	980	1,245
30	Add: Amortization Expense	- Line 23	-	81	345	1,955	4,005	5,394
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32								
33	Taxable Income	Line 31 / (1 - Line 12)	21	168	654	3,395	6,646	8,852
34								
35	Income Tax Expense	Line 33 x Line 12	6	42	164	849	1,661	2,213
36								
37	Annual Cost of Service Impact of EEC NGV Incentives							
38	Amortization Expense	-Line 23	-	81	345	1,955	4,005	5,394
39	Income Tax Expense	Line 35	6	42	164	849	1,661	2,213
40	Earned Return	Line 26 x Line 10	32	94	304	1,233	2,044	2,599
41	**Total Cost of Service**	Sum of Lines 38 to 40	**38**	**216**	**812**	**4,037**	**7,710**	**10,206**
42	**Cumulative Cost of Service**		**38**	**254**	**2,041**	**15,023**	**45,490**	**91,329**

Appendix A-2

NGV ENGINE AVAILABILITY AND NGVS IN BC & OTHER JURISDICTIONS

TABLE OF CONTENTS

1 NGV ENGINE AVAILABILITY & TECHNOLOGY OVERVIEW

This Section of the Appendix provides a brief overview of CNG and LNG engine technologies and availability and how they are applied in different transportation market applications to proved reliable, cost effective, environmental friendly transportation solutions for customers. This information is provided for context only, as it will be up to each customer executing a "take-or-pay" service agreement with TGI to consider vehicle issues such as engine availability and technology. The information is of assistance in understanding that the changing external environment that increases the overall market potential for NGV over time, which in addition to benefitting NGV customers can provide direct benefits to TGI's customers and GHG reductions.

1.1 Overall Context

With over 11 million vehicles in operation worldwide, NGVs are the only alternative fuel compared to conventional diesel or gasoline counterparts with measurable market penetration on the rise in the transportation market.[1] There are a several classes of NGVs: passenger cars, light duty trucks, medium duty vans, heavy-duty vehicles such as garbage trucks and large class-8 trucks, and finally buses such as urban and transit. Marine vessels are also an emerging sector. NGV technology has come a long way in the past ten years and now LNG and CNG engines are both proven, reliable, commercially available engines. The technology for NGVs is now proven at both the vehicle and fueling portions of the NGV value chain, but both need to be put into practice in order to deliver a complete solution to customers. Given the favourable price differential of natural gas to diesel and gasoline, natural gas is assuming an increasingly important role in fuel-intensive, fleet and heavy-duty applications.

1.1.1 Engine Types

Natural Gas engines are available in a variety of formats but generally fall within the following categories:

1. Dedicated or Mono-Fuel – (Spark Ignition) A dedicated engine uses natural gas as its only fuel source. A dedicated engine has the advantage of being 'optimised' to operate on natural gas, thus ensuring maximum efficiency and optimum emissions results.
2. Bi-fuel - Bi-fuel engines operate on either natural gas or gasoline (or another spark ignited fuel such as ethanol). Bi-fuel engines are available as an aftermarket conversion.
3. Dual-fuel - A dual-fuel engine utilizes a mixture of natural gas and diesel, with the natural gas/air mixture ignited by a diesel "pilot".
4. Tri-fuel - A relatively recent technology development, a tri-fuel vehicle combines a 'flex-fuel' vehicle and a natural gas vehicle. A flex-fuel vehicle uses gasoline and ethanol, either exclusively or blended together.

1 Westport Innovations. Made in B.C. Clean Transportation Solutions - A Proven Solution for British Columbia's Commercial Transportation Sector, November 2008, p. & http://www.iangv.org/

5. High Pressure Direct Injection, HPDI - A proprietary technology developed by Westport Innovations (Canada). HPDI technology involves the injection of both diesel and gas directly at high pressure into the combustion chamber. Like a dual-fuel engine, HPDI relies on diesel for combustion to occur. The system differs from the dual-fuel system in the manner in which the fuels are mixed and is reported to deliver performance equal to a diesel engine.

There are a wide range of NGVs available for the transportation market today as illustrated in Figure 1-1.

Figure 1-1: Wide Range of NGV Availability

Because natural gas is a 'simple'[2] yet high octane fuel, it produces far fewer emissions than other fuels and combusts efficiently. The efficiency and emissions of the engine vary depending on the combustion and injection methods. Additionally, the clean properties of natural gas, as well as the absence of particulates often reduce engine wear and tear. Some operators report extended service and oil change intervals, thus reducing operating costs even further[3].

1.1.1 HEAVY DUTY ALTERNATIVES FOR BC CUSTOMERS

As discussed in Appendix A-1 and Sections 1 and 2 of the Application, buses, heavy duty and vocation trucks operating as return-to-base, commercial fleets represent the most significant opportunity within the Company's near-term target. There are OEM options available to the heavy-duty CNG and LNG markets, which use the following engine technologies. A summary of all OEM options available in BC which use these engines can be found within this Appendix.

[2] Simple in terms of molecular structure as compared to other hydrocarbons
[3] http://www.iangv.org/

Cummins-Westport ISL G Engine (Spark Ignition) - CNG

Within the North American market, the range of NGV offerings has increased in recent years particularly for the medium and heavy duty truck markets. Notable offerings are vocational trucks (e.g. garbage trucks) and transit buses powered with BC based, Cummins Westport ISL G (CWI) natural gas engine. This engine option is available direct from the factory with dealer warrantee support. CWI sells mid-range 5.9 – 8.9 litre engines globally to more than 50 OEMs of transit and transit buses, refuse haulers and medium duty trucks, as well as specialty vehicles such as street sweepers and materials handling vehicles (forklifts).

The Cummins- Westport ISL G engine is offered in variations covering the range from 250 to 320 horsepower. It is based on a Cummins diesel engine that has been factory designed and optimized to run on natural gas.

Cummins ISX Engine (HPDI) - LNG

LNG as a transportation fuel offers two key benefits to vehicle operators.

1. LNG by virtue of its high density in a liquid state is equivalent to 1/600 of the volume under standard gaseous condition. This volumetric advantage is beneficial for vehicle platforms where payload is a consideration. The higher density allows LNG vehicles to travel greater distances than CNG vehicles without refueling and offers greater torque in heavy-duty applications versus CNG.
2. Using LNG as a transportation fuel also provides an economic benefit to fleet operators through fuel cost savings. Westport has identified that LNG is approximately 40% less expensive than diesel[4]. These savings can result in relatively short payback periods for the incremental capital expenditures and provide long run savings to the fleet operators.

The Cummins ISX G engine is a 15 litre diesel cycle engine that incorporates Westport Innovation's High Pressure Direct Injection technology. The engine is identical to the standard diesel powered ISX engine with the exception of the fuel injectors and fueling system. The fuel injectors are designed to inject a small amount of diesel to initiate combustion with a subsequent main injection of natural gas.

In the heavy duty truck market Kenworth and Peterbilt now offer NG powered models in the Class 8 truck segment using Westport's High Pressure Direct Ignition technology in a Cummins diesel cycle engine and is suitable as an engine for heavy duty tractor trailer rigs.

1.1.2 LIGHT AND MEDIUM DUTY ALTERNATIVE FOR BC

As a long-term opportunity, light-duty and medium duty vehicles would be able to take advantage of fuelingfueling infrastructure developed for the heavy-duty market in cases where

4 Westport Innovations. Made in B.C. Clean Transportation Solutions - A Proven Solution for British Columbia's Commercial Transportation Sector, November 2008, p. 1.

public access infrastructure has been developed to allow the existing fueling infrastructure to be utilized by the public. Additional opportunities to reach this secondary market would include the possibility of developing a station for a return-to-base fleet such as a taxi fleet or for municipal vehicles.

Conventional gasoline or diesel powered vehicles can be converted to run on natural gas either as a dedicated fuel or as a bi-fuel approach (can run on gasoline or natural gas). Three local companies are servicing the light duty market offering conversion kits.

Conversion packages and equipment:

- Ecofuels
- Max Quip
- Technocarb

Conversion installers:

- Excel Fuels Installations
- Cap Tex Automotive Services

Conversions must be conducted by these qualified dealers which meet specific requirements, or consumers risk having their warranty voided.[5]

Future Light-Duty Options

a) Factory OEM (Original Equipment Manufacturer)

There are approximately 50 light duty OEMs available worldwide.[6] The only OEM light duty offering in North America is the Honda GX, which is available from retailers in California, Oklahoma, New York, and Utah.[7] At the present time there are no light duty NGVs being offered for sale in BC by vehicle OEMs like Ford or GM. With the growth in NGV sales worldwide, Terasen Gas is hopeful this situation will change, but at present the only way to acquire a light duty NGV is to import it from another jurisdiction, provided the vehicle is approved by Transport Canada. However warranties on imported vehicles are generally voided once imported into Canada, and combined with a lack of qualified dealer support[8] for maintenance, importing is a major deterrent for customers.

[5] NGV Global, November 14, 2009 http://www.ngvglobal.com/ford-releases-bulletin-on-gas-ready-engines-1114
[6] http://www.iangv.org/tools-resources/oem-vehicle-directory/Vehicles-by-Type.html
[7] http://automobiles.honda.com/news/press-releases-article.aspx?Article=5422
[8] Note: Dealers and or repair shops need to be certified on CNG in order to be able to provide certain maintenance functions on CNG vehicles.

Factory NG-Ready

In response to North American customer demand, in 2010 both Ford and General Motors announced plans to expand their NGV activity by supplying various vehicles as "NG-Ready".[9] This terminology means that the vehicles will be designed to be suitable for conversion to natural gas service. NG-Ready offerings will be delivered from the assembly line to conversion companies who will provide the necessary modifications. This step is a major advance as the vehicles are now being offered through the OEM dealer networks and will have warranty support at the dealer level.

1.1.3 MARINE ALTERNATIVES FOR BC FLEETS

Natural gas options for marine operators include the following:

a) Conversions

As demonstrated in the late 1980's with the conversion of the Albion Ferry to run on natural gas, successful conversions of existing diesel engines to natural gas operation are possible.

b) Rolls Royce

Rolls Royce supplies Spark Ignited natural gas marine engines from its manufacturing facility in Bergen Norway. This engine was developed in 1991 and is available in the 1400 to 8500 kW power range[10].

A notable application of this engine is in Norwegian coastal ferries which are quite comparable to BC Ferries.

Norway will have 11 ferries in LNG service by the end of 2011. The largest will be capable of carrying 240 cars. The photo shown below is a smaller vessel that has been in service since 2000[11].

Figure 1-2: LNG Marine Applications

[9] Car and Driver, June 9, 2010, http://blog.caranddriver.com/ford-adds-cng-and-lpg-options-for-f-450-f-550/NGV Global News July 13, 2010: http://www.ngvglobal.com/gm-update-on-cng-van-production-0713.

[10] : Presentation_Rolls-Royce Marine_MarineGasEngines_24.11.2009

[11] http://www.ngvglobal.com/fjord1-to-construct-worlds-largest-natural-gas-powered-ferry-0705#more-9041

c) Wartsila

Wartsilla is a major supplier of marine engines. They presently offer two Dual Fuel marine engines that run on natural gas and diesel which provide a power range suitable for large marine application (Wärtsilä 32DF and Wärtsilä 50DF).

1.2 Summary of NGV's Available in BC

NGV technologies are well advanced for transportation applications worldwide and are now proven, reliable, commercially available engines. There are various natural gas engine solutions to serve BC's transportation needs that are even commercially available from local BC businesses. TGI's near-term target market of heavy duty vehicles and return-to-base fleet applications makes sense given the external environment and product availability. With a sustainable business model, the NGV refueling network can be built to serve longer term markets such as light and medium duty vehicles. Marine applications also appear to hold substantial promise and should be explored in more depth.

2 NGVS IN BC & OTHER JURIDICTIONS

This Appendix is divided in two parts in order to provide an overview of the history of NGVs in BC as well as other jurisdictions. This summary is meant to provide context for why TGI has proposed a new business model and why the Company feels there is strong market potential for NGV adoption in BC due to the success of NGVs in other jurisdictions.

2.1 NGVs in BC

In this Section, Terasen Gas will:

- Review the BC track record of success in developing an NGV market of over 1.1 million GJ at its peak, and the subsequent period of decline that has seen NGV consumption drop to 200,000 GJ in 2009;
- Examine the historic number of fueling stations, NGVs, and energy used for natural gas transportation;
- Identify the factors that drove success and the factors that contributed to the decline in the use of natural gas in the NGV;
- Summarize today's NGV market in BC, by analyzing the current number of vehicles and fueling stations; and
- Discuss how the Proposed Rate Structure a Departure from Past Business Model.

2.1.1 HISTORY OF TERASEN GAS INVOLVEMENT IN NGVS

BC has a long track record of experience with NGV's that dates back over 25 years The original NGV program was approved for Inland Natural Gas Co. Ltd. (a predecessor company of Terasen Gas) in 1985 under Rate Schedule 14[12] which offered three options:

Option A – Fleet Vehicle Service

Option B – General Vehicle Service, and

Option C – Compression Dispensing Service.

From the mid 1980s to mid 1990s Terasen Gas helped establish the NGV marketplace by installing and owning compression and dispensing facilities at many sites. The Company focused on public fueling stations and the source of the load was primarily high-mileage light duty vehicle conversions. This differs from the Company's present strategy focused on return-to-base fleet vehicles served by a private fueling station (anchor tenant) primarily in the heavy duty and bus segments. By 1997 there were 52 private fleet and public access fueling stations within Terasen Gas's service territory with an annual load of 627,000 GJ. In the late 1990's, several OEM providers such as GM, Ford and Chrysler started offering factory-built NGVs and there was a market shift from vehicle conversions to OEM natural gas engines. Ford was the leading supplier of OEM NGVs during this period with several different models available including the Crown Victoria sedan, F-150 pickup and Econoline vans – that were used by taxi companies, municipalities, police forces and utilities. [13]

From the period of 1999 - 2005, Terasen Gas formed a separate non-regulated company in order to have greater flexibility to grown the NGV market and own and operate natural gas fueling stations across North America. The company acquired the natural gas fueling stations from Terasen Gas as well as a third party in BC and underwent a number of name changes from 4Pro Systems to eFuels and is now called Clean Energy after merging with Pickens Fuel Corp based out of California in 2001.

Terasen Gas continued to provide incentives through its NGV grant program as established through Rate Schedule 6 for OEM vehicles throughout this time period and dropped the incentives for conversions. The provincial and federal governments did the same, but due to low market penetration, Ford and the other OEMs decided to pull their vehicles and future vehicles from the market in 2002.[14] As discussed in Section 1 of this Appendix the low market penetration for OEM vehicles was largely because the economic advantage of natural gas over gasoline was small during this time frame.

With no OEM vehicles available, the economic advantage of natural gas declining, the lack of government mandates and incentives for NGVs or clear emission reduction targets, the BC natural gas transportation load started to drop off. Although Terasen Gas reinstituted incentives

[12] B.C. Utilities Commission order number not available prior to 1988.
[13] New York Times, September 26, 2004 http://www.nytimes.com/2004/09/26/automobiles/26AUTO.html
[14] New York Times, September 26, 2004 http://www.nytimes.com/2004/09/26/automobiles/26AUTO.html

for conversions, government grant matching programs were not renewed.[15] NGV volumes for light duty vehicles have been declining steadily since 2004. In 2009, Rate Schedule 6 sales totalled only 75,046 GJ, which equates to about 470 vehicles.[16] As a result of the declining vehicle volumes, many of the NGV fueling stations have closed as they were reliant on public fueling as opposed to an anchor tenant return-to-base fleet model.

In November 2005, Terasen Gas Inc., after being acquired by Kinder Morgan, sold all remaining interest in Clean Energy. Clean Energy has had great success growing the market in the US due to strong environmental government policy and incentives to overcome the initial capital cost premium of purchasing an NGV.[17] For example, in the US there is a federal tax credit in the amount of $32,000/vehicle for heavy duty vehicles such as refuse trucks. Additionally, many of the stations have been built around an anchor tenant model with return-to-base fleets. Unfortunately in BC, most of the NGV stations have been closed due to the economic factors described above. However, the WM Agreement provides evidence that the traditional barriers to NGV adoption in BC may be eroding with respect to heavy duty, return-to-base fleet vehicles.

2.1.2 HISTORIC NATURAL GAS CONSUMPTION, NUMBER OF VEHICLES, AND FUELING STATIONS IN BC

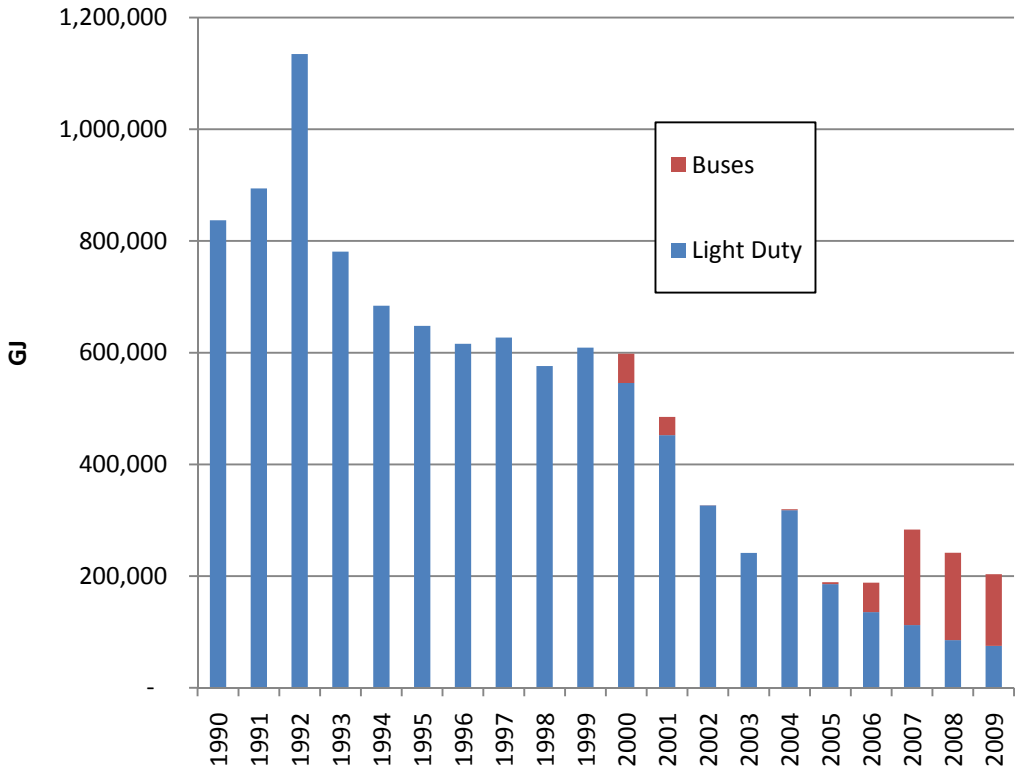
Terasen Gas has historically provided most of the natural gas destined for the transportation sector through service under Rate Schedule 6 – Natural Gas Vehicle Service.[18] In addition, large commercial accounts were serviced under Rate Schedule 25 – General Firm Transportation Service and could now be served under Rate Schedule 26 – NGV Transportation Service.[19] The type of vehicles under each Rate Schedule was light duty vehicles and buses, respectively.

Similar to the NRCan data in Appendix A-1, Section 1, the Company's 283,000 GJ share in 2007 makes up approximately 0.07% of the overall transportation market.[20] In 2009, overall natural gas consumption was 203,000 GJ.

Natural gas consumption had trended significantly downward since the 1990s. The following Figure 2-1 illustrates this decline.

[15] NGV Annual Report 2007, Order No. G-98-99
[16] Based on 160 GJ per year per vehicle
[17] See Section 2.3 of this Appendix, NGVs in Other Jurisdictions
[18] BCUC Order No. G-89-03
[19] BCUC Order No. G-141-09
[20] Calculation: 282 GJ / 369.6 PJ = 0.076%

Figure 2-1: British Columbia NGV Consumption since 1990[21]



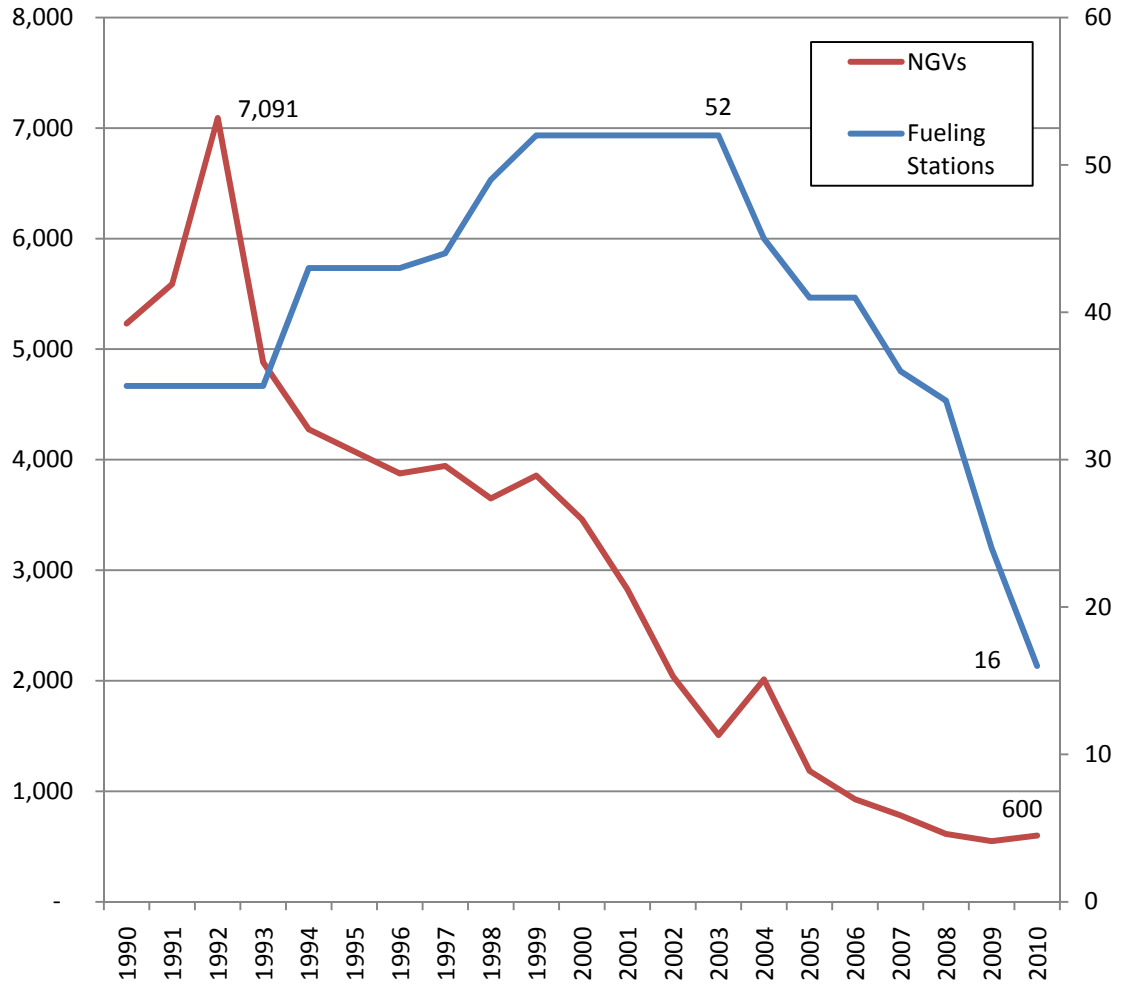
Notes:
Light Duty – Rate Schedule 6
Buses – Rate Schedule 25 (2003-2006), and Rate Schedule 3 (2000-2002). Data not available prior to 2000.

In 2009, consumption in the light duty segment was 75,046 GJ and 128,393 GJ in the bus segment, for a total of 203,439 GJ. Fifteen years previous in 1994, Rate Schedule 6 consumption was 684,000 GJ compared to its 2009 volume of 75,000 GJ. This loss of 609,000 GJ broadly represents a loss in delivery revenues of approximately $2.19 million.[22]

Based on the preceding consumption history, Terasen Gas has created an estimate of the number of NGVs and fueling stations in BC over the past two decades. Using the Company's NGV Annual Reports and the number of Rate Schedule 6 account customers, an estimate on the historic number of fueling stations was created.[23] These are shown in Figure 2-2 below.

[21] Data collected from Terasen Gas database records
[22] Calculation: 609,000 GJ x Rate Schedule 6 delivery charge of $3.604 = $2,194,836
[23] Vehicle estimate based on Rate Schedule 6 consumption divided by 160 GJ per vehicle, plus known quantities of buses and medium duty vehicles.

Figure 2-2: British Columbia Number of NGVs and Fueling Stations since 1990



2.1.3 REASONS FOR DECLINE IN CONSUMPTION

As illustrated in both Figure 2-1 and Figure 2-2, natural gas consumed by the transportation sector has decreased dramatically since 1992. The peak in 1992 was achieved primarily due to the high level of vehicle conversions and a wide price differential between natural gas and gasoline. Terasen Gas believes the decline in consumption from light duty vehicles over the past ten years is due a number of reasons:

- In the period from 2001 to 2003 the price advantage of natural gas versus conventional fuels narrowed to the point where there was insufficient economic incentive to switch fuels given the differential in capital cost between the two options;[24]
- Passenger cars and light duty OEM suppliers Ford and General Motors withdrew their natural gas vehicle offerings of pickup trucks and vans from the market around 2004;[25]

[24] See Appendix A-1, Section 2

- Cost of engine conversions for light duty vehicles increased from around $3,000 in the early 1990s to approximately $7,000 - $10,000 at present day;[26]
- BC fueling infrastructure was not supported by an 'anchor-tenant' model which has been successful in other jurisdictions.[27] As a result of loss in load, NGV station closures resulted in a decline in customer confidence and convenience for fueling. In recent years, five stations closed in 2007 and eight stations closed in 2010;
- Discontinuation of government incentive programs such as the Natural Resources Canada matching grant program in 2006;[28]
- Introduction of hybrid electric vehicles as competitors within the passenger and light duty segments despite uncertainty surrounding the technology; and
- There were also early generation technology issues with NGVs that have now been resolved.

Coast Mountain Bus Company purchases natural gas for its fleet of buses under Rate Schedule 25. They are the only customer NGV under Rate Schedule 25. The history for natural gas buses in BC is summarized chronologically below:[29]

- 1991 – Three CNG buses enter test service in Lower Mainland. These were conversions of conventional diesel powered buses;
- 1995 – 25 CNG buses purchased for regular operations. These were first generation OEM buses supplied by New Flyer. The buses were equipped with Detroit Diesel 50 Series Natural Gas engines;[30]
- 1998 – Further 25 buses purchased. These were also equipped with the Detroit Diesel 50 series engine coupled with Voith 3 speed transmissions. This particular bus proved very problematic from an operating reliability perspective;
- 2001 – As a result of a spike in natural gas pricing and continuing operability issues associated with the first generation buses, all 50 natural gas buses were parked;
- 2004 – 25 of the 50 parked buses were re-powered with diesel engines and returned to service;
- 2006 - 50 second generation OEM natural gas buses entered into regular service (New Flyer buses equipped with Cummins C-Gas Plus engines); and

[25] New York Times, September 26, 2004 http://www.nytimes.com/2004/09/26/automobiles/26AUTO.html
USA Today, July 5, 2007 http://www.usatoday.com/money/autos/2007-05-08-natural-gas-usat_N.htm
[26] Based on conversations with conversion specialist Excel Fuels Installations. Prices do not include incentive funding, grants, or subsidies.
[27] See Appendix A-2, Section 2
[28] NGV Annual Report 2007, Order No. G-98-99
[29] From interviews with BC Transit and Cummins Westport staff
[30] The results from the program are summarized in an April 1997 report developed by Sypher-Mueller International Inc. http://www.llbc.leg.bc.ca/public/pubdocs/bcdocs/335500/fuelchoice.pdf

- 2006 – Approximately 25 of the remaining first generation Detroit Diesel engine buses were also brought back into service.

Operational issues with the Detroit Diesel engines included lower power and high maintenance costs. OEM vendor sources have also indicated that the engine and transmission specifications on these vehicles were not properly matched resulting in non-optimal performance. The second generation of buses powered by the C+ class Cummins engines are reported to have had much better performance and reliability. Since the initial pilot in 1994 to 2010 there have been many advances in NGV technology. Please see Section 1 of this Appendix for a discussion on NGV Products and Services.

In summary, the light-duty NGV market has almost completely eroded in BC. In order to revitalize the market in BC a new strategy and approach is necessary to ensure the sustainable development of an NGV fueling network and customer vehicle offering. In essence, this means focusing on reliable OEM heavy-duty technology and a service backed by 'take-or-pay' commitments for NGV fueling. This business model represents a notable departure from past NGV initiatives undertaken by the Company, which while initially successful in reaching the light duty market served by a public fueling network, was not sustainable once market conditions changed.

2.2 Current Number of NGVs and Fueling Stations

As discussed above, the number of stations served under Rate Schedule 6 in BC peaked at 52 in 2002. This has declined to just 16 in 2010. These stations are currently owned and operated by a variety of companies such as Clean Energy, Petro Can and some private fleets and municipalities.

Terasen Gas estimates there are 600 NGVs in BC today, comprised of:

- 520 light duty vehicles; which include 470 light duty trucks (under Rate Schedule 6) and 50 light duty Terasen Gas fleet vehicles[31];
- 30 medium duty delivery vans (under Rate Schedule 6); and
- 50 urban transit buses (under Rate Schedule 25) from Coast Mountain Bus Company in Port Coquitlam.

At the time of this Application's submission, 16 NGV fueling stations were open in British Columbia. These stations are listed in Figure 2-3 below.

[31] Terasen Gas fleet vehicles are scheduled for regular operations in the fall of 2010.

Figure 2-3: British Columbia Fueling Stations in 2010[32]

Operator	Location	Type
Chevron	Burnaby	public access
Chevron	Cloverdale	public access
Chevron	Vancouver	public access
Christie Adams	Burnaby	public access
City of Surrey	Surrey	private - commercial fleet
Coast Mountain Bus Company	Port Coquitlam	private - transit fleet
Esso	Vancouver	public access
Euro-Asia Transload Inc	Burnaby	private - lift truck fleet
Euro-Asia Transload Inc	Richmond	private - lift truck fleet
Petro Canada	Coquitlam	public access
Petro Canada	North Vancouver	public access
Petro Canada	Richmond	public access
Prince George Taxi Association	Prince George	commercial fleet with public access
Terasen Gas Burnaby	Burnaby	private - commercial fleet
Terasen Gas Surrey Operations	Surrey	private - commercial fleet
Viking Logistics	Richmond	private - commercial fleet

Note: First Canada (formerly Farwest Fuels) operates four public access stations outside of the Terasen Gas service territory

Terasen Gas believes that a continuation of the rapid decline in public fueling infrastructure will equate to a corresponding decline in the number of NGVs, and thus natural gas consumption under Rate Schedule 6 and 25. Natural gas for transportation is available through these rates from Terasen Gas. Yet in order to successfully development the NGV market in BC, fueling service infrastructure is also required to provide complete NGV solutions to customers.

2.2.1 PROPOSED RATE STRUCTURE A DEPARTURE FROM PAST BUSINESS MODEL

The model inherent in the proposed rate structure will allow Terasen Gas to target a portion of the NGV market with "take-or-pay" contracts that remove much of the risk associated with the business model adopted by Terasen Gas in the 1990s. Terasen Gas expects to play a role in

[32] http://www.cngprices.com/

removing the barriers that will enable the development of an NGV industry in B.C., which will help new customers reduce their GHG emissions in a cost effective manner, while providing benefits to existing customers by improving the utilization of the existing natural gas infrastructure. NGV solutions must be complete solutions, however, and provide the customer with service that allows them to directly fuel their vehicles and equipment without the need for them to supplement a portion of the service, or risk the unwillingness to participate in this important opportunity.

2.3 NGV Experience in Other Jurisdictions

The worldwide adoption of NGVs over a wide range of vehicle applications speaks to the high degree of consumer confidence, vehicle performance and proven reliability of NGV technology. Markets in North America have not experienced high adoption levels due to a lack of light duty OEM vehicle availability, a narrow price differential between natural gas and conventional fuels and lack of government policy and incentives. However, as discussed in this Appendix, these traditional barriers to adoption are now being eroded and government policy initiatives are having a favourable impact on NGV development. This information is being provided to put future demand forecasts in context only. TGI's "take-or-pay" contractual model reduces risks associated with the overall NGV market forecasts, and thus the information is not integral to support TGI's requested approval of the proposed WM Agreement, GT&C's, and expenditures on the WM facilities.

In this Section of the Appendix, , Terasen Gas will:

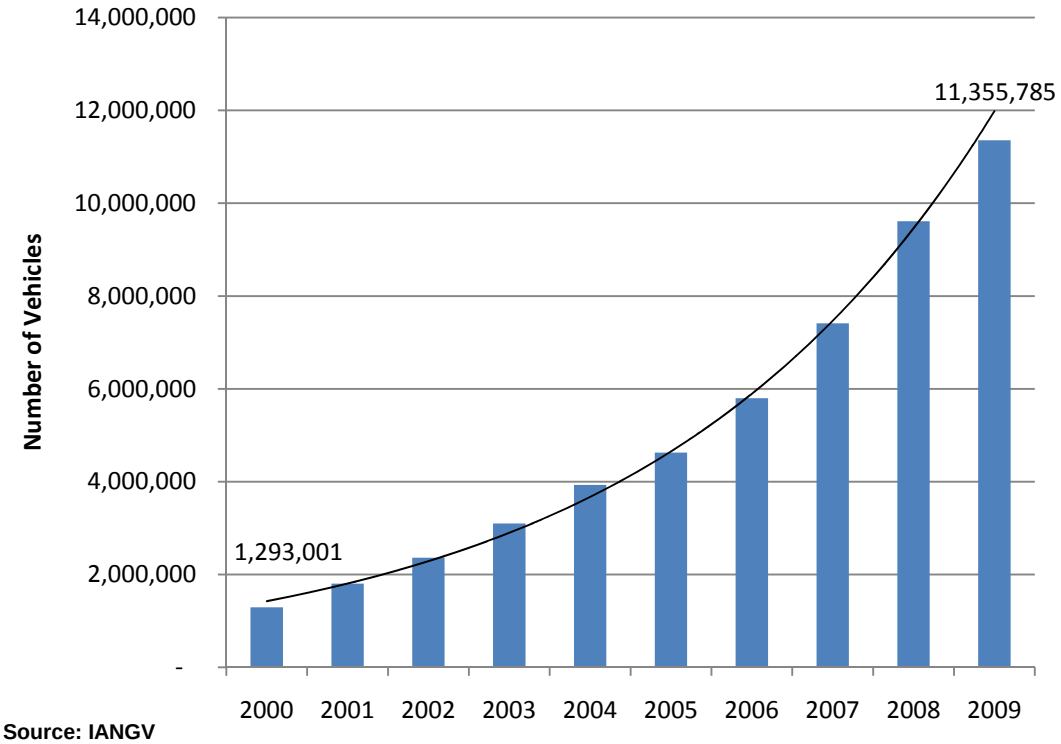
- Provide a summary of World NGV Growth;
- Highlight NGV growth in various regions; and
- Discuss the implications of success in other jurisdictions for TGI's proposed business model.

2.3.1 SUMMARY OF WORLD NGV GROWTH

Established in 1986, The International Association of Natural Gas Vehicles ("IANGV") has seen worldwide NGV numbers grow from almost none to more than 11 million vehicles today.[33] This total represents a 1.27% share of the global motor vehicle market.[34] NGV growth since 2000 is shown in the below in Figure 2-4

[33] http://www.iangv.org/tools-resources/statistics.html
[34] NGVA Europe, Worldwide NGV Statistics http://www.ngvaeurope.eu/worldwide-ngv-statistics

Figure 2-4: NGV Use Has Grown Worldwide to 11 Million NGVs



Source: IANGV

On average, worldwide growth has exceeded 27% per year for the past nine years. Over the next 10 years, IAGNV is projecting a six-fold increase, to reach a target of 65 million NGVs on the road globally by 2020.[35] If achieved, the average growth rate over the next ten years would be approximately 19% per year.

According to the Natural Gas Vehicle Association of Europe ("NGVA Europe") there were 17,763 fueling stations worldwide in 2010, which included 16,098 public and 1,665 private stations. In addition, around 100 LNG stations were present worldwide in 2010.[36]

Despite unique economic, social, and political conditions in each region, Terasen Gas can use worldwide growth rates as a broad indicator of BC's NGV adoption; assuming comparable decision drivers are present.

2.3.2 SUMMARY OF REGIONAL NGV GROWTH

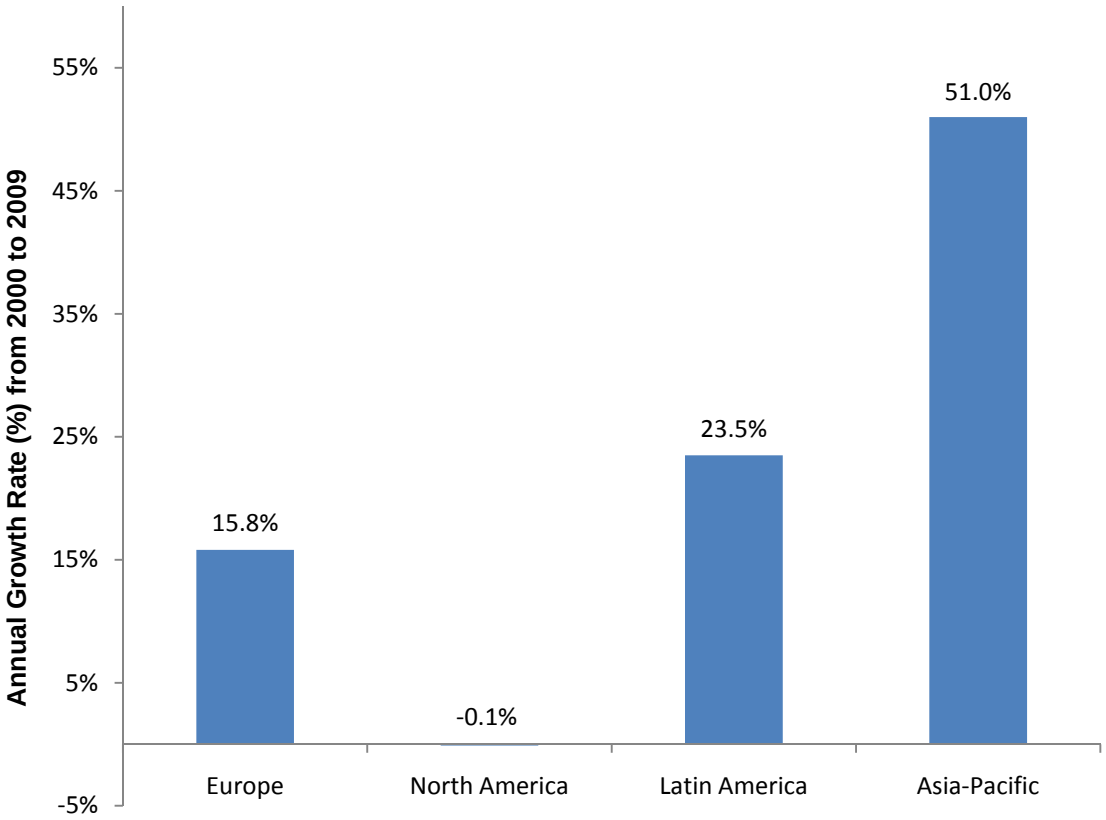
This section illustrates that the use of natural gas as a transportation fuel has been prevalent throughout the world. Now a proven technology, NGV reliability, performance, and thus

[35] http://www.iangv.org/component/content/article/1/145-alternative-fuels-natural-gas-vehicles-cng-lng.html

[36] The number of CNG and LNG stations is changing constantly. The most recent count reported by an official database was conducted by NGVA Europe in June 2010. It stated 17,763 CNG and 51 LNG stations worldwide. The LNG count did not include the United States. The current number of US stations is approximately 45, based on data from the US Department of Energy, Energy Efficiency & Renewable Energy.

acceptance have improved in many jurisdictions. Vehicle growth from 2000 to 2009 by region is shown in below in Figure 2-5:[37]

Figure 2-5: NGV Regional Growth Shows The Rest Of The World Outpacing North America (2000 – 2009)



Source: IANGV

Figure 2-5 illustrates a strong market adoption of NGVs in Latin America and the Asia-Pacific regions. Europe has also shown strong growth of NGVs in the past decade. Comparatively, the total number of vehicles in North America has not grown and even declined slightly since 2000. In the following sub-sections, Terasen Gas will examine the key decision drivers which impact adoption in each of the above-mentioned regions. In some cases analysis will be divided by country or state.

Where applicable, this analysis will include the:

- Degree of NGV adoption based on the number of NGVs and number of fueling stations;
- Role and impact of key decision drivers which influence NGV adoption; and
- Role of the natural gas utility in NGV initiatives.

The following Table 2-1 summarizes the experience of each jurisdiction, organized by the degree of impact of each decision driver. Each region was assigned a value (low, medium or high) based on the subsequent analysis in this Section.

Table 2-1: Summary of NGV Experience in Other Jurisdictions

	Presence and/or Impact of Decision Drivers									
Decision Drivers Impacting NGV Adoption	**Europe**	**US**			**Canada**		**Latin America**	**Asia-Pacific**		
	Italy	California	Utah	Oklahoma	BC*	Ontario		Pakistan	India	China
Availability and proven performance of Light Duty OEM vehicle options	High	Med	Med	Med	Low	Low	High	High	High	High
Availability and proven performance of Heavy Duty OEM vehicle options	High	High	High	High	High	High	High	High	High	High
Significant Price Differential between Natural Gas and Conventional Fuels	High	High	High	High	High	High	High	N/A**	High	High
Government Policy - ie. NGV incentive funding, tax exemptions, penalties discouraging conventional fuels	High	High	Med	Med	Med	Med	High	High	High	High
Availability of Refueling Infrastructure	High	High	Med	Med	Low	Low	High	High	High	High
Other Factors										
Regulated Utility Involved in NGV station development	High	High	Med	Med	Low	Med	High	High	High	High
Overall										
Level of NGV Adoption	High	High	Med	Med	Low	Low	High	High	Med	Med

Notes: BC Experience is discussed in Section 2.3 of this Appendix.

**Free market consumer price of CNG

The remainder of this Section is organized in the following order:

1. Europe
2. North America
3. Latin America
4. Asia-Pacific

2.3.3 NGVS IN EUROPE

Europe has approximately 1.3 million NGVs on the road today.[38] The composition of these vehicles is approximately 1 million light duty vehicles, 144,000 buses, and 124,000 heavy duty vehicles. To refuel these NGVs, Europe has 3,570 CNG stations and 27 LNG stations. Over 70% of the CNG stations were available for public access. According to Clean Fuels Consulting, Europe's fueling network needs to keep developing to support the NGV market, as the ratio between fueling stations and vehicles in most of Europe is not economically sustainable at current levels.[39]

Historic growth can be attributed to a number of factors, including the availability of OEM vehicles, NGV price competitiveness versus conventional fuelled vehicles, along with progressive government policy and incentives. In addition, European environmental considerations with respect to GHG emission reductions are notably higher than other parts of the world.

The number of OEM NGVs in Europe are abundant, and include manufacturers such as Fiat, Mercedes Volkswagen, and Volvo. The IANGV currently lists over 80 vehicle models in their directory available in European countries.[40] While the directory cites mostly passenger, and light to medium duty models, heavy duty engine technology from Cummins-Westport and Westport Innovations are increasingly being adopted with over 25,000 engine deliveries worldwide[41]. In general, vehicles sold in Europe generally attract a 10% premium over their diesel and gasoline counterparts due to their lower cost of fueling.[42]

Despite high natural gas prices, the fuel price differential in Europe is quite significant. Gasoline sells at premium prices greater than $2 per litre, compared to NGV prices around $1 per litre-equivalent.[43]

[38] NGVA Europe, http://www.ngvaeurope.eu/european-ngv-statistics
[39] Clean Fuels Consulting presentation September 21, 2009, http://www.cleanvehicle.org/conference/2009/images/Seisler-GlobalNGVGrowthNAmImpacts.pdf
[40] IAGNV, http://www.iangv.org/tools-resources/oem-vehicle-directory/Vehicles-By-Location/Europe.html
[41] http://www.westport.com/products/md.php
[42] Oilweek Magazine, June 2010, http://www.oilweek.com/articles.asp?ID=732
[43] http://www.ngvaeurope.eu/european-ngv-statistics

Strong government policy has driven market activity in recent years. The European Union ("EU") has committed to reducing GHGs emissions by 25-40% until 2020, and by at least 80% by 2050, from 1990 levels. Emissions from the transportation sector represent 20% of total emissions. The EU expects to achieve these targets through mandatory tailpipe emission limits and fuel content standards, which effectively favour NGV policy.[44]

In December 2009, the European Commission released an action plan to target natural gas replacing 10% of current conventional fuels by 2020.[45] Specifically, the plan calls for 23.5 million NGVs and 20,000 fueling stations in Europe by 2020.

To reach this goal, regulated natural gas utilities have become active in the NGV market by building, owning and maintaining fueling infrastructure. In Switzerland, Regio Energie and Eni Suisse SA own 123 fueling stations across the country.[46] OMV Group in Austria built and owns nearly half of the country's 170 public and 40 commercial CNG fueling stations.[47] While the European approach varies nationally, Italy points to one example of a well-organized NGV development model.

2.3.3.1 Italy

Italy is the European NGV leader with more than 600,000 vehicles on the road today (see chart below for country comparison). Prior to the 1990s, most of the NGVs in Italy were converted vehicles. Since then, increased OEM vehicle availability has boosted NGV market share, with annual growth over the past three years at 37% per annum[48]. Italy's market share for NGVs in 2007 was around 2%, notably higher than hybrid electric vehicles at 0.37%.[49] Price has also been a driver, with CNG 40 – 60% less expensive than gasoline and diesel[50].

Around 700 public fueling stations offer CNG service to operators. Of the 700 fueling stations, 500 are owned and operated by Snam Rete Gas, Italy's leading regulated natural gas utility.[51] The next largest provider is Apig (Azienda Generale Italiana Petroli), with around 20 stations. Both companies are subsidiaries of Italy's largest integrated oil and gas company, Eni.[52]

The number of fueling stations and NGVs in Italy are shown under changing market conditions from 1973 to 2005 in Figure 2-6.

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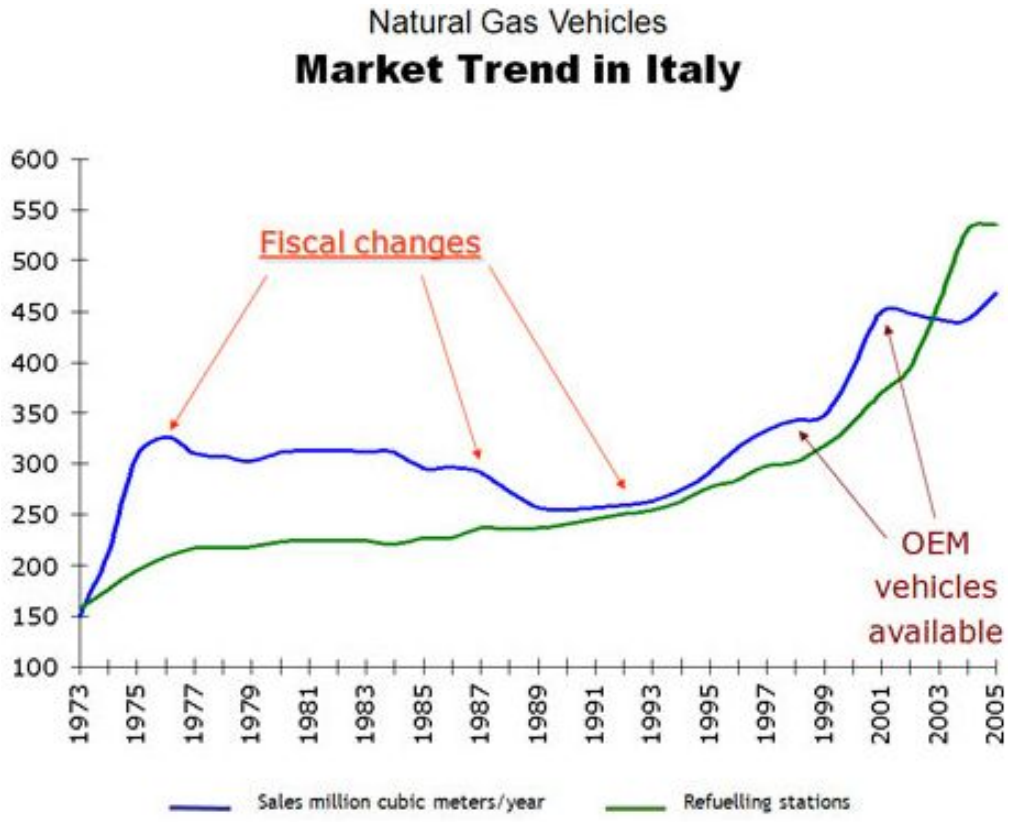
44 NGVA Europe http://www.ngvaeurope.eu/eu-policy-on-alternativerenewable-fuels-and-ghg-emissions
45 http://www.cng.cz/en/natural_gas/facts/europe/european_union_activities.html
46 NGV Global News, July 9, 2010. http://www.ngvglobal.com/regio-energie-opens-two-ng-stations-on-a1-in-switzerland-0709;
47 OMV Group http://www.omv.com
48 IANGV, http://www.iangv.org/tools-resources/statistics.html
49 NGV System Italia, With natural gas a truly sustainable mobility, www.ngvsystem.com
50 Oilweek Magazine, June 2010, http://www.oilweek.com/articles.asp?ID=732
51 www.Metanauto.com , CNG stations directory. http://www.metanoauto.com/modules.php?name=Distributori&m=c&p=1
52 http://www.eni.com

Figure 2-6: NGV Growth in Italy Under Changing Market Conditions[53]



OEM vehicles available, illustrated in Figure 2-3 shows the dramatic influence that greater OEM vehicle availability in the late 1990s and early 2000s had on Italian NGV adoption. Also, in the late 1980s the Italian government reduced its role in the economy and initiated privatization (labelled as "fiscal changes").[54] As a result, NGV adoption declined with less government funding assistance. The adoption rate increased again in the early 2000s, when government incentives which included a low CNG tax and conversion incentives were introduced.

For Terasen Gas, it is important to recognize the impact that the presence of these two factors has on adoption. If provincial and federal NGV funding incentives become more available, it is reasonable to assume that NGV adoption may be positively stimulated. Similarly, as manufacturers like Ford and Honda create more OEM vehicle offerings to service North American customers, NGV adoption levels could also increase in the US, Canada and BC.

2.3.4 NGVS IN NORTH AMERICA

In 2009, North America had 122,000 NGVs in operation – 120,000 in the United States ("US") and 12,000 in Canada. The number of fueling stations in the US and Canada are approximately 1,300 and 53 respectively (which includes 16 stations in BC, as described in Section 2.2 of this

[53] http://www.ngvaeurope.eu/ngv-market-growth-in-italy-1973-2008
[54] http://www.nationsencyclopedia.com/economies/Europe/Italy-OVERVIEW-OF-ECONOMY.html

Appendix).[55] Presently, the US ranks tenth in the world in NGV deployment based on number of vehicles.

As previously stated in Figure 2-5, the growth rate (-0.1% from 2000 to 2009) of NGVs in North America has been limited in recent years.

This lag may suggest that future opportunities for NGV solutions in North American vehicle markets may exist. The US and Canadian experience are detailed below in the following subsections.

2.3.5 UNITED STATES

In the 1990s, the American Gas Association predicted more than 12 million NGV in the US by 2010. However, there are just 120,000 NGVs are on the road today. Industry experts believe the main reasons for lack of adoption have been:[56]

- OEM vehicle manufacturers had stopped producing NGVs for the US;
- Narrow price differential between conventional fuels and natural gas;[57]
- A lack of fueling infrastructure;
- Government mandates and tax incentives ended or were adjusted downward;
- Incremental cost for buying NGVs over conventional-fueled vehicles increased;
- Deadlines of government-mandated fleet conversions to cleaner alternative fuels kept changing;
- Vehicle-conversion shops and service centers faded away

As a result, fleets returned to conventional-fueled vehicles. Despite past failures, industry coalition NGV America foresees a new future:

> *"Across North America, public and private fleet operators are transitioning to natural gas vehicles, a proven technology choice that exceeds ever-stricter emissions requirements and an effective strategy to reduce the country's dependence on foreign oil. And the number of public fueling sites is growing, creating the confidence that draws environmentally aware and cost-conscious consumers to buy vehicles fueled with natural gas. Ample natural gas supplies, a growing selection of vehicle choices, and progressive public policies and incentives support natural gas as the transportation fuel of the future."*[58]

While the overall experience in the US has lagged, some regions and states have experienced success. The reasons for changing market conditions in the US are described below.

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55 NGVA Europe, http://www.ngvaeurope.eu/worldwide-ngv-statistics; http://www.cngprices.com

56 American Gas Association article "Full Speed Ahead" April, 2010, pp. 25 http://www.questargas.com/FuelingSystems/NGV/RonJibsonsNGVstoryinAmericanGasMagazine.pdf

57 Ibid. Article mentions gasoline prices reaching $4 per gallon in 2008 which spurred the Utah NGV market.

58 NGV America http://www.ngvc.org/

Although OEM availability has been limited in the passenger and light duty segments, a significant number of conversion alternatives still exist for consumers. Presently, the only OEM light duty offering is the Honda GX, which is available from retailers in California, Oklahoma, New York, and Utah[59]. This is accompanied by a handful of "NG-Ready" conversion alternatives. Also, over 15 heavy duty options are available from manufactures Freightliner, Mack, and Peterbilt. Heavy duty, return-to-base fleets, and transit buses represent the largest opportunity for US growth. A study by NGV America projects four growth scenarios for CNG/LNG in the US by 2020. The moderate case targets 1.9 million vehicles by 2020, with freight trucks capturing 14% of the diesel market share, trash trucks 25%, and transit buses 60%.[60]

US government incentives and policies toward NGV development have advanced in recent years. Federal incentives include income tax credits toward vehicles, fueling infrastructure, and fuel. Grants programs such as the US Department of Energy's *Clean Cities Program* are designed to promote proven alternative fuel technologies like natural gas through vehicle and infrastructure incentives.

Recent legislative developments which impact the US NGV sector are summarized below:

- The proposed Nat Gas Act (S. 1408, H.R. 1835), introduced by Senators Reid, Hatch and Menendez by, promotes NGV initiatives by incentivizing consumers, commercial truckers and governments with state and federal tax credits.61 Lobbyist T. Boone Pickens has also expressed his support for the legislation;
- In July 2010, a proposed stimulus bill was introduced to the U.S. Senate as Clean Energy Jobs 5 and Oil Company Accountability Act of 2010. One section of the bill outlines rebates to cover up to 90% of the incremental cost of switching from conventional fueled vehicles to NGVs; up to a maximum budget of $3.8 billion;[62] and
- In response to the Streamline Vehicle Conversion Act (S. 1809, H.R. 3431), the US Environmental Protection Agency has filed a proposal to assist vehicle manufacturers with streamlined regulatory requirements for aftermarket conversion systems.[63]

State incentives may take the form of tax deductions or credits, reduced license fees, reduced vehicles sales taxes, and lower registrations.[64] Permitting alternative fuel vehicles to operate in high occupancy vehicle (HOV) lanes during peak rush-hour periods is also a popular policy.

The US NGV market has been founded on an "anchor-tenant" business model which links an "anchor" tenant – a high fuel consuming fleet – to the station to amortize the fixed costs over the gallons sold. Public access to fueling is typically permitted by the operator. The model, now an

59 http://automobiles.honda.com/news/press-releases-article.aspx?Article=5422
60 NGV America http://www.ngvc.org/
61 http://www.ngvglobal.com/new-us-nat-gas-act-of-2009-introduced-on-energy-independence-day-0708.
62 Green Car Congress, July 28, 2010: http://www.greencarcongress.com/2010/07/reidbill-20100728.html
63 http://www.ngvamerica.org/pdfs/EPA_Letter_Nat_Gas_Conversions.pdf
64 NGV America, http://www.ngvc.org/incentives/stateNGV.html

industry standard, has been successful in helping fleets switch to natural gas while simultaneously building economically viable stations.[65]

Many regulated natural gas utilities have adopted or modified the anchor- tenant model to achieve success with NGV adoption. A few such examples include Pacific Gas & Electric, Questar Gas, and Oklahoma Natural Gas. These utilities and their respective states - California, Utah, and Oklahoma - are described in the section below.

California

California has the largest natural gas fueling infrastructure in the US. Its success in recent years has more than doubled the number of stations from 200 in 2005, to 460 in 2009.[66] Of those, 146 offer public access. The state's first fueling station was constructed in 1990 by regulated utility Pacific Gas & Electric.[67]

Similar to the overall US experience, a decline in the passenger and light duty segment over the past decades has given way to a number of commercial, return-to-base fueling stations. In Southern California, more than 550 waste haulers and 4,300 transit buses were operating on CNG in 2008.[68] In total, more than 50% of the state's 9,000+ transit buses are powered by CNG. The Los Angeles County Transit Authority operates the largest NGV bus fleet in North America, with 2,500 CNG buses or 95% of its overall fleet.[69]

In additional to vehicle availability, the retail price for natural gas has also been a driver in California adoption. Natural gas is approximately 40% less than gasoline, and 60% less than diesel.[70] Like the rest of America, an abundance of natural gas has influenced this price. In regard to fueling supply, an LNG plant in Boron, California operated by Clean Energy is a primary source of LNG for the California market.[71] In other parts of the US LNG plants are owned and operated by third-parties or oil companies in locations such as Arizona and Georgia.[72]

To supplement federal policy, the Californian government provides a long list of regulations, laws, and incentives to assist alternative fuels like CNG and LNG. A few include:[73]

- A requirement for public organizations to operate their fleets with cleaner fuels;
- CNG tax exemptions for public transit use;

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65 AllBusiness, March 8, 2001. http://www.allbusiness.com/energy-utilities/oil-gas-industry-oil-processing/6042771-1.html

66 http://www.cngvc.org/why-ngvs/fueling-options.php; http://www.consumerenergycenter.org/transportation/afvs/cng.html

67 http://www.pge.com/myhome/environment/pge/cleanair/naturalgasvehicles/

68 2008 Southern California Heavy Duty Vehicle Report, March 30, 2009

69 http://www.ngvglobal.com/clean-energy-upgrades-la-metro-transit-servicing-0628#more-8924

70 San Diego Gas & Electric presentation, July 15, 2010, http://www.c-5.org/PDFs/2010/SCG%20SDG&E%20Gas%20Quality%20Presentation%20-%20071410.pdf

71 http://www.cleanenergyfuels.com/CaliLNGplant.html

72 http://altlngusa.com/lng_pro.asp, http://www.aglresources.com/about/lng.aspx

73 US Department of Energy, http://www.afdc.energy.gov/afdc/laws/state_summary/CA

- Alternative fuels research and development incentives from the California Energy Commission; and
- Emissions reductions grants; and
- Fueling infrastructure grants.

Most recently, the California Energy Commission ("CEC") released a draft investment plan for its AB 118 Alternative and Renewable Fuel and Vehicle Technology Program. Over the next two years, stimulus funding would provide $12 million for medium and heavy duty NGVs, and $2 million for fueling infrastructure upgrades.[74]

In the Port of Long Beach, the *Clean Trucks Program* has banned all diesel trucks built prior to 1993. Approximately 1,000 new LNG trucks have been placed in-service since 2008, achieving an 80% emissions reduction.[75]

Policy reform has also come from the natural gas utilities. The state's three major utilities Pacific Gas & Electric ("PG&E"), San Diego Gas & Electric, and Southern California Gas have played important roles in transforming the industry. Incentives may come in the form of vehicle rebates, grants, plus discounted insurance and electricity rates.

These regulated utilities have also been involved in the various fueling station ownership models. PG&E operates 37 CNG stations; 24 with public access. Their commercial rate (G-NGV2) applies to the sale of CNG at PG&E-owned stations, and is charged every fill.[76] The other Southern California utilities also offer variations on this fee structure.

Utah

Another NGV success story can be found in Utah, where natural gas utility Questar Gas ("Questar"), regulated by the Public Service Commission ("PSC"), has become the nation's second-largest retailer of CNG fueling stations. Questar has deployed a two-pronged strategy to "work with large fleet operators to install on-site stations, and move Questar-owned stations to locations where the public and the Questar NGV fleet could conveniently refuel."[77] The utility seeks out branded gasoline stations, leases space for NGV fueling equipment, and pays the operator for the handling the transactions. Questar then charges a volumetric rate for NGV fueling service at company-owned CNG stations.[78]

An estimated 5,000 to 8,000 NGVs operate on Utah's roads today. CNG fueling sites include 25 public fueling stations (5 are state-owned) and over 50 fleet-owned fueling stations.

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74 California NGV News, February 8, 2010 http://www.cngvc.org/pdf/newsletters/CalNGVNews_020810.pdf

75 NGV Global News, January 20, 2010 http://www.ngvglobal.com/ports-clean-truck-program-shines-bright-white-for-2010-0120

76 http://www.pge.com/myhome/environment/pge/cleanair/naturalgasvehicles/rates/

77 American Gas Association article "Full Speed Ahead" April, 2010, http://www.questargas.com/FuelingSystems/NGV/RonJibsonsNGVstoryinAmericanGasMagazine.pdf

78 http://www.questargas.com/Tariffs/uttariff.pdf

In late 2008, the PSC made a ruling which forced Questar to raise CNG prices to the full cost of service.[79] Previously, the cost of service was subsidized by the rate payer base, and also incorporated an inexpensive gas source from its Wyoming well ("Wexpro"). Later in 2009, the State of Utah legislated that the rate was permitted at less than full cost of service.[80] The result was PSC having Questar remove half the subsidy and allowing the Wexpro fuel to count in the rate calculation. At this time, the PSC is still reviewing the CNG rate structure.

Unlike the Utah model, Terasen Gas proposes a rate which covers the full cost of service within the contract term and is not subsidized.

Oklahoma

Oklahoma Natural Gas ("ONG") operates 31 CNG stations throughout Oklahoma State.[81] Similar to Questar, ONG charges fleet operators a tariff for the fueling service. Designed for commercial or industrial customers, the rate is charged as a volumetric delivery fee and a nominal fixed service charge, in addition to the commodity cost of gas.[82]

The State of Oklahoma recently signed into law the *Oklahoma Energy Security Act*. A few provisions exist to promote CNG, with a goal for one public fueling station every fifty miles along its interstate highway system by 2025.[83]

Other States

NGV technology adoption by fleet operators has been proven throughout the country. A few other cases are summarized:

- New York Metropolitan Transit Authority has made advances in the NGV market, with a recent announcement to purchase up to 475 New Flyer CNG buses;[84]
- In Texas, the state's gas regulator has created the Texas Public Fleet Project, which awards infrastructure and vehicle incentive funding to municipal fleets;[85]
- The City of Phoenix uses over 355 LNG transit buses, representing 71% of its municipal fleet;[86] and
- Waste Management Inc. operates a national fleet of over 300 CNG and 500 LNG waste haulers throughout the country.[87]

[79] State of Utah PSC, Docket No. 08-057-21 http://www.psc.state.ut.us/utilities/gas/gasindx/0805721indx.html
[80] http://le.utah.gov/~2009/bills/hbillint/hb0392.htm
[81] http://www.oklahomanaturalgas.com/SaveEnergyAndMoney/NaturalGasVehicles/~/media/ONG/Images/CNG-Station-loc-6-2010-ONG.ashx
[82] https://www.oklahomanaturalgas.com/~/media/ONG/Tariffs/701.ashx
[83] NGV Global News, June 1, 2010 http://www.ngvglobal.com/oklahoma-legislation-will-establish-cng-interstate-highway-0601
[84] http://www.newflyer.com/index/news-app/story.85
[85] NGV Global News, January 20, 2010 http://www.ngvglobal.com/texans-are-busy-with-ngvs-0120
[86] http://phoenix.gov/ENVPGM/airqual.html
[87] Waste Management Inc., 2010 Corporate Fact Sheet, http://www.wm.com/wm/press/mediakit/WM_Corporate_Fact_Sheet.pdf

In summary, the US experience has illustrated numerous examples and success stories which suggest NGV adoption may increase in the near future. Led by California, successful deployment of NGVs throughout the US would likely be driven by greater OEM vehicle availability, favourable government policy, anchor-tent infrastructure models, and improved price competiveness of natural gas versus conventional fuels.

2.3.6 CANADA

A March 2010 report from Marbek Resources concluded that the Canadian NGV market has stagnated and is lagging far behind other countries. Not unlike the US experience, previous failures can be attributed to past price volatility and problems with NGV technologies in some sectors.

The NGV market in Canada is comprised of 9,500 light duty cars and commercial vehicles, as well as 300 heavy duty vehicles and 150 urban transit buses.[88] The majority of these vehicles are concentrated within BC and Ontario. For a complete discussion of the BC NGV market, please see Section 2.1 of this Appendix. The following discusses specific utilities and programs in other Canadian provinces.

Ontario

For over twenty years, Enbridge Gas Distribution ("Enbridge") has been an NGV leader and advocate in the Ontario transportation market.[89] Regulated by the Ontario Energy Board, Enbridge offers on-site fueling station solutions for commercial vehicle operators. Enbridge has shifted its focus from passenger and light duty NGVS to commercial, return-to-base applications like urban transit buses, refuse trucks, and heavy duty trucks. This was largely due to a lack of OEM vehicle options in the light duty segment, as well as the advancement of passenger and light duty electric vehicle policies. As a result, public CNG fueling infrastructure has declined rapidly in recent years from as many as 72 stations to just 9 in 2010.[90]

The Ontario Ministry of Transportation currently runs a program called Green Commercial Vehicle Program which provides 1/3 of the capital premium incentive funding (to a maximum of $15,000) for Class 3 – 7 (medium and heavy duty) commercial vehicles.[91]

Other Provinces

The provision of fueling service by regulated natural gas utilities is relatively common in Canada. In other regulated provinces like Saskatchewan, SaskEnergy owns and operates seven public CNG stations.[92] In Alberta, ATCO Gas provides fueling service at eight

88 "Study of Opportunities for Natural Gas in the Transportation Sector", March 2010 http://www.cngva.org/media/4302/marbek_ngv_final_report-april_2010.pdf
89 http://www.ngvontario.com/
90 Atco Gas Canada Wide Station List http://www.atcogas.com/About_NG/NGV/NG_Vehicles.asp, http://www.cngprices.com last accessed September 2, 2010
91 Ontario Ministry of Transportation, http://www.mto.gov.on.ca/english/trucks/programs/grants-trucks/index.shtml
92 http://www.saskenergy.com/business/NGVfueling.asp

locations.[93] In the past, these utilities have primarily served light duty fleet vehicles. However, this focus is changing to return-to-base heavy duty operators, as evidenced by discussions through Natural Resources Canada's *Natural Gas for Transportation Deployment Roadmap.*[94]

In Ontario and Quebec, Encana and Gaz Métro are also working to develop the market for LNG as a cost effective, lower carbon fuel for highway tractors.

Overall, Canada has lagged far behind other countries in terms of NGV deployment. However, there is reason to believe NGV adoption will increase in Canada, based on the wide availability of heavy duty OEM vehicle options, a competitive natural gas price (versus gasoline and diesel), and greater government policy with respect to environmental issues. The presence of these drivers in other jurisdictions has led to higher levels of NGV adoption.

2.3.7 NGVS IN LATIN AMERICA

In Latin America NGV growth over the past ten years has averaged more than 20% per year. Argentina has developed 1,850 fueling stations to service its more than 1.8 million NGVs, making it the second-largest country by number of NGVs.[95] In the 1980s the government decided to keep the price of natural gas artificially low due to an abundance of natural gas and declining supplies of diesel, which led to an advancement of the CNG industry.[96] NGV gains have historically been in taxicabs and passenger vehicles, but recent plans for heavy duty vehicles to replace diesel are underway, targeting 1,000 by 2012.

Brazil ranks as the fourth-largest country worldwide for NGV vehicles, with 1.6 million in service. The majority of vehicles are aftermarket converted taxicabs and commercial medium duty vehicles. New strategies are focused on fleet operators and city buses. A new project called *Blue Corridors*, would interconnect large cities to other centers in Argentina, Uruguay, and Chile with through accessible NGV fueling infrastructure.[97]

According to the Latin American NGV Association, Latin American adoption has grown because of an availability of gas supply, wide price differential, availability of conversion retrofits, and the development of its fueling network.[98]

2.3.8 NGVS IN THE ASIA-PACIFIC

As a whole, the Asia-Pacific region[99] has grown 51% since 2000. With rapid population (and vehicles sales) in high growth regions like Pakistan, India and China, NGV manufacturers and government entities must manage vehicle standards and infrastructure safety closely. Public transit buses are a strong focus for NGV development.

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93 http://www.atcogas.com/About_NG/NGV/NG_Vehicles.asp
94 http://www.cngva.org/en/home/canadas-industry/natural-gas-for-transportation-deployment-roadmap.aspx
95 http://www.iangv.org/tools-resources/statistics.html
96 "Study of Opportunities for Natural Gas in the Transportation Sector", March 2010 http://www.cngva.org/media/4302/marbek_ngv_final_report-april_2010.pdf
97 http://www.iangv.org/tools-resources/ngvs-by-country/brazil.html
98 NGV Global News, August 20, 2008. http://www.ngvglobal.com/latin-america-ngvs-an-update-report-0820
99 Includes the continents of Asia and Australia

The Asia-Pacific region shown strong NGV adoption due to:

- A wide availability of light duty and heavy duty OEM vehicle options, exhibited by numerous NGV taxi and bus fleets.
- In many countries, government has mandated policies to stimulate NGV adoption, such as India's bus laws (which are discussed below).
- The price of CNG is approximately 30 – 50% lower than diesel in Pakistan, India, and China.[100]

The following Section provides a brief overview of three of the largest countries in the region – Pakistan, India, and China.

2.3.9 PAKISTAN

Pakistan is the world's largest NGV market with over 2.3 million vehicles on the road today[101]. This represents over 50% of the total motor vehicles in Pakistan. A few policy highlights include:[102]

- Strong government commitment to promote CNG use;
- Liberal approvals to obtain license for CNG retailing;
- Free market consumer price of CNG;
- Priority of natural gas connection to CNG stations; and
- Exemptions of import duty and sales tax on import of CNG machinery, equipment, kits and cylinders.

While these factors have built Pakistan into the global NGV leader, many operational and pricing issues still remain. These include inadequate delivery pressure at the stations, and deep discounting of CNG prices from station operators.

2.3.10 INDIA

India ranks fifth in the world in terms of number of NGVs. Their flagship project is a public bus system in Delhi ordered by the Supreme Court of India in 1998.[103] This mandate has resulted in more than 10,000 CNG buses on Delhi's roads. A similar directive was issued to 11 other cities in India.

[100] NGVA Europe. http://www.ngvaeurope.eu/european-ngv-statistics
[101] http://www.iangv.org/tools-resources/statistics.html
[102] http://gee-21.org/publications/Development-of-CNG-Industry-in-Pakistan.pdf
[103] "Study of Opportunities for Natural Gas in the Transportation Sector", March 2010 http://www.cngva.org/media/4302/marbek_ngv_final_report-april_2010.pdf

New vehicle offerings have expanded and now include the nation's largest automaker, Maruti Suzuki.[104]

2.3.11 CHINA

China had 450,000 NGVs as of 2009, but is a growing market with 112% and 48% increases in 2007 and 2008 respectively.[105] As of January 2010, China was constructing 240 new CNG filling stations to add to their current total of 1,650.[106] Over 200 of these are private, commercial stations. China also has a high concentration of medium, heavy duty and bus NGVs at 180,000 vehicles. China Natural Gas Inc is one of the leaders in developing CNG and LNG refueling station infrastructure.[107]

LNG development has also progressed as the first successful LNG-powered tugboat was completed in August 2010.[108]

2.4 Terasen Gas Implications from Other Jurisdictions

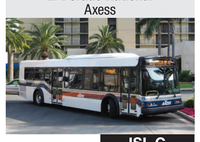
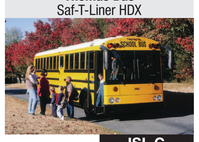
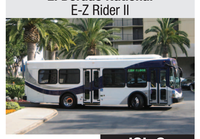
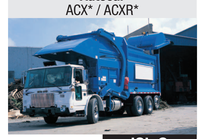
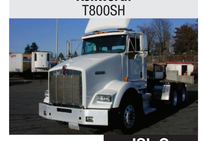
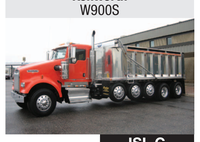
The WM Agreement provides evidence that traditional barriers to NGV adoption in North American are being eroded. CNG vehicle and fueling station technology, as proposed in the WM Agreement, has been proven world-wide for decades with significant improvements in performance and reliability. The anchor-tenant model with public access fueling has been adopted and implemented with success by many regulated utilities within North America in order to build a sustainable business model. Similar to the WM Agreement, by installing, owning, and maintaining fuel station infrastructure, regulated utilities are able to charge fleet operators a "take-or-pay" volumetric service charge to recover station capital costs and provide public fueling as an added benefit.

3 OEM AVAILABILITY

The image below shows the a large variety of medium and heavy duty vehicles now on the market that can be power on CNG and/or LNG engines. A significant majority of these vehicles were not available when Terasen Gas was last involved in NGV refueling but are now in widespread use in other jurisdictions. Terasen Gas believes that these relatively new, yet commercially proven, vehicles provide a significant market opportunity for increase NGV adoption in our service territory.

[104] http://green.autoblog.com/2010/08/18/indias-largest-automaker-maruti-suzuki-now-offers-cng-option/
[105] http://www.iangv.org/tools-resources/statistics.html
[106] NGVA Europe, Worldwide NGV Statistics http://www.ngvaeurope.eu/worldwide-ngv-statistics
[107] http://www.naturalgaschina.com/CNG/
[108] http://redchipnews.com/china-natural-gas-branching-out-into-liquefied-natural-gas-market-028/

MEDIUM- & HEAVY-DUTY NATURAL GAS VEHICLE AVAILABILITY CATALOGUE

Bus (School)	Bus (Transit / Shuttle)	Bus (Intercity)	Dump	Mixer / Utility	Refuse	Stake Bed or Cube	Street Sweeper	Tractor (Long Haul)	Tractor (Short Haul)	Vacuum / Sewer	Yard Spotter
Blue Bird All American RE  ISL G: CNG	**El Dorado National** Axess  ISL G: CNG, LNG	**MCI** Commuter Coach  ISL G: CNG	**Freightliner** Business Class M2 112*  ISL G: CNG, LNG	**Freightliner** Business Class M2 112*  ISL G: CNG, LNG	**American LaFrance** Condor Low Cab-Forward*  ISL G: CNG, LNG	**Freightliner** Business Class M2 112*  ISL G: CNG, LNG	**Elgin** Broom Bear  ISL G: CNG	**Kenworth** T800*  GX: LNG	**Freightliner** Business Class M2 112*  ISL G: CNG, LNG	**Freightliner** Business Class M2 112*  ISL G: CNG, LNG	**AutoCar** Xspotter  ISL G: CNG, LNG
Thomas Bus Saf-T-Liner HDX  ISL G: CNG	**El Dorado National** E-Z Rider II  ISL G: CNG, LNG		**International** WorkStar  Phoenix: CNG, LNG	**International** WorkStar  Phoenix: CNG, LNG	**Autocar** ACX* / ACXR*  ISL G: CNG, LNG	**Peterbilt** 320*  ISL G: CNG	**Freightliner** Business Class M2 112*  ISL G: CNG, LNG	**Peterbilt** 386*  GX: LNG	**Kenworth** T440  ISL G: CNG, LNG		**Capacity of Texas** TJ9000  ISL G: CNG, LNG
	El Dorado National Transmark RE  ISL G: CNG, LNG		**Kenworth** T440  ISL G: CNG, LNG	**Kenworth** T440  ISL G: CNG, LNG	**Crane Carrier** LCF (Low Cab-Forward)*  ISL G: CNG, LNG		**Schwarze** A7000  ISL G: CNG		**Kenworth** T800*  GX: LNG		
	El Dorado National XHF  ISL G: CNG, LNG		**Kenworth** T470*  ISL G: CNG, LNG	**Kenworth** T470*  ISL G: CNG, LNG	**Freightliner** Business Class M2 112*  ISL G: CNG, LNG				**Kenworth** T800SH  ISL G: CNG, LNG		
	Foton L40 CNG  ISL G: CNG	Future Original Equipment Manufacture (OEM) or Model	**Kenworth** T800* / T800SH  GX: LNG; ISL G: CNG, LNG	**Kenworth** W900S  ISL G: CNG, LNG	**International** WorkStar  Phoenix: CNG, LNG				**Kenworth** W900S  ISL G: CNG		
	Gillig Low Floor  ISL G: CNG, LNG		**Kenworth** W900S  ISL G: CNG, LNG	**Peterbilt** 365*  ISL G: LNG	**Kenworth** T470*  ISL G: CNG, LNG				**Peterbilt** 384  ISL G: LNG		
	NABI 35 & 40 LFW  ISL G: CNG, LNG		**Peterbilt** 365*  ISL G: LNG		**Mack** TerraPro Series*  ISL G: CNG, LNG				**Peterbilt** 386*  GX: LNG		
	NABI 40, 42 & 60 BRT  ISL G: CNG, LNG		**Peterbilt** 367*  GX: LNG		**Peterbilt** 320*  ISL G: CNG						
	New Flyer 30, 35 & 40LF  ISL G: CNG		**Peterbilt** 386*  GX: LNG								
	Orion VII LF  ISL G: CNG										

Indicates Canadian body (cab) / chassis supplier

Indicates Canadian fuel storage supplier

Indicates Canadian engine manufacturer

Phoenix NG 7.6L
- 7.6 litre engine
- 175 – 265 horsepower
- 460 – 820 lb-ft torque
- Manufactured by Emission Solutions Inc.*

* kit for MaxxForce DT engine

Westport ISL G
- 8.9 litre engine
- 250 – 320 horsepower
- 660 – 1,000 lb-ft torque
- Manufactured by Cummins Westport

Westport™ HD GX
- 15 litre engine
- 400 – 475 horsepower
- 1,450 – 1,750 lb-ft torque
- Manufactured by Westport

Westport (TBD)
- 11.9 litre engine
- 400 horsepower
- 1,350 lb-ft torque
- Manufactured by Cummins Westport

DOOSAN GK12-S
- 11.1 litre engine
- 290 – 340 horsepower
- 904 lb-ft torque
- Manufactured by Doosan

Future engine products

Box Builder Notes
(Canadian shown in red)

Refuse
Heil Environmental (front loader, rear loader, side loader & recyclers)
McNeilus (front, rear & side)
Labrie Environmental Group (includes):
- Labrie (side)
- Leach (rear)
- Wittke (front)

Amrep Inc. (front & side)
Bridgeport Manufacturing (front & side)
F.F. Gomez Inc. (front & roll off)
E-Z Pack (front, rear, side)
Pendpac (front, rear, side)
New Way (front, rear, side)
Pak-Mor Ltd (front, rear, side)
Wayne Engineering (front, rear, side)
GSP Marketing Inc (side)
Universal Group (front, rear, side)
Amrep
Galbreath
Kann Manufacturing Corporation
Numerous other small local body builders

Concrete mixer
McNeilus
Numerous other small local body builders

Dump
Ox Bodies
Typically, one or two local suppliers in each major area

Appendix B

PROPOSED TERASEN GAS GENERAL TERMS AND CONDITIONS (GT&CS) – SECTION 12B

12B. Vehicle Fueling Stations

12B.1 **Compression and Dispensing Service for Compressed Natural Gas (CNG) Fueling and Fuel Storage and Dispensing Service for Liquefied Natural Gas** (**LNG) Fueling** - Terasen Gas will make extensions to the Terasen Gas System and provide CNG and LNG Services to vehicles in accordance with the provisions of this section.

CNG or LNG Service will be provided under the terms and conditions of a Service Agreement between Terasen Gas and the Customer. The CNG and LNG Services are described below:

CNG Service will typically consist of:

- installing and maintaining a CNG fueling station, including, but not limited to, the compression, gas dryer /dehydrator, high pressure storage, dispensing equipment; and
- dispensing of compressed natural gas.

LNG Service will typically consist of:

- transport and delivery of the LNG from TGI's LNG facilities to the Customer premise by LNG tankers;
- installing and maintaining a LNG fueling station, including, but not limited to, the storage, vaporizer, pump, dispensing equipment; and
- dispensing of liquefied natural gas.

12B.2 **Ownership** - All CNG and LNG fueling stations will remain the property of Terasen Gas.

12B.3 **Cost of Service Recovery** – Customers will be charged a "take-or-pay" rate (i.e. minimum contract demand) under the Service Agreement that recovers the present value of the forecast cost of service associated with provision of CNG or LNG Service over the term of the Service Agreement, where the minimum contract demand is the forecast consumption based on the forecast number of vehicles served by the vehicle fueling station.

12B.5 **Costs** - The total costs to be used in determining the forecast cost of service to be recovered from the Customer under the Service Agreement include, without limitation

(a) the capital investment, including any associated labour, material, capitalized overhead and other costs necessary to serve the Customer, less any contributions in aid of construction by the Customer or third parties, grants, tax credits or non-financial factors offsetting the full costs that are deemed to be acceptable by the British Columbia Utilities Commission;

(c) depreciation expense related to the capital assets associated with the

vehicle fueling station; and

(d) the incremental operating and maintenance expenses necessary to serve the Customers.

In addition to the costs identified, the cost of service recovery will include applicable property and incomes taxes and the appropriate return on rate base as approved by the British Columbia Utilities Commission.

Appendix C

RATE SCHEDULES 6, 16, AND 25

TERASEN GAS INC.

RATE SCHEDULE 6
NATURAL GAS VEHICLE SERVICE

Effective November 1, 1996

TABLE OF CONTENTS

1. Applicability

1.1 **Description of Applicability** - This Rate Schedule applies to the sale of firm Gas through one meter set for the purpose of compression and dispensing as fuel to operate vehicles.

1.2 **Service Agreement** - Terasen Gas will only sell Gas pursuant to an executed Service Agreement which may be amended from time to time with the consent of the British Columbia Utilities Commission.

1.3 **British Columbia Utilities Commission** - This Rate Schedule may be amended from time to time with the consent of the British Columbia Utilities Commission.

2. Conditions of Service

2.1 **Conditions** - This Rate Schedule is available in all territory served by Terasen Gas under the tariff of which this Rate Schedule is a part if

(a) adequate Gas volumes for such service are available,

(b) adequate capacity exists in the Terasen Gas System,

(c) the Customer purchases under this Rate Schedule all of the Gas required for its facilities specified in the Service Agreement; and

(d) Terasen Gas has installed at the Delivery Point the facilities and equipment referred to in section 7.1 (Facilities and Equipment).

2.2 **Security** - In order to secure the prompt and orderly payment of the charges to be paid by the Customer to Terasen Gas under the Service Agreement Terasen Gas may require the Customer to provide, and at all times maintain, an irrevocable letter of credit in favour of Terasen Gas issued by a financial institution acceptable to Terasen Gas in an amount equal to the maximum amount payable by the Customer under this Rate Schedule and the Service Agreement for a period of 90 days. Where Terasen Gas requires a Customer to provide a letter of credit and the Customer is able to provide alternative security acceptable to Terasen Gas, Terasen Gas may accept such security in lieu of a letter of credit.

2.3 **Right to Sell** - Customer will not sell Gas except as fuel for vehicles.

3. Sales

3.1 **Sale of Gas** - Subject to section 13 of the General Terms and Conditions (Interruption of Service), Terasen Gas will sell to the Customer and the Customer will buy from Terasen Gas at one Delivery Point such quantity of Gas as is required by the Customer for the operation of the Customer's facilities specified in the Service Agreement estimated to be the maximum quantity per day set out in the Service Agreement, for the charges and on all of the terms and conditions set out in either this Rate Schedule or the Service Agreement.

3.2 **Maximum Hourly Quantities** - Terasen Gas will not be obliged to deliver in any one hour more than 5% of the maximum quantity per day set out in the Service Agreement.

3.3 **Pressure at Delivery Point** - All Gas delivered by Terasen Gas at the Delivery Point to the Customer will not be at less than the pressure specified in the Service Agreement.

4. Table of Charges

4.1 **Charges** - In respect of all quantities of Gas delivered to the Delivery Point pursuant to this Rate Schedule and the Service Agreement, the Customer will pay to Terasen Gas all of the charges set out in the Table of Charges except as specified in the Service Agreement.

5. Term of Service Agreement

5.1 **Term** - The initial term of a Service Agreement for NGV Firm Gas Service will begin on the Commencement Date and will expire at 7:00 a.m. Pacific Standard Time on the expiry date specified in the Service Agreement.

5.2 **Automatic Renewal** - Except as specified in the Service Agreement, the term of the Service Agreement will continue on a year to year basis until cancelled by either Terasen Gas or the Customer upon not less than 6 Months' notice prior to the end of the term then in effect.

5.3 **Early Termination** - The term of the Service Agreement is subject to early termination in accordance with section 9 (Default or Bankruptcy).

5.4 **Survival of Covenants** - Upon the termination of the Service Agreement, whether pursuant to section 9 (Default or Bankruptcy) or otherwise,

(a) all claims, causes of action or other outstanding obligations remaining or being unfulfilled as at the date of termination, and,

(b) all of the provisions in this Rate Schedule and in the Service Agreement relating to the obligation of any of the parties to account to or indemnify the other and to pay to the other any monies owing as at the date of termination in connection with the Service Agreement,

will survive such termination.

6. Statement and Payments

6.1 **Statements to be Provided** - Terasen Gas will, each month, deliver to the Customer a statement for the preceding month showing the Gas delivered to the Customer and the payment due. Terasen Gas will, on or before the 45th day after the end of a Contract Year, deliver to the Customer a separate statement for the preceding Contract Year showing the amount required from the Customer in respect of any indemnity due under a Service Agreement. Any errors in any statement will be promptly reported to the other party as provided hereunder, and statements will be final and binding unless questioned within one year after the date of the statement.

6.2 **Payment and Late Payment Charge** - Payment for the full amount of the statement, including federal, provincial and municipal taxes or fees applicable thereon, will be made to Terasen Gas at its Vancouver, British Columbia office, or such other place in Canada as it will designate, on or before the 1st business day after the 21st calendar day following the billing date. If the Customer fails or neglects to make any payment required under this Rate Schedule, or any portion thereof, to Terasen Gas when due, Terasen Gas may include in the next bill to the Customer a late payment charge of 1½% per month (19.56% per annum).

6.3 **Examination of Records** - Terasen Gas and the Customer will have the right to examine at reasonable times the books, records and charts of the other to the extent necessary to verify the accuracy of any statement, charge, computation or demand made pursuant to any provisions of this Rate Schedule or the Service Agreement.

7. Measuring Equipment

7.1 **Facilities and Equipment** - Terasen Gas will install, maintain and operate at the Delivery Point such metering and communications facilities and equipment as Terasen Gas determines are necessary or desirable for measuring the quantity of Gas delivered pursuant to this Rate Schedule to the Customer and the Customer will permit Terasen Gas, without cost to Terasen Gas, to use the Customer's communications lines and power for the purpose of installing, maintaining and operating the measuring equipment of Terasen Gas.

7.2 **Measuring Site** - If Terasen Gas determines that it is necessary to install the facilities and equipment referred to in section 7.1 (Facilities and Equipment) on the Customer's property, the Customer will, without charge, provide a suitable site for the installation of the facilities and equipment of Terasen Gas. Terasen Gas will at all times have clear access to the site and to all of its facilities and equipment. All facilities and equipment installed by Terasen Gas on the Customer's property will remain the property of Terasen Gas and may be removed by Terasen Gas upon termination of the Service Agreement.

7.3 **Calibration and Test of Measuring Equipment** - The accuracy of the measuring equipment of Terasen Gas will be verified by standard tests and methods at regular intervals and at other times at the initiative of Terasen Gas or upon the reasonable request of the Customer. Notice of the time and nature of each test conducted in response to communications with or at the request of the Customer will be given by Terasen Gas to the Customer sufficiently in advance to permit a representative of the Customer to be present. If during a test the measuring equipment is found to be registering inaccurately, it will be adjusted at once to read as accurately as possible. The results of each test and adjustment, if any, made by Terasen Gas, whether or not the Customer is present for such test, will be accepted until the next test. All tests of such measuring equipment of Terasen Gas will be made at the expense of Terasen Gas, except that the Customer will bear the expense of tests made at its request if the measuring equipment is found to be inaccurate by an amount equal to 2% or less.

7.4 **Inaccuracy Exceeding 2%** - If upon any test the measuring equipment is found to be inaccurate by an amount exceeding 2%, any previous readings of such equipment will be corrected to zero error for any period during which it is definitely known or is agreed upon that the error existed. If the period is not definitely known or is not agreed upon, such correction will be for a period covering the last half of the time elapsed since the date of the last test. Provided that under no circumstances will an adjustment be made for a period of more than the preceding 12 months.

7.5 **Correction of Measuring Errors** - If the measuring equipment is out of service or out of repair so that the quantity of Gas delivered cannot be correctly determined by the reading thereof, the Gas delivered during the period such measuring equipment is out of service or out of repair will be estimated on the basis of the best available data, using the first of the following methods which is feasible.

(a) by correcting the error if the percentage of error is ascertained by calibration test or mathematical calculation,

(b) by using the registration of any check measuring equipment if installed and accurately registering, and

(c) by estimating the quantity of Gas delivered to the Customer during the preceding periods under similar conditions when the meter was registering accurately.

7.6 **Customer's Equipment** - The Customer may at its own expense install, maintain and operate its own measuring equipment for the purposes of monitoring or checking the measuring equipment of Terasen Gas, provided that the Customer will install such equipment so as not to interfere with the operation of the measuring equipment of Terasen Gas.

7.7 **Right to be Present** - Terasen Gas and the Customer will have the right to inspect all equipment installed or furnished by the other and the charts and other measurement or test data of the other at all times during business hours, and to be present at the time of any installing, testing, cleaning, changing, repairing, calibrating or adjusting done in connection with the measuring equipment of the other party, but all such activities will be performed by the party furnishing the measuring equipment.

7.8 **Preservation of Records** - Both parties will be preserve each test datum, chart and other record of Gas measurement for a period of 2 years.

8. Measurement

8.1 **Unit of Volume** - The unit of volume of Gas for all purposes hereunder will be 1 cubic metre at a temperature of 15^{o} Celsius and an absolute pressure of 101.325 kilopascals.

8.2 **Determination of Volume** - Gas delivered hereunder will be metered using metering apparatus approved by the Standards Division, Department of Consumer & Corporate Affairs of Canada and the determination of standard volumes delivered hereunder will be in accordance with terms and conditions pursuant to the *Electricity and Gas Inspection Act* of Canada.

8.3 **Conversion to Energy Units** - In accordance with the *Electricity and Gas Inspection Act* of Canada, volumes of Gas delivered each Day will be converted to energy units by multiplying the standard volume by the Heat Content of each unit of Gas. Volumes will be specified in 10^3m^3 rounded to two decimal places and energy will be specified in Gigajoules rounded to one decimal place.

9. Default or Bankruptcy

9.1 **Default** - If the Customer at any time fails or neglects

(a) to make any payment due to Terasen Gas or to any other person under this Rate Schedule or the Service Agreement within 30 days after payment is due, or

(b) to cure any default of any of the other terms, covenants, agreements, conditions or obligations imposed upon it under this Rate Schedule or the Service Agreement, within 30 Days after Terasen Gas gives to the Customer notice of such default or, in the case of a default that cannot with due diligence be cured within a period of 30 Days, the Customer fails to proceed promptly after the giving of such notice with due diligence to cure the same and thereafter to prosecute the curing of such default with all due diligence,

then Terasen Gas may in addition to any other remedy that it has, at its option and without liability therefore

(a) suspend further service to the Customer and may refuse to deliver Gas to the Customer until the default has been fully remedied, and no such suspension or refusal will relieve the Customer from any obligation under this Rate Schedule or the Service Agreement, or

(b) terminate the Service Agreement, and no such termination of the Service Agreement pursuant hereto will exclude the right of Terasen Gas to collect any amount due to it from the Customer for what would otherwise have been the remainder of the term of the Service Agreement.

9.2 **Bankruptcy or Insolvency** - If the Customer becomes bankrupt or insolvent or commits or suffers an act of bankruptcy or insolvency or a receiver is appointed pursuant to a statute or under a debt instrument or the Customer seeks protection from the demands of its creditors pursuant to any legislation enacted for that purpose, Terasen Gas will have the right, at its sole discretion, to terminate the Service Agreement by giving notice in writing to the Customer and thereupon Terasen Gas may cease further delivery of Gas to the Customer and the amount then outstanding for Gas provided under the Service Agreement will immediately be due and payable by the Customer.

10. Notice

10.1 **Notice** - Any notice, request, statement or bill that is required to be given or that may be given under this Rate Schedule or under the Service Agreement will, unless otherwise specified, be in writing and will be considered as fully delivered when mailed, personally delivered or sent by fax to the other in accordance with the following:

if to Terasen Gas	TERASEN GAS INC.	
MAILING ADDRESS:	16705 Fraser Highway Surrey, B.C. V4N 0E8	C
BILLING AND PAYMENT:	Attention: Industrial Billing Telephone: (604) 663-3677 Fax: (604) 663-3683	C
LEGAL AND OTHER:	Attention: Vice President & General Counsel; Corporate Secretary Telephone: (604) 293-8631 Fax: (604) 293-8640	C

If to the Customer, then as set out in the Service Agreement.

10.2 **Specific Notices** - Notwithstanding section 10.1 (Notice), notices with respect to Force Majeure will be sufficient if:

(a) given by Terasen Gas in writing by fax, or orally in person, or by telephone (to be confirmed in writing) to the person or persons designated from time to time by the Customer as authorized to receive such notices, or

(b) given by the Customer by telephone (to be confirmed by fax) in the following manner:

To claim Force Majeure…"Please be advised that (name of company and location of plant) has (reason for claiming Force Majeure as provided in section 4 of the Service Agreement) and hereby claims suspension by reason of Force Majeure in accordance with the terms of Rate Schedule 6 effective 7:00 a.m. Pacific Standard Time (date Force Majeure suspension to become effective, but not to be retroactive)."

To terminate Force Majeure…"Please be advised that (name of company and location of plant) requests a return to normal natural gas service in accordance with Rate Schedule 6 and the Service Agreement effective 7:00 a.m. Pacific Standard Time (date Force Majeure suspension to end, but not to be retroactive) whereby the suspension by reason of Force Majeure currently in force will be terminated."

11. Interpretation

11.1 **Definitions in General Terms and Conditions of Terasen Gas** - Except where the context requires otherwise or except as otherwise expressly provided in this Rate Schedule, all words and phrases defined in the General Terms and Conditions and used in this Rate Schedule or in a Service Agreement have the meanings set out in the General Terms and Conditions.

11.2 **Change in Definition of "Day"** - Terasen Gas may amend the definition of "Day" from time to time to suitably align its operations with those of its Transporters. If Terasen Gas amends the meaning of "Day", a pro-rata adjustment of quantities of Gas and charges to account for any Day of more or less than 24 hours will be made and the term of the Service Agreement will be similarly adjusted.

11.3 **Further Definitions** - Additionally, except where the context requires otherwise, each of the words and phrases described in the Definitions have the meanings as set out in the Definitions.

11.4 **Interpretation** - Except where the context requires otherwise or except as otherwise expressly provided, in this Rate Schedule or in a Service Agreement

(a) all references to a designated section are to the designated section of this Rate Schedule unless otherwise specifically stated,

(b) the singular of any term includes the plural, and vice versa, and the use of any term is equally applicable to any gender and, where applicable, body corporate,

(c) any reference to a corporate entity includes and is also a reference to any corporate entity that is a successor to such entity,

(d) all words, phrases and expressions used in this Rate Schedule or in a Service Agreement that have a common usage in the gas industry and that are not defined in the General Terms and Conditions of Terasen Gas, the Definitions or in the Service Agreement have the meanings commonly ascribed thereto in the gas industry, and

(e) the headings of the sections set out in this Rate Schedule or in the Service Agreement are for convenience of reference only and will not be considered in any interpretation of this Rate Schedule or the Service Agreement.

12. Miscellaneous

12.1 **Waiver** - No waiver by either Terasen Gas or the Customer of any default by the other in the performance of any of the provisions of this Rate Schedule or the Service Agreement will operate or be construed as a waiver of any other or future default or defaults, whether of a like or different character.

12.2 **Enurement** - The Service Agreement will enure to the benefit and be binding upon the parties and their respective successors and permitted assigns, including without limitation successors by merger, amalgamation or consolidation.

12.3 **Assignment** - The Customer will not assign the Service Agreement or any of its rights or obligations thereunder without the prior written consent of Terasen Gas which consent will not be unreasonably withheld or delayed. No assignment will release the Customer from its obligations under this Rate Schedule or under the Service Agreement that existed prior to the date on which the assignment takes effect. This provision applies to every proposed assignment by the Customer.

12.4 **Amendments to be in Writing** - Except as set out in this Rate Schedule, no amendment or variation of the Service Agreement will be effective or binding upon the parties unless such amendment or variation is set forth in writing and duly executed by the parties.

12.5 **Proper Law** - The Service Agreement will be construed and interpreted in accordance with the laws of the Province of British Columbia and the laws of Canada applicable therein.

12.6 **Time is of Essence** - Time is of the essence of this Rate Schedule, the Service Agreement and of the terms and conditions thereof.

12.7 **Subject to Legislation** - Notwithstanding any other provision hereof, this Rate Schedule and the Service Agreement and the rights and obligations of Terasen Gas and the Customer under this Rate Schedule and the Service Agreement are subject to all present and future laws, rules, regulations and orders of any legislative body, governmental agency or duly constituted authority now or hereafter having jurisdiction over Terasen Gas or the Customer.

12.8 **Further Assurances** - Each of Terasen Gas and the Customer will, on demand by the other, execute and deliver or cause to be executed and delivered all such further documents and instruments and do all such further acts and things as the other may reasonably require to evidence, carry out and give full effect to the terms, conditions, intent and meaning of this Rate Schedule and the Service Agreement and to assure the completion of the transactions contemplated hereby.

12.9 **Form of Payments** - All payments required to be made under statements and invoices rendered pursuant to this Rate Schedule or the Service Agreement will be made by telegraphic transfer to, or cheque or bank cashier's cheque drawn on, a Canadian chartered bank or trust company, payable in lawful money of Canada at par in immediately available funds in Vancouver, British Columbia.

Definitions

(a) **Terasen Gas** - means Terasen Gas Inc., a body corporate incorporated pursuant to the laws of the Province of British Columbia under number 368681.

(b) **Terasen Gas System** - means the Gas transmission and distribution system owned and operated by Terasen Gas, as such system is expanded, reduced or modified from time to time.

(c) **British Columbia Utilities Commission** - means the British Columbia Utilities Commission constituted under the *Utilities Commission Act* of British Columbia and includes and is also a reference to

(i) any commission that is a successor to such commission, and

(ii) any commission that is constituted pursuant to any statute that may be passed which supplements or supersedes the *Utilities Commission Act* of British Columbia.

(d) **Commencement Date** - means the Day specified as the Commencement Date in the Service Agreement.

(e) **Contract Year** - means a period of 12 consecutive Months commencing at the beginning of the 1st Day of November and ending at the beginning of the next succeeding 1st Day of November.

(f) **Customer** - means a person who enters into a Service Agreement with Terasen Gas.

(g) **Day** - means, subject to section 11.2 (Change in Definition of "Day"), any period of twenty-four consecutive hours beginning and ending at 7:00 a.m. Pacific Standard Time.

(h) **Definitions** - means the definitions appended to this Rate Schedule.

(i) **Delivery Point** - means the point specified in a Service Agreement where Terasen Gas delivers Gas to a Customer.

(j) **Force Majeure** - means any acts of God, strikes, lockouts, or other industrial disturbances, civil disturbances, arrests and restraints of rulers or people, interruptions by government or court orders, present or future valid orders of any regulatory body having proper jurisdiction, acts of the public enemy, wars, riots, blackouts, insurrections, failure or inability to secure materials or labour by reason of priority, regulations or orders of government, serious epidemics, landslides, lightning, earthquakes, fires, storms, floods, washouts, explosions, breakage or accident to machinery or lines of pipes, or freezing of wells or pipelines, or the failure of Gas supply, temporary or otherwise, from a Supplier of Gas, which act of Force Majeure was not due to negligence of the party claiming Force Majeure. Further, Force Majeure will also include a declaration of Force Majeure by a Transporter that results in Gas being unavailable for delivery.

(k) **Franchise Fees** - means the aggregate of all monies payable by Terasen Gas to a municipality or First Nations lands (formerly, reserves within the *Indian Act*)

(i) for the use of the streets and other property to construct and operate the utility business of Terasen Gas within a municipality or First Nations lands (formerly, reserves within the *Indian Act*), C

(ii) relating to the revenues received by Terasen Gas for services provided and Gas consumed within the municipality or First Nations lands (formerly, reserves within the *Indian Act*), and C

(iii) relating, if applicable, to the value of Gas transported by Terasen Gas through the municipality or First Nations lands (formerly, reserves within the *Indian Act*). C

(l) **Gas** - means the residue remaining after raw gas has been subjected to any or all of the following permissible processes

(i) the removal of any of its constituent parts other than methane, and the removal of methane to such extent as is necessary in removing other constituents,

(ii) the compression, regulation, cooling, cleaning or any other chemical or physical process other than the addition of diluents, such as air or nitrogen, to such extent as may be required in its production, gathering, transmission, transportation, storage, removal from storage and delivery, and

(iii) the addition of odorant by Terasen Gas,

but for greater certainty Gas does not include propane.

(m) **General Terms and Conditions** - means the general terms and conditions of Terasen Gas from time to time approved by the British Columbia Utilities Commission.

(n) **Heat Content** - means the gross heating value of the Gas, determined on the basis of a temperature of 15^{o} Celsius with the Gas free of all water vapour and at an absolute pressure of 101.325 kilopascals, with the products of combustion cooled to the initial temperature of the Gas and the water formed by the combustion condensed to the liquid state. The Heat Content will be expressed in megajoules per cubic metre of Gas (MJ/m^3) rounded to two decimal places.

(o) **Hour** - means any consecutive 60 minute period.

(p) **Month** - means, subject to any changes from time to time required by Terasen Gas in the starting time of its Gas Day, the period beginning at 7:00 a.m. Pacific Standard Time on the first day of the calendar month and ending at 7:00 a.m. Pacific Standard Time on the first day of the next succeeding calendar month.

(q) **NGV** - means natural gas for vehicles

(r) **NGV Firm Gas Service** - means the sale and delivery of Gas on a firm basis to the Customer.

(s) **Pacific Clock Time** - means Pacific Standard Time or Daylight Savings Time as it applies in Surrey, British Columbia.

(t) **Rate Schedule 6 or this Rate Schedule** - means this Rate Schedule, including all rates, terms and conditions, Definitions and the Table of Charges, as amended from time to time by Terasen Gas with the consent of the British Columbia Utilities Commission.

(u) **Service Agreement** - means an agreement between Terasen Gas and a Customer to provide service pursuant to this Rate Schedule.

(v) **Supplier** - means a party who sells Gas to Terasen Gas.

(w) **Table of Charges** - means the table of prices, fees and charges, as amended from time to time by Terasen Gas with the consent of the British Columbia Utilities Commission, appended to this Rate Schedule.

(x) **Transporter** - means, in the case of the Columbia service area, TransCanada PipeLines Limited, B.C. System, a Canadian corporation, and in the case of the Inland and Lower Mainland service areas, Westcoast Energy Inc., a Canadian corporation, and any other gas pipeline transportation company connected to the facilities of Terasen Gas from which Terasen Gas receives Gas for the purposes of Gas service or resale.

(y) **10^3m^3** - means 1,000 cubic metres.

Table of Charges

	Lower Mainland Service Area	Inland Service Area	Columbia Service Area	
Delivery Margin Related Charges				
1. **Basic Charge** per Month	$ 61.00	$ 61.00	$ 61.00	
2. **Delivery Charge** per Gigajoule	$ 3.571	$ 3.571	$ 3.571	
3. **Rider 2** per Gigajoule	$ 0.057	$ 0.057	$ 0.057	
4. **Rider 3** per Gigajoule	$ (0.024)	$ (0.024)	$ (0.024)	
Commodity Related Charges				
5. **Commodity Cost Recovery Charge** per Gigajoule	$ 4.976	$ 4.976	$ 4.976	R
6. **Midstream Cost Recovery Charge** per Gigajoule	$ 0.466	$ 0.464	$ 0.464	
Subtotal of per Gigajoule Commodity Related Charges	**$ 5.442**	**$ 5.440**	**$ 5.440**	R

Delivery Margin Related Riders

Rider 2 **Recovery of July to December 2009 Approved Return on Equity and Capital Structure** - Applicable to Lower Mainland, Inland and Columbia Service Area Customers for the period January 1, 2010 to December 31, 2010.

Rider 3 **Earnings Sharing Mechanism** - Applicable to Lower Mainland, Inland and Columbia Service Area Customers for the Year ending December 31, 2010.

Rider 4 (Reserved for future use.)

Rider 5 **Revenue Stabilization Adjustment Charge** - Not applicable.

Rider 7 (Reserved for future use)

Commodity Cost Recovery Related Riders

Rider 1 **Propane Surcharge** - Not applicable.

Midstream Cost Recovery Related Riders

Rider 6 (Reserved for future use.)

Franchise Fee Charge, if applicable, will be payable in addition to the above charges.

Minimum Charge per Month - The minimum charge per Month, will be the Basic Charge and, if applicable, the Franchise Fee Charge as specified in the Service Agreement.

Permanent Rate Establishment - Pursuant to British Columbia Utilities Commission Order No. G-158-09, Terasen Gas Inc. interim delivery rates are made permanent effective July 1, 2009. The 2009 deferred deficiency resulting from Order No. G-158-09 will be recovered by Rate Rider 2 from January 1, 2010 to December 31, 2010. C

Special Conditions

Terasen Gas may, in its sole discretion, reduce the Delivery Charge per Gigajoule to any Customer where such reduction is necessary to encourage expansion of the NGV market. Any reduction in the Delivery Charge will be specified in the Service Agreement.

Terasen Gas may make a promotional grant towards the cost to purchase a factory-built NGV vehicle, or the cost to convert a vehicle to natural gas to meet requirements as set by the Government of Canada, provided that such vehicles will obtain Gas from refuelling facilities in a Terasen Gas service area. The amount of the grant would not exceed $10 per GJ, based on estimated consumption over a one year period, up to a maximum total grant by vehicle type as listed in the table below:

Factory Built NGV Incentive Grants		
Vehicle Description	GVW (#)	Maximum Grant
Light Duty	< 10,000	$ 2,500
Medium Duty	< 17,000	$ 5,000
Heavy Duty	> 17,000	$ 10,000

The amount of each grant will not exceed the 5 year projected net revenue to Terasen Gas from each corresponding vehicle.

Terasen Gas may also fund Special Demonstration project grants, tied to an individual vehicle purchased by a customer. The amount of the Special Demonstration grant will not exceed the premium cost for the natural gas option for the vehicle. The total funds paid out under the Special Demonstration project grants will not exceed $100,000 in any one year.

NATURAL GAS VEHICLE
SERVICE AGREEMENT

This Agreement dated the _____ day of _____, 20___, is between Terasen Gas Inc. ("Terasen Gas") and _____ (the "Customer").

WHEREAS:

A. Terasen Gas owns and operates the Terasen Gas System;

B. The Customer is the operator of _____ located in or near _____ (the "Premises") in the Province of British Columbia, from which the Customer desires to dispense NGV;

C. The Customer / or _____ is the registered owner of the Premises;

D. The Customer desires to purchase from Terasen Gas NGV Firm Gas Service for the Premises in accordance with Rate Schedule 6.

NOW THEREFORE THIS AGREEMENT WITNESSES THAT in consideration of the terms, conditions and limitations contained herein, the parties agree as follows:

1. Specific Information

Estimated Maximum Consumption	_____ Gigajoules per day (Maximum Day Delivery)
	and _____ Gigajoules per hour
Commencement Date:	_____
Expiry Date of First Contract Term:	One year after commencement date
Automatic Contract Extension:	Year to Year
Delivery Point:	_____
Gauge Pressure at the Delivery Point:	_____ kilopascals
Service Address:	_____
Account Number:	_____

N

Address of Customer for receiving notices:

_____ Attention: _____
(name of Customer)

_____ Telephone: _____
(address of Customer)

_____ Fax: _____

_____ Email: _____ N

_____

The information set out above is hereby approved by the parties and each reference in either this Service Agreement or Rate Schedule 6 to any such information is to the information set out above.

2. Rate Schedule 6

2.1 **Additional Terms** - All rates, terms and conditions set out in Rate Schedule 6 or the General Terms and Conditions, as either of them may be amended by Terasen Gas and approved from time to time by the British Columbia Utilities Commission, are in addition to the rates, terms and conditions contained in this Service Agreement and form part of this Service Agreement and bind Terasen Gas and the Customer as if set out herein.

2.2 **Payment of Amounts** - Without limiting the generality of the foregoing and except as specified in this Service Agreement, the Customer will pay to Terasen Gas all of the amounts set out in Rate Schedule 6 for the services provided under Rate Schedule 6 and this Service Agreement.

2.3 **Conflict** - Where anything in either Rate Schedule 6 or the General Terms and Conditions of Terasen Gas conflicts with any of the rates, terms and conditions set out in this Service Agreement, this Service Agreement governs. Where anything in Rate Schedule 6 conflicts with any of the rates, terms and conditions set out in the General Terms and Conditions of Terasen Gas, Rate Schedule 6 governs.

3. Limitation on Liability and Indemnity

3.1 **Limitation on Liability** - Neither Terasen Gas, its employees, contractors or agents will be liable in damages for or on account of any interruption or curtailment permitted under the General Terms and Conditions of Terasen Gas, this Service Agreement or Rate Schedule 6.

3.2 **Indemnity** - The Customer will indemnify and hold harmless each of Terasen Gas, its employees, contractors and agents from and against any and all adverse claims, losses, suits, actions, judgements, demands, debts, accounts, damages, costs, penalties and expenses (including all legal fees and disbursements) arising from or out of

(a) Franchise fees not otherwise collected by Terasen Gas under the Table of Charges, and

(b) all federal, provincial, municipal taxes (or payments made in lieu thereof) and royalties, whether payable on the delivery of Gas to Terasen Gas by the Customer or on the delivery of Gas to the Customer by Terasen Gas, or on any other service provided by Terasen Gas to the Customer.

3.3 These indemnities will survive the termination of this Agreement.

4. Force Majeure

4.1 **Force Majeure** - Subject to the other provisions of this section 4, if either party is unable or fails by reason of Force Majeure to perform in whole or in part any obligation or covenant set out in this Service Agreement, the obligations of both Terasen Gas and the Customer will be suspended to the extent necessary for the period of the Force Majeure condition.

4.2 **Curtailment Notice** - If Terasen Gas claims suspension pursuant to this section 4, Terasen Gas will be deemed to have issued to the Customer a notice of curtailment.

4.3 **Exceptions** - Neither party will be entitled to the benefit of the provisions of section 4.1 of this agreement under any of the following circumstances

(a) to the extent that the failure was caused by the negligence or contributory negligence of the party claiming suspension,

(b) to the extent that the failure was caused by the party claiming suspension having failed to diligently attempt to remedy the condition and to resume the performance of the covenants or obligations with reasonable dispatch, or

(c) unless as soon as possible after the happening of the occurrence relied on or as soon as possible after determining that the occurrence was in the nature of Force Majeure and would affect the claiming party's ability to observe or perform any of its covenants or obligations under this Service Agreement, the party claiming suspension will have given to the other party notice to the effect that the party is unable by reason of Force Majeure (the nature of which will be specified) to perform the particular covenants or obligations.

4.4 **Notice to Resume** - The party claiming suspension will likewise give notice, as soon as possible after the Force Majeure condition has been remedied, to the effect that it has been remedied and that the party has resumed, or is then in a position to resume, the performance of the covenants or obligations.

4.5 **Settlement of Labour Disputes** - Notwithstanding any of the provisions of this section 4, the settlement of labour disputes or industrial disturbances will be entirely within the discretion of the particular party involved and the party may make settlement of it at the time and on terms and conditions as it may deem to be advisable and no delay in making settlement will deprive the party of the benefit of section 4.1 of this agreement.

4.6 **No Exemption for Payments** - Notwithstanding any of the provisions of this section 4, Force Majeure will not relieve or release either party from its obligations to make payments to the other.

4.7 **Periodic Repair by Terasen Gas** - Terasen Gas may temporarily shut off the delivery of Gas for the purpose of repairing or replacing a portion of the Terasen Gas System or its equipment and Terasen Gas will endeavour to give the Customer as much notice as possible with respect to such interruption, not to be less than 8 hours' prior notice except when prevented by Force Majeure. Terasen Gas will use all diligence to restore service as quickly as possible.

5. Arbitration

5.1 **Arbitration** - Any dispute between the parties arising from this agreement will be resolved by a single arbitrator pursuant to the *Commercial Arbitration Act* of British Columbia or successor legislation, save as expressly provided herein.

5.2 **Demand for Arbitration** - Either party may commence arbitration proceedings by sending to the other party a demand for arbitration setting forth the nature of the dispute.

5.3 **Arbitrator** - The parties will have 10 days from receipt of the demand referred to in section 5.2 of this agreement to agree upon the arbitrator, failing which either party may apply to the Supreme Court of British Columbia to select the arbitrator. The arbitrator must be sufficiently qualified by education and training to decide the particular questions in dispute. Unless otherwise agreed, the arbitrator may not be a past or present employee, officer or director of any of the parties or their respective successors or affiliates, any customer or supplier of the Customer or Terasen Gas.

5.4 **Commencement and Decision** - The arbitrator will proceed immediately to hear and determine the matter in dispute and will render a written decision, signed by the arbitrator, within 45 days after the appointment, subject to any reasonable delay due to unforeseen circumstances. Notwithstanding the foregoing, if the arbitrator fails to render a decision within 60 days after the appointment then either party may elect to have a new arbitrator appointed in like manner as if none had previously been appointed.

5.5 **Decision** - The decision of the arbitrator will be final and binding upon the parties and the parties will abide by the decision and perform the terms and conditions thereof.

6. Rates

6.1 For NGV Firm Gas Service, the Customer agrees to pay (check one):

_____ the charges set out in the Table of Charges of Rate Schedule 6, which may be amended from time to time by Terasen Gas with the consent of the British Columbia Utilities Commission

or

_____ the following special charges, fixed for the term of the Service Agreement.

_____

_____

_____

plus the Gas Cost Recovery Charge per Gigajoule, as set out in the Table of Charges of Rate Schedule 6.

IN WITNESS WHEREOF the parties hereto have executed this Service Agreement.

TERASEN GAS INC.

_____
(here insert name of Customer)

BY: _____
(Signature)

_____
(Title)

_____
(Name – Please Print)

DATE: _____

BY: _____
(Signature)

_____
(Title)

_____
(Name – Please Print)

DATE: _____

TERASEN GAS INC.

RATE SCHEDULE 16
INTERRUPTIBLE LIQUEFIED NATURAL GAS SALES AND DISPENSING SERVICE

Effective June 15, 2009

TABLE OF CONTENTS

1 Definitions

1.1 **Definitions** - Except where the context requires otherwise, all words and phrases defined below or in the General Terms and Conditions of Terasen Gas and used in this Rate Schedule have the meanings set out below or in the General Terms and Conditions of Terasen Gas. Where any of the definitions set out below conflict with the definitions in the General Terms and Conditions of Terasen Gas, the definitions set out below govern.

(a) **Available LNG Capacity** - means the total quantity of LNG available for sale to all Customers under this LNG Rate Schedule. For greater clarity this quantity is limited to 1,040 Gigajoules per Day.

(b) **Contract Demand** - means the minimum quantity of LNG that the Customer may take delivery of over the period of one month subject to this Rate Schedule measured in Gigajoules. Contract Demand for one Customer must not exceed 50% of the Available LNG Capacity as provided by Terasen Gas. Terasen Gas will determine the Contract Demand for each Customer taking into consideration the Customer's forecast monthly LNG requirements.

(c) **Contract Year** - means a period of 12 consecutive Months commencing at the beginning of the 1st Day of this Rate Schedule and ending at the beginning of the next succeeding 1st Day of the Expiry Date.

(d) **Dispensing** - means the act of filling a tanker truck with LNG.

(e) **Expiry Date** - the date where the LNG Agreement ceases to exist.

(f) **Force Majeure** - means any acts of God, strikes, lockouts, or other industrial disturbances, civil disturbances, arrests and restraints of rulers or people, interruptions by government or court orders, present or future valid orders of any regulatory body having proper jurisdiction, acts of the public enemy, wars, riots, blackouts, insurrections, failure or inability to secure materials or labour by reason or regulations or orders of government, serious epidemics, landslides, lightning, earthquakes, fires, storms, floods, washouts, explosions, breakage or accident to machinery or lines of pipes, or freezing of wells or pipelines, or the failure of Gas supply, temporary or otherwise, from a Supplier of Gas, which act of Force Majeure was not due to negligence of the party claiming Force Majeure. Further, Force Majeure will also include a declaration of Force Majeure by a Transporter that results in Gas being unavailable for delivery at the Interconnection Point.

(g) **Gas** - means natural gas (including odorant added by Terasen Gas) or LNG.

(h) **Interconnection Point** - means a point where the Terasen Gas System interconnects with the facilities of one of the Transporters of Terasen Gas, as specified in a Transportation Agreement.

(i) **LNG** - means liquefied natural gas.

(j) **LNG Agreement** - means the Interruptible Liquefied Natural Gas Sales and Dispensing Service Agreement between Terasen Gas and the Customer, a form of which is attached to this Rate Schedule.

(k) **LNG Service** - means the interruptible service of the liquefaction, storage and Dispensing of LNG from the Terasen Gas LNG plant at Tilbury, as further specified in section 2.1 of this Rate Schedule.

(l) **LNG Spot Price** - means the price per Gigajoule of LNG as set out in the Table of Charges.

(m) **Rate Schedule** - means this Rate Schedule 16 together with the Table of Charges and form of LNG Agreement, the terms of which govern the provision of LNG Service by Terasen Gas to the Customer as specified herein.

(n) **Supplier** - means a party who sells Gas to the Customer or Terasen Gas or has access to its own supplies of Gas.

(o) **Table of Charges** - means the table of prices, fees and charges, appended to this Rate Schedule.

(p) **Transporter** - means, in the case of the Columbia service area, TransCanada PipeLines Limited, B.C. System, and Nova Gas Transmission Ltd., and in the case of the Inland and Lower Mainland service areas, Westcoast Energy Inc., Terasen Huntingdon Inc., and any other gas pipeline transportation company connected to the facilities of Terasen Gas from which Terasen Gas receives Gas for the purposes of Gas transportation or resale.

(q) **Transportation Agreement** - means an agreement between Terasen Gas and a Shipper to provide service pursuant to a transportation Rate Schedule.

2 Conditions of Service

2.1 **Description of Service** - This Rate Schedule applies to the LNG Service at the Terasen Gas LNG plant at Tilbury. For greater certainty, LNG Service means the provision by Terasen Gas of LNG Service which may be interrupted or curtailed by Terasen Gas pursuant to sections 4.2 (Curtailment of Dispensing), 11 (Default or Bankruptcy), and 14 (Force Majeure) herein and section 13 of the General Terms and Conditions of Terasen Gas.

2.2 **Security** - In order to secure the prompt and orderly payment of the charges to be paid by the Customer to Terasen Gas under this LNG Rate Schedule, Terasen Gas may require the Customer to provide, and at all times maintain, an irrevocable letter of credit in favour of Terasen Gas issued by a financial institution acceptable to Terasen Gas in an amount equal to the estimated maximum amount payable by the Customer under this LNG Rate Schedule for a period of 90 Days and in a form satisfactory to Terasen Gas. If the Customer is able to provide alternative security acceptable to Terasen Gas, Terasen Gas may in its sole discretion accept such security in lieu of a letter of credit.

2.3 **British Columbia Utilities Commission** - This Rate Schedule may be amended from time to time with the consent of the British Columbia Utilities Commission.

3 Purchase and Delivery of LNG

3.1 **Purchase of LNG** - The Customer will be responsible for the purchase of LNG from Terasen as per the Terms of Payment in section 5.

3.2 **Monthly Totals** - The Customer's Contract Demand may not exceed 50% of the Available LNG Capacity, Terasen Gas reserves the right to curtail Dispensing of LNG should it determine it does not have the capacity to supply the Customer's request.

3.3 **Spot Loads** - If capacity exists, Terasen Gas may provide additional LNG Service above the Contract Demand to the Customer, on a spot load basis at the LNG Spot Price per Gigajoule.

4 Dispensing

4.1 **Dispensing of LNG** - Subject to section 13 of the General Terms and Conditions of Terasen Gas (Interruption of Service) and all of the terms and conditions of this Rate Schedule, Terasen Gas will on behalf of the Customer or the Customer's authorized agents dispense LNG into cryogenic trailers provided by the Customer or its contractor.

4.2 **Curtailment of Dispensing** - If at any time Terasen Gas, acting reasonably, determines that it does not have capacity on the Terasen Gas System to accommodate the Customer's request for Dispensing of LNG, Terasen Gas may, for any length of time, interrupt or curtail LNG Service under this Rate Schedule. In the event of any curtailment in excess of 72 hours per Month, then the Minimum Monthly Charge will be prorated accordingly.

4.3 **Notice of Curtailment** - Each notice from Terasen Gas to the Customer with respect to the interruption or curtailment of LNG Service by Terasen Gas will be by telephone and/or fax and will specify the quantity of LNG to which the Customer is curtailed and the time at which such curtailment is to be effective. Terasen Gas will make reasonable efforts to give the Customer as much notice as possible with respect to such curtailment, not to be less than two hours prior notice unless prevented by Force Majeure.

4.4 **Responsibility for Compliance** - It is the sole responsibility of the Customer to ensure that any personnel, vehicle or cryogenic trailer presented to Terasen Gas for Dispensing meets the requirements of any laws, rules, regulations and orders of any legislative body, governmental agency or duly constituted authority now or hereafter having jurisdiction including, but not limited to, the federal Transportation of Dangerous Goods Act and its associated regulations.

4.5 **Right to Refuse Dispensing** - Notwithstanding subsection 4.4 above, Terasen Gas may at its sole discretion refuse to dispense LNG to the Customer, if in Terasen Gas' opinion, the supply of LNG to the Customer, may be contrary to any laws, rules, regulations and orders of any legislative body, governmental agency or duly constituted authority now or hereafter having jurisdiction including, but not limited to, the federal Transportation of Dangerous Goods Act and its associated regulations.

4.6 **Required Insurance** - The Customer will ensure that the common carrier to be used for truck transportation of LNG maintains a minimum of $5 million in general liability insurance with Terasen Gas named as an additional insured, a minimum of $5 million of automobile liability insurance and any other insurance coverage required by law. The selection of such common carrier will be at the Customer's sole discretion.

5 Terms of Payment

5.1 **Charges** - The Customer will pay to Terasen Gas as follows:

(a) **Table of Charges** - all of the amounts set out in the Table of Charges for the services provided under this Agreement which include the following:

(i) Minimum Monthly Charge - a minimum monthly charge calculated by multiplying the Contract Demand by the Variable Charge. The Minimum Monthly Charge will be prorated in the event of curtailment pursuant to sections 4.2 and 14.6 by Terasen Gas;

(ii) Commodity charge for Contract Demand - for those amounts of LNG supplied to the Customer that are less than or equal to the Contract Demand, a charge calculated by multiplying the amount of LNG in Gigajoules supplied to the Customer by the Sumas Monthly Index Price; and

(iii) Spot load LNG Charge - for those amounts of LNG supplied to the Customer that are in excess of the Contract Demand, a charge calculated by multiplying the amount of LNG in Gigajoules in excess of the Contract Demand supplied to the Customer by the LNG Spot Price; and

(b) All applicable taxes, including but not limited to, the Goods and Services Tax ("GST") as required under the *Excise Tax Act* of Canada, and provincial tax in accordance with the *British Columbia Social Service Tax Act*, unless exempted there from, and any and all additional federal, provincial or municipal taxes, including any applicable Franchise Fees, to which the Customer may be subject for services provided hereunder.

5.2 **Subject to Change** - The charges payable by the Customer to Terasen Gas pursuant to section 5.1 of this Agreement are subject to change by Terasen Gas and, upon approval of such changes from time to time by the British Columbia Utilities Commission, will be binding on the Customer.

6 Loading and Scheduling

6.1 **Requested Quantity and Loading Schedule** - The Customer or its agents will provide Terasen Gas by fax or email, prior to 7:00 a.m. Pacific Standard Time on each Day (or such other time as may be specified from time to time by Terasen Gas) such information as may be requested by Terasen Gas, which will include, but is not limited to, the Customer's requested quantity of LNG for the Day commencing in approximately 24 hours and the requested time of loading. Loading of the Customer's tanker(s) with LNG shall take place between 8:00 a.m. - 4:00 p.m. (Pacific Standard Time) Monday through Friday (excluding British Columbia statutory holidays). The estimated minimum Dispensing time for a tanker load at the plant at Tilbury is approximately two hours. Dispensing a tanker outside of the hours designated above is permitted, but each such Dispensing is subject to an additional charge of $100.00 per Hour with a four Hour minimum.

6.2 **Adjustment of Loading Schedule** - Terasen Gas may adjust, in consultation with the Customer or its authorized agents, the Customer's loading schedule, when in the reasonable opinion of Terasen Gas such modification is required in order to minimize the costs of Dispensing LNG.

6.3 **Authorized Quantity** - Terasen Gas will take such action as is reasonable in all the circumstances to advise the Customer or its authorized agents if the authorized quantity of LNG available at Tilbury is less than the Customer's requested quantity of LNG.

7 Term of LNG Agreement

7.1 **Initial Term** - The initial term of the LNG Agreement will begin on the date specified in the attached LNG Agreement, and will expire at 7:00 a.m. Pacific Standard Time on the Expiry Date.

7.2 **Automatic Renewal** - The term of the LNG Agreement will continue from year to year after the expiry of the Initial Term unless cancelled by either Terasen Gas or the Customer upon not less than 6 Months notice prior to the end of the Contract Year then in effect, to a final expiration date of the LNG Agreement of December 31, 2014.

7.3 **Early Termination** - The term of the LNG Agreement is subject to early termination in accordance with section 11 (Default or Bankruptcy).

7.4 **Survival of Covenants** - Upon termination of the LNG Agreement, whether pursuant to section 11 (Default or Bankruptcy) of this LNG Rate Schedule or otherwise,

(a) all claims, causes of action or other outstanding obligations remaining or being unfulfilled as at the date of termination, and

(b) all of the provisions in the LNG Agreement and this Rate Schedule relating to the obligations of any of the parties to account to or indemnify the other and to pay to the other any monies owing as at the date of termination in connection with this Rate Schedule,

will survive such termination.

8 Statements and Payments

8.1 **Statements to be Provided** - Terasen Gas will, on or about the 15th Day of each Month, deliver to the Customer, a statement for the preceding Month showing the LNG quantities delivered to the Customer or its authorized agents and the amount due. Any errors in any statement will be promptly reported to the other party as provided hereunder, and statements will be final and binding unless questioned within one year after the date of the statement.

8.2 **Payment and Late Payment Charge** - Payment for the full amount of the statement, including federal, provincial and municipal taxes or fees applicable thereon, will be made to Terasen Gas at its Surrey, British Columbia office, or such other place in Canada as it will designate, on or before the 1st business Day after the 30th calendar Day following the billing date. If the Customer fails or neglects to make any payment required under this Rate Schedule, or any portion thereof, to Terasen Gas when due, Terasen Gas will include in the next bill to the Customer a late payment charge of 1.5% per Month (19.56% per annum) on the outstanding amount.

8.3 **Examination of Records** - Each of Terasen Gas and the Customer will have the right to examine at reasonable times the books, records and charts of the other to the extent necessary to verify the accuracy of any statement, charge, computation or demand made pursuant to any provisions of this Rate Schedule.

9 Measurement

9.1 **Unit of Measurement** - The unit of measurement of LNG for all purposes hereunder will be kilograms.

9.2 **Determination of Volume** - The quantity of LNG dispensed pursuant to this Rate Schedule shall be measured at the scale at the Tilbury plant that is approved and certified by Measurement Canada. The Customer vehicle will be weighed at said scale before and after LNG Dispensing. The measurement of the amount of LNG delivered shall be based on the difference, expressed in kilograms, of these two weights.

9.3 **Conversion to Energy Units** - In accordance with the *Electricity and Gas Inspection Act* of Canada, volumes of LNG dispensed each Day will be converted to energy units by multiplying the standard volume by the Heat Content of each unit of LNG. Volumes will be specified in kilograms rounded to the nearest unit and energy will be specified in Gigajoules rounded to one decimal place. Terasen will use the following formula to convert kilograms of LNG to GJ LNG:

Converting Kilograms of LNG to Gigajoules

	Tractor/Trailer Gross Weight after LNG Dispensing (kilograms)
minus	Tractor/Trailer Gross Weight prior to Dispensing (kilograms)
equals	Net Weight of the Delivered LNG (kilograms)
	Net Weight of the Delivered LNG (kilograms)
multiplied by	0.055058 gigajoule/kilogram
equals	Delivered LNG (Gigajoule)

10 Representations, Warranties and Covenants

10.1 **Title Transfer** - Possession of, title to and risk of loss of, damage to, or damage caused by the LNG sold and delivered hereunder shall pass from Terasen Gas to the Customer at Terasen Gas Tilbury LNG Operations, specifically, delivery and title transfer shall occur at the outlet flange of the tank truck upon loading of the LNG.

10.2 **Emergency Response Action Plan** - Terasen Gas represents and warrants that it has and shall maintain throughout the term of this Agreement an Emergency Response Action Plan approved by Transport Canada for the transportation of dangerous goods (the "ERAP"). Terasen Gas agrees that the ERAP shall apply to all LNG and LNG shipments until the LNG is delivered to and received by the Customer at its refueling station. Notwithstanding the foregoing, in the event that an accident occurs requiring implementation of the ERAP, the Customer shall reimburse Terasen Gas for all costs incurred to provide emergency response pursuant to the ERAP, including but not limited to, the dispatching of Terasen Gas personnel to the site of the accident.

10.3 **Applicable Law** - The Customer warrants and represents that in its acceptance, transport, use or storage of the LNG it is in compliance with the requirements of any laws, rules, regulations and orders of any legislative body, governmental agency or duly constituted authority now or hereafter, including, but not limited to, the federal *Transportation of Dangerous Goods Act*.

10.4 **Transportation and Safety Documents** - Terasen Gas shall be responsible for preparing and supplying all transportation and safety documents that are the responsibility of a consignor of a dangerous good or a supplier of a hazardous material or product under applicable laws and regulations including without limitation all safety marks, shipping documents and material safety data sheets.

11 Default or Bankruptcy

11.1 **Default by the Customer** - If the Customer at any time fails or neglects

(a) to make any payment due to Terasen Gas or to any other person under this Rate Schedule within 30 Days after payment is due, or

(b) to correct any default of any of the other terms, covenants, conditions or obligations imposed upon it under this Rate Schedule, within 30 Days after Terasen Gas gives to the Customer notice of such default, or

(c) in the case of a default that cannot with due diligence be corrected within a period of 30 Days, the Customer fails to proceed promptly after the giving of such notice to correct the same and thereafter to prosecute the correcting of such default with all due diligence,

then Terasen Gas may in addition to any other remedy that it has, at its option and without liability therefor:

(d) suspend further LNG Service to the Customer and may refuse to deliver LNG to the Customer until the default has been fully remedied, and no such suspension or refusal will relieve the Customer from any obligation under this Rate Schedule, or

(e) terminate the supply of LNG, and no such termination of this Rate Schedule pursuant hereto will exclude the right of Terasen Gas to collect any amount due to it from Customer for what would otherwise have been the remainder of the term of this Rate Schedule.

11.2 **Bankruptcy or Insolvency of the Customer** - If the Customer becomes bankrupt or insolvent or commits or suffers an act of bankruptcy or insolvency or a receiver is appointed pursuant to a statute or under a debt instrument or the Customer seeks protection from the demands of its creditors pursuant to any legislation enacted for that purpose or commences proceedings under the *Companies' Creditors Arrangement Act* of Canada, Terasen Gas will have the right, at its sole discretion, to terminate the supply of LNG by giving notice in writing to the Customer and thereupon Terasen Gas may cease further delivery of LNG to the Customer and the amount then outstanding for LNG provided under this Rate Schedule will immediately be due and payable by the Customer.

12 Notice

12.1 **Notice** - Any notice, request, statement or bill that is required to be given or that may be given under this Rate Schedule will, unless otherwise specified, be in writing and will be considered as fully delivered when mailed, personally delivered or sent by fax to the other in accordance with the following:

if to Terasen Gas	TERASEN GAS INC.
MAILING ADDRESS:	16705 Fraser Highway Surrey, B.C. V4N 0E8
BILLING AND PAYMENT:	Attention: Industrial Billing Telephone: (604) 663-3677 Fax: (604) 663-3683
CUSTOMER RELATIONS:	Attention: Commercial Industrial Account Manager Telephone: (604) 592-7843 Fax: (604) 592-7894

12.2 **Specific Notices** - Notwithstanding section 12.1 (Notice), notices with respect to suspension of LNG Service by Terasen Gas for reasons of Force Majeure will be sufficient if given by Terasen Gas in accordance with section 13.3 of the General Terms and Conditions of Service.

13 Indemnity and Limitation on Liability

13.1 **Limitation on Liability** - Terasen Gas, its employees, contractors or agents are not responsible or liable for any loss, damage, costs or injury (including death) incurred by the Customer or any person claiming by or through the Customer caused by or resulting from, directly or indirectly, any discontinuance, suspension or interruption of, or failure or defect in the supply or delivery or transportation of, or refusal to supply, delivery or transport gas, or provide LNG Service, unless the loss, damage, costs or injury (including death) is directly attributable to the gross negligence or wilful misconduct of Terasen Gas, its employees, contractors or agents provided, however that Terasen Gas, its employees, contractors and agents are not responsible or liable for any loss of profit, loss of revenues, or other economic loss even if the loss is directly attributable to the gross negligence or wilful misconduct of Terasen Gas, its employees, contractors or agents.

13.2 **Indemnity** - The Customer will indemnify and hold harmless each of Terasen Gas, its employees, contractors and agents from and against any and all adverse claims, losses, suits, actions, judgments, demands, debts, accounts, damages, costs, penalties and expenses (including all legal fees and disbursements) arising from or out of

(a) the negligence or wilful misconduct of the Customer, employees, contractors or agents; or

(b) the breach by the Customer of any of the provisions contained in this Rate Schedule including those related to the payment by the Customer of all federal, provincial, and municipal taxes (or payments made in lieu thereof).

14 Force Majeure

14.1 **Force Majeure** - Subject to the other provisions of this section 14, if either party is unable or fails by reason of Force Majeure to perform in whole or in part any obligation or covenant set out in this Rate Schedule, the obligations of both Terasen Gas and the Customer will be suspended to the extent necessary for the period of the Force Majeure condition.

14.2 **Curtailment Notice** - If Terasen Gas claims suspension pursuant to this section 14, Terasen Gas will be deemed to have issued to the Customer a notice of curtailment.

14.3 **Exceptions** - Neither party will be entitled to the benefit of the provisions of section 14.1 under any of the following circumstances:

(a) to the extent that the failure was caused by the negligence or contributory negligence of the party claiming suspension,

(b) to the extent that the failure was caused by the party claiming suspension having failed to diligently attempt to remedy the condition and to resume the performance of the covenants or obligations with reasonable dispatch, or

(c) unless as soon as possible after the happening of the occurrence relied on or as soon as possible after determining that the occurrence was in the nature of Force Majeure and would affect the claiming party's ability to observe or perform any of its covenants or obligations under this Rate Schedule, the party claiming suspension will have given to the other party notice to the effect that the party is unable by reason of Force Majeure (the nature of which will be specified) to perform the particular covenants or obligations.

14.4 **Notice to Resume** - The party claiming suspension will likewise give notice, as soon as possible after the Force Majeure condition has been remedied, to the effect that it has remedied and that the party has resumed, or is then in a position to resume, the performance of the covenants or obligations.

14.5 **Settlement of Labour Disputes** - Notwithstanding any of the provisions of this section 14, the settlement of labour disputes or industrial disturbances will be entirely within the discretion of the particular party involved and the party may make settlement of it at the time and on terms and conditions as it may deem to be advisable and no delay in making settlement will deprive the party of the benefit of section 14.1.

14.6 **No Exemption for Payments** - Notwithstanding any of the provisions of this section 14, Force Majeure will not relieve or release either party from its obligations to make payments to the other. In the event of any curtailment in excess of 72 hours, then the Minimum Monthly Charge will be prorated accordingly.

14.7 **Periodic Repair by Terasen Gas** - Terasen Gas may temporarily suspend Dispensing of LNG at its LNG plant at Tilbury for the purpose of repairing or replacing a portion of the Terasen Gas System or its equipment and Terasen Gas will make reasonable efforts to give the Customer as much notice as possible with respect to such interruption, not to be less than 24 hours prior notice except when prevented by Force Majeure. Terasen Gas will make reasonable efforts to schedule repairs or replacement to minimize interruption or curtailment of LNG Service to the Customer, and to restore Service as quickly as possible.

15 Disputes

15.1 **Mediation** - Where any dispute arises out of or in connection with the LNG Service, Terasen Gas and the Customer agree to try to resolve the dispute by participating in a structured mediation conference with a mediator under the National Arbitration Rules of the ADR Institute of Canada Inc. for Dispute Resolution.

15.2 **Arbitration** - If Terasen Gas and the Customer fail to resolve the dispute through mediation, the unresolved dispute shall be referred to, and finally resolved or determined by arbitration under the National Arbitration Rules of the ADR Institute of Canada Inc. for Dispute Resolution. Unless Terasen Gas and the Customer agree otherwise the arbitration will be conducted by a single arbitrator.

15.3 **Written Award** - The arbitrator shall issue a written award that sets forth the essential findings and conclusions on which the award is based. The arbitrator will allow discovery as required by law in arbitration proceedings.

15.4 **Failure to Render a Decision** - If the arbitrator fails to render a decision within thirty (30) days following the final hearing of the arbitration, any party to the arbitration may terminate the appointment of the arbitrator and a new arbitrator shall be appointed in accordance with these provisions. If Terasen Gas and the Customer are unable to agree on an arbitrator or if the appointment of an arbitrator is terminated in the manner provided for above, then either Terasen Gas or the Customer shall be entitled to apply to a judge of the British Columbia Supreme Court to appoint an arbitrator and the arbitrator so appointed shall proceed to determine the matter mutatis mutandis in accordance with the provisions of this section 15.

15.5 **Award** - The arbitrator shall have the authority to award:

(a) money damages;

(b) interest on unpaid amounts from the date due;

(c) specific performance; and

(d) permanent relief.

15.6 **Costs** - The costs and expenses of the arbitration, but not those incurred by the parties, shall be shared equally, unless the arbitrator determines that a specific party prevailed. In such a case, the non-prevailing party shall pay all costs and expenses of the arbitration, but not those of the prevailing party.

15.7 **Obligations Continue** - The parties will continue to fulfill their respective obligations pursuant to this Rate Schedule 16 and the LNG Agreement during the resolution of any dispute in accordance with this section 15.

16 Interpretation

16.1 **Interpretation** - Except where the context requires otherwise or except as otherwise expressly provided, in this Rate Schedule:

(a) all references to a designated section are to the designated section of this Rate Schedule unless otherwise specifically stated;

(b) the singular of any term includes the plural, and vice versa, and the use of any term is equally applicable to any gender and, where applicable, body corporate;

(c) any reference to a corporate entity includes and is also a reference to any corporate entity that is a successor by merger, amalgamation, consolidation or otherwise to such entity;

(d) all words, phrases and expressions used in this Rate Schedule that have a common usage in the gas industry and that are not defined in this Rate Schedule or in the General Terms and Conditions have the meanings commonly ascribed thereto in the gas industry; and

(e) the headings of the sections set out in this Rate Schedule are for convenience of reference only and will not be considered in any interpretation of this Rate Schedule.

17 Miscellaneous

17.1 **Waiver** - No waiver by either Terasen Gas or the Customer of any default by the other in the performance of any of the provisions of this Rate Schedule will operate or be construed as a waiver of any other or future default or defaults, whether of a like or different character.

17.2 **Enurement** - This Rate Schedule will enure to the benefit of and be binding upon the parties and their respective successors and permitted assigns, including without limitation, successors by merger, amalgamation or consolidation.

17.3 **Assignment** - The Customer may not assign its rights under this Rate Schedule in whole or in part without the prior written consent of Terasen Gas, provided, however, that Customer may assign without the consent of Terasen Gas if:

(a) such assignment is made pursuant to the assignment of all of the Customer's rights and obligations hereunder to a partnership, limited liability company, corporation, trust or other organization in whatever form succeeds to all or substantially all of the Customer's assets and business; and

(b) the assignee assumes such obligations by contract, operation of law, or otherwise.

Upon such assumption of obligations, and if required, the receipt of the prior written consent of Terasen Gas, which consent shall not be unreasonably delayed or withheld, the Customer shall be relieved of and fully discharged from all obligations hereunder. This provision applies to every proposed assignment by the Customer.

17.4 **Amendments to be in Writing** - Except as set out in this Rate Schedule, no amendment or variation of this Rate Schedule will be effective or binding upon the parties unless such amendment or variation is set out in writing and duly executed by the parties.

17.5 **Law** - This Rate Schedule will be construed and interpreted in accordance with the laws of the Province of British Columbia and the laws of Canada applicable therein.

17.6 **Time is of Essence** - Time is of the essence of this Rate Schedule and of the terms and conditions thereof.

17.7 **Subject to Legislation** - Notwithstanding any other provision hereof, this Rate Schedule and the rights and obligations of Terasen Gas and the Customer under this Rate Schedule are subject to all present and future laws, rules, regulations and orders of any legislative body, governmental agency or duly constituted authority now or hereafter having jurisdiction over Terasen Gas or the Customer.

17.8 **Further Assurances** - Each of Terasen Gas and the Customer will, on demand by the other, execute and deliver or cause to be executed and delivered all such further documents and instruments and do all such further acts and things as the other may reasonably require to evidence, carry out and give full effect to the terms, conditions, intent and meaning of this Rate Schedule and to assure the completion of the transactions contemplated hereby.

17.9 **Form of Payments** - All payments required to be made under statements and invoices rendered pursuant to this Rate Schedule will be made by wire transfer to, or cheque or bank cashier's cheque drawn on a Canadian chartered bank or trust company, payable in lawful money of Canada at par in immediately available funds in Vancouver, British Columbia.

Table of Charges

Variable Charge per Gigajoule	$ 3.89	A
Charge per Gigajoule of Sumas Monthly Index Price Gas supplied	Sumas Monthly Index Price[1]	
Minimum Monthly Charge	Contract Demand multiplied by the Variable Charge	
Spot load LNG Charge	Amount in excess of Contract Demand delivered to the Customer multiplied by the LNG Spot Price	
LNG Spot Price	The Variable Charge per Gigajoule plus the Sumas Monthly Index Price per Gigajoule	

Notes:

1. **Sumas Monthly Index Price** - means the Sumas Monthly Index Price as set out in Inside F.E.R.C.'s Gas Market Report for gas delivered to Northwest Pipeline Corporation at Sumas, converted to Canadian dollars using the noon exchange rate as quoted by the Bank of Canada for the first Day of each Month in which the Sumas Monthly Index Price shall apply. Energy units are converted from MMBtu to Gigajoule by application of a conversion factor equal to 1.055056 Gigajoule per MMBtu.

INTERRUPTIBLE LIQUEFIED NATURAL GAS SALES AND DISPENSING SERVICE AGREEMENT

This Agreement ("LNG Agreement") is dated _____, 20___, between Terasen Gas Inc. ("Terasen Gas") and _____ ("Customer").

WHEREAS:

A. Terasen Gas owns and operates the Terasen Gas System in British Columbia.

B. Customer has requested that Terasen Gas provide services for liquefaction of natural Gas and Dispensing of LNG at Terasen Gas' LNG plant at Tilbury.

NOW THEREFORE THIS LNG AGREEMENT WITNESSES THAT in consideration of the terms, conditions and limitations contained herein, the parties agree as follows:

1. Specific Information

Applicable Rate Schedule:	16
Type of Service:	Interruptible
Firm Contract Demand:	_____ Gigajoules per Month
Commencement Date:	_____
Expiry Date:	_____
Service Address:	_____
Account Number:	_____

Address of Customer for receiving notices:

_____ Attention: _____
(name of Customer)

_____ Telephone: _____
(address of Customer)

_____ Fax: _____

_____ Email: _____

_____

The information set out above is hereby approved by the parties and each reference in either this agreement or the Rate Schedule 16 to any such information is to the information set out above.

2. Interruptible LNG Sales and Dispensing Service Rate Schedule

2.1 **Additional Terms** - All rates, terms and conditions set out in the applicable Interruptible LNG Sales and Dispensing Service Rate Schedule and the General Terms and Conditions of Terasen Gas' Tariff, as any of them may be amended by Terasen Gas and approved from time to time by the British Columbia Utilities Commission, are in addition to the terms and conditions contained in this LNG Agreement and form part of this LNG Agreement and bind Terasen Gas and the Customer as if set out in this LNG Agreement.

2.2 **Payment of Amounts** - Without limiting the generality of the foregoing, the Customer will pay to Terasen Gas all of the amounts set out in the applicable Interruptible LNG Sales and Dispensing Service Rate Schedule for the services provided under such Rate Schedule.

2.3 **Conflict** - Where anything in either the LNG Sales and Dispensing Service Rate Schedule or the General Terms and Conditions of Terasen Gas' Tariff conflicts with any of the terms and conditions set out in this LNG Agreement, this LNG Agreement governs. Where anything in the applicable LNG Sales and Dispensing Service Rate Schedule conflicts with any of the rates, terms and conditions set out in the General Terms and Conditions of Terasen Gas' Tariff, the LNG Sales and Dispensing Service Rate Schedule governs.

2.4 **Pilot** - Interruptible LNG Sales and Dispensing Service is a pilot program with a limitation on the total amount of supply. The program expires on December 31, 2014 and notwithstanding any other provision of the LNG Sales and Dispensing Service Rate Schedule or this LNG Agreement, Terasen Gas shall have no responsibility to provide service under the LNG Sales and Dispensing Service Rate Schedule or this LNG Agreement after that date.

IN WITNESS WHEREOF the parties hereto have executed this LNG Agreement.

TERASEN GAS INC.

BY: _____
(Signature)

_____
(Title)

_____
(Name – Please Print)

DATE: _____

_____
(here insert name of Customer)

BY: _____
(Signature)

_____
(Title)

_____
(Name – Please Print)

DATE: _____

BY: _____
(Signature)

_____
(Title)

_____
(Name – Please Print)

DATE: _____

TERASEN GAS INC.

RATE SCHEDULE 25
GENERAL FIRM TRANSPORATION SERVICE

Effective November 1, 2000

TABLE OF CONTENTS

Section **Page**

1. Definitions

1.1 **Definitions** - Except where the context requires otherwise all words and phrases defined below or in the General Terms and Conditions of Terasen Gas and used in this Rate Schedule or in a Transportation Agreement have the meanings set out below or in the General Terms and Conditions of Terasen Gas. Where any of the definitions set out below conflict with the definitions in the General Terms and Conditions of Terasen Gas, the definitions set out below govern.

(a) **Authorized Quantity** - means the quantity of energy (in Gigajoules) for each Day approved by the Transporter(s) for transportation service on the Transporter's pipeline system, based on the quantity requested pursuant to section 7.2 (Requested Quantity), adjusted as set out in section 7.3 (Adjustment of Requested Quantity) or the quantity of energy approved for sale by Terasen Gas under an applicable Rate Schedule, or any component or aggregate of these quantities, as the context requires. C

(b) **Backstopping Gas** - means Gas made available by Terasen Gas as an interruptible backup supply if on any Day the Authorized Quantity is less than the Requested Quantity, adjusted as set out in section 7.3 (Adjustment of Requested Quantity).

(c) **Balancing Gas** - means any Gas taken during a Month which is in excess of the Authorized Quantity, subject to section 8.1 (Monthly Adjustments).

(d) **Business Day** - means a Day that commences on other than a Saturday, a Sunday, or a statutory holiday in the Province of British Columbia.

(e) **Commencement Date** - means the day specified as the Commencement Date in the Transportation Agreement.

(f) **Contract Year** - means a period of 12 consecutive Months commencing at the beginning of the 1st Day of November and ending at the beginning of the next succeeding 1st Day of November.

(g) **Day** - means, subject to section 1.2 (Change in Definition of "Day"), any period of twenty-four consecutive hours beginning and ending at 7:00 a.m. Pacific Standard Time.

(h) **Delivery Point** - means the point specified in a Transportation Agreement where Terasen Gas delivers Gas to a Shipper.

(i) **DTQ or Daily Transportation Quantity** - means the maximum quantity of Gas that Terasen Gas is obligated to transport for and deliver to a Shipper at the Delivery Point on any particular Day, which in the discretion of Terasen Gas reasonably reflects the Shipper's requirements and which is specified in a Transportation Agreement.

(j) **EKE** - means the East Kootenay Exchange, an Interconnection Point where the Terasen Gas System interconnects with the facilities of TransCanada PipeLines Limited, B.C. System.

(k) **Firm EKE Receipt Service** - means the firm receipt service by which the Shipper provides Gas to Terasen Gas at EKE for firm transportation to a Delivery Point in the Inland Service Area, as described in section 11.1.

(l) **Force Majeure** - means any acts of God, strikes, lockouts, or other industrial disturbances, civil disturbances, arrests and restraints of rulers or people, interruptions by government or court orders, present or future valid orders of any regulatory body having proper jurisdiction, acts of the public enemy, wars, riots, blackouts, insurrections, failure or inability to secure materials or labour by reason of regulations or orders of government, serous epidemics, landslides, lightning, earthquakes, fires, storms, floods, washouts, explosions, breakage or accident of machinery or lines of pipes, or freezing of wells or pipelines, or the failure of gas supply, temporary or otherwise, from a Supplier of gas, which act of Force Majeure was not due to negligence of the party claiming Force Majeure. Further, Force Majeure will also include a declaration of force majeure by a Transporter that results in Gas being unavailable for delivery at the Interconnection Point.

(m) **Group -** means a group of Shippers who each transport Gas under a transportation Rate Schedule, have a common Shipper Agent, and who have each entered into a Transportation Agreement.

(n) **Interconnection Point** - means a point where the Terasen Gas System interconnects with the facilities of one of the Transporters of Terasen Gas, as specified in a Transportation Agreement.

(o) **Interruptible EKE Receipt Service** - means the interruptible receipt service by which the Shipper provides Gas to Terasen Gas at EKE for firm transportation to a Delivery Point in the Inland Service Area or the Lower Mainland Service Area, as described in section 11.2.

(p) **Month** - means, subject to any changes from time to time required by Terasen Gas, the period beginning at 7:00 a.m. Pacific Standard Time on the first day of the calendar month and ending at 7:00 a.m. Pacific Standard Time on the first day of the next succeeding calendar month.

(q) **Non-Bypass Shipper** - means a Shipper that receives service under Rate Schedule 23, 25 or 22A and pays rates as set out in the standard Table of Charges for the applicable Rate Schedule.

(r) **Pacific Clock Time** - means Pacific Standard Time or Daylight Savings Time as it applies in Surrey, British Columbia.

(s) **Peak Day Demand** - means the quantity of energy used for the purposes of determining the Peaking Gas and EKE Receipt Service available to a Non-Bypass Shipper, as calculated pursuant to section 10.4.

(t) **Peaking Gas** - means Gas which is provided to the Shipper by Terasen Gas in accordance with the provisions of section 10.

(u) **Peaking Gas Quantity** - means the Peaking Gas available to a Non-Bypass Shipper on a Day, determined pursuant to the provisions of section 10.5.

O

(v) **Rate Schedule 25 or this Rate Schedule** - means this Rate Schedule, including all rates, terms and conditions, and the Table of Charges, as amended from time to time by Terasen Gas with the consent of the British Columbia Utilities Commission. C

(w) **Replacement Gas** - means Gas which is provided to a Shipper by Terasen Gas in the event the Shipper fails to return Peaking Gas Quantity pursuant to section 10.7. C

(x) **Requested Quantity** - means the quantity of energy for each Day requested for firm transportation under this Rate Schedule. C

(y) **Requested Peaking Gas Quantity** - means the quantity of energy for each Day requested as Peaking Gas under this Rate Schedule. C

(z) **Shipper** - means a person who enters into a Transportation Agreement with Terasen Gas who is also the consumer of the Gas transported. C

(aa) **Shipper Agent** - means a person who enters into a Shipper Agent Agreement with Terasen Gas. C

(bb) **Shippers Agent Agreement** - means an agreement between Terasen Gas and a Shipper Agent pursuant to which the Shipper Agent agrees to act as agent for a Group. C

(cc) **Southern Crossing Pipeline** - means the pipeline and other facilities constructed by Terasen Gas from EKE to an interconnection with existing Terasen Gas facilities near Oliver that will enable Terasen Gas to transport Gas between EKE and the Delivery Point. C

(dd) **Sumas Daily Price** - means the "NW Sumas" Daily Midpoint Price as set out in Gas Daily's Daily Price Survey for Gas delivered to Northwest Pipeline Corporation at Sumas, converted to Canadian dollars using the noon exchange rate as quoted by the Bank of Canada one business day prior to Gas flow date, for each Day. Energy units are converted from MMBtu to Gigajoule by application of a conversion factor equal to 1.055056 Gigajoule per MMBtu. C

(ee) **Supplier** - means a party who sells Gas to a Shipper or Terasen Gas or has access to its own supplies of Gas. C

(ff) **Table of Charges** - means the table of prices, fees and charges, as amended from time to time by Terasen Gas with the consent of by the British Columbia Utilities Commission, appended to this Rate Schedule. C

(gg) **Transportation Agreement** - means an agreement between Terasen Gas and a Shipper to provide service pursuant to a transportation Rate Schedule. C

(hh) **Transporter** - means, in the case of the Columbia Service Area, TransCanada PipeLines Limited, B.C. System, and in the case of the Inland Service Area and Lower Mainland Service Area, Westcoast Energy Inc., Terasen Huntingdon Inc., TransCanada PipeLines Limited, B.C. System and any other gas pipeline transportation company connected to the facilities of Terasen Gas from which Terasen Gas receives Gas for the purposes of Gas transportation or resale. C

(ii) **Transporter's Service Terms** - means the general terms and conditions of the applicable Transporter, as filed with and approved from time to time by the National Energy Board or other applicable governmental authority. C

(jj) **Unauthorized Overrun Gas** - means any Gas taken on any Day in excess of the curtailed quantity specified in any notice to interrupt or curtail a Shipper's take or to interrupt or curtail a Group's take, and for greater certainty, Unauthorized Overrun Gas includes all Gas taken by a Shipper or a Group to the extent that the obligation of Terasen Gas to deliver such Gas is suspended by reason of Force Majeure. C

1.2 **Change in Definition of "Day"** - Terasen Gas may amend the definition of "Day" from time to time to suitably align its operations with those of its Transporters. If Terasen Gas amends the definition of "Day", a pro-rata adjustment of quantities of Gas and charges to account for any Day of more or less than 24 Hours will be made and the term of the Transportation Agreement will be similarly adjusted.

2. Applicability

2.1 **Description of Applicability** - This Rate Schedule applies to the provision of firm transportation service through the Terasen Gas System and through one meter station to one Shipper. For greater certainty, firm transportation service under this Rate Schedule means the transportation service Terasen Gas is obligated to provide to a Shipper on a firm basis subject to interruption or curtailment pursuant to sections 16 (Default or Bankruptcy), 19 (Force Majeure) and the General Terms and Conditions of Terasen Gas.

2.2 **British Columbia Utilities Commission** - This Rate Schedule may be amended from time to time with the consent of the British Columbia Utilities Commission.

3. Conditions of Service

3.1 **Conditions** - Terasen Gas does not provide transportation service as a common carrier. Terasen Gas will only transport Gas under this Rate Schedule to Shippers in the territory served by Terasen Gas under the Terasen Gas tariff of which this Rate Schedule is a part if:

(a) the Shipper has entered into a Transportation Agreement,

(b) adequate capacity exists on the Terasen Gas System, and

(c) Terasen Gas has installed at the Delivery Point the facilities and equipment referred to in section 15.1 (Facilities and Equipment).

3.2 **Security** - In order to secure the prompt and orderly payment of the charges to be paid by the Shipper to Terasen Gas under the Transportation Agreement, Terasen Gas may require the Shipper to provide, and at all times maintain, an irrevocable letter of credit in favour of Terasen Gas issued by a financial institution acceptable to Terasen Gas in an amount equal to the estimated maximum amount payable by the Shipper under this Rate Schedule and the Transportation Agreement for a period of 90 Days. Where Terasen Gas requires a Shipper to provide a letter of credit and the Shipper is able to provide alternative security acceptable to Terasen Gas, Terasen Gas may accept such security in lieu of a letter of credit.

3.3 **Warning if Switching from Interruptible to Firm Transportation Service or Sales** - A Shipper wishing to switch from interruptible transportation or interruptible sales to firm transportation under this Rate Schedule must

(a) give 12 months prior notice to Terasen Gas of the Shipper's desire to do so, and

(b) after receiving an estimate from Terasen Gas of costs Terasen Gas will reasonably incur to provide such service, agree to reimburse Terasen Gas for any such costs.

Notwithstanding section 3.3(a), Terasen Gas will make reasonable efforts to accommodate a Shipper on less than 12 months prior notice if Terasen Gas is able, with such shorter notice, to arrange for firm transportation of Gas under this Rate Schedule.

4. Transportation

4.1 **Transportation of Gas** - Subject to section 13 of the General Terms and Conditions of Terasen Gas (Interruption of Service), and all of the terms and conditions of this Rate Schedule, Terasen Gas will on each Day transport for and deliver to the Shipper at the Delivery Point the Authorized Quantity, or the Shipper's portion of the Group's Authorized Quantity, received at the Interconnection Point from the Transporter up to the DTQ. On each Day, if the Shipper's Gas received at the Interconnection Point is not consumed by the Shipper or is not authorized for delivery to the Shipper, Terasen Gas will be entitled to utilize such Gas subject to all the terms of this Rate Schedule and the Transportation Agreement.

4.2 **Curtailment** - Consistent with the provisions of section 7.6 (Failure to Deliver to Interconnection Point), if at any time Terasen Gas, acting reasonably, determines that it is not able to provide Balancing Gas or Backstopping Gas, Terasen Gas may curtail the Shipper's take to the lesser of the Authorized Quantity or the DTQ.

4.3 **Notice of Curtailment** - Each notice from Terasen Gas to the Shipper with respect to the interruption or curtailment by Terasen Gas of deliveries of Gas to the Delivery Point will be by telephone and/or fax and will specify the quantity of Gas to which the Shipper is curtailed and the time at which such curtailment is to be made. Terasen Gas will make reasonable efforts to give the Shipper as much notice as possible with respect to such curtailment, not to be less than 8 Hours prior notice unless prevented by Force Majeure or unless the Transporter does not provide to Terasen Gas at least 8 Hours prior notice of reduced availability of gas.

4.4 **Default Regarding Curtailment** - The Shipper will comply with each notice to interrupt or curtail the Shipper's take. If the Shipper at any time fails or neglects to comply with a notice to interrupt or curtail the Shipper's take as set out in section 7.6 (Failure to Deliver to Interconnection Point), Terasen Gas may, in addition to any other remedy which it may then or thereafter have, at its option, without liability therefor and without any prior notice to the Shipper

(a) turn off the valve at the Delivery Point, or

(b) deliver such Gas and charge the Shipper for such Gas consumed on that Day the unauthorized overrun charge set out in the Table of Charges.

4.5 **Maximum Hourly Quantities** - Terasen Gas will not be obliged to receive or deliver in one Hour more than 5% of the quantity of Gas that the Shipper is authorized to receive on any Day.

4.6 **Gas Pressure** - Where specifically requested by the Shipper, Terasen Gas may agree to deliver Gas to the Shipper at the Delivery Point at a minimum pressure specified in the Shipper's Transportation Agreement. The Shipper will reimburse Terasen Gas for costs it reasonably incurs in maintaining such minimum pressure above that set out in the General Terms and Conditions of Terasen Gas. Terasen Gas' ability to maintain a minimum pressure at the Delivery Point is subject to Terasen Gas receiving Gas at the Interconnection Point at the pressure specified in the Transporter's Service Terms.

5. Table of Charges

5.1 **Charges** - In respect of all quantities of Gas delivered to the Delivery Point pursuant to this Rate Schedule and the Transportation Agreement, the Shipper will pay to Terasen Gas all of the charges set out in the Table of Charges whether or not the Shipper is a member of a Group. The Shipper Agent may elect to pay to Terasen Gas the charges for the Backstopping Gas and the Balancing Gas taken, any Unauthorized Overrun Gas taken, any Replacement Gas incurred, and any Positive Imbalance and Negative Imbalance incurred under Rate Schedule 40 for members of its Group. In the event the Shipper Agent fails to make an election or withdraws an election to pay these charges for and on behalf of the Shippers which are members of its Group, Terasen Gas will bill the Shippers directly.

6. Unauthorized Gas Use

6.1 **Charges for Unauthorized Service** - On any Day a Shipper takes Unauthorized Overrun Gas, the Shipper will pay to Terasen Gas the unauthorized overrun charge set out in the Table of Charges. The Shipper Agent may elect to pay these charges for the members of its Group. In the event the Shipper Agent fails to make an election or withdraws an election to pay these charges for and on behalf of the Shippers which are members of its Group, Terasen Gas will bill the Shippers directly.

6.2 **Payments Not License** - Payments made to Terasen Gas for Unauthorized Overrun Gas neither give the right to take Unauthorized Overrun Gas, nor exclude or limit any other remedies available to Terasen Gas for the Shipper's taking of Unauthorized Overrun Gas.

6.3 **Demand Surcharge** - If the Shipper is a member of a Group which includes a Shipper under Rate Schedule 22, 22A or 22B then the Group and its members will be subject to Demand Surcharges under section 7 (Unauthorized Use) of Rate Schedule 22.

7. Nomination

7.1 **Capacity on Transporter Pipeline(s)** - The Shipper will on or before the Commencement Date notify Terasen Gas of the identity of the party holding capacity for the Shipper on the Transporter pipeline(s), and thereafter from time to time on a prompt basis when such party changes.

7.2 **Requested Quantity** - The Shipper will provide to Terasen Gas by fax or other method approved by Terasen Gas, prior to 7:30 a.m. Pacific Clock Time on each Day (or such other time as may be specified from time to time by Terasen Gas) such information as may be requested by Terasen Gas, which will include, but is not limited to, the Shipper's Requested Quantity for the Day commencing in approximately 24 Hours and the portion of the Requested Quantity to be delivered to Terasen Gas at each applicable Interconnection Point. If the Shipper does not notify Terasen Gas in accordance with the foregoing, then the Shipper's Requested Quantity for the Day commencing in approximately 24 Hours will be deemed to be the Shipper's Requested Quantity, adjusted as set out in section 7.3 (Adjustment of Requested Quantity), for the Day just commencing. The Shipper's Requested Quantity for each Day will equal the Shipper's best estimate, at the time of notification to Terasen Gas of the Requested Quantity, of the quantity of Gas the Shipper will actually consume on such Day.

7.3 **Adjustment of Requested Quantity** - Terasen Gas may adjust, in consultation with the Shipper, the Shipper's Requested Quantity, described in section 7.2 (Requested Quantity), when in the reasonable opinion of Terasen Gas such modification is required in order to minimize the Month end balancing quantity.

7.4 **Request to Transporter** - Terasen Gas will provide to the Transporter(s) the portion of the Shipper's Requested Quantity to be delivered to Terasen Gas at the Interconnection Point with the Transporter, adjusted as set out in section 7.3 (Adjustment of Requested Quantity).

7.5 **Delivery to Interconnection Point** - Each Day the Shipper will cause to be delivered to the applicable Interconnection Point a quantity of Gas at least equal to the portion of the Shipper's Requested Quantity from that Interconnection Point, adjusted as set out in section 7.3 (Adjustment of Requested Quantity).

7.6 **Failure to Deliver to Interconnection Point** - If on any Day the Authorized Quantity from a Transporter is less than the quantity requested from the Transporter pursuant to section 7.4 (Request to Transporter), Terasen Gas may, in its discretion, interrupt or curtail service hereunder to the lesser of such Authorized Quantity or the DTQ. Alternatively, Terasen Gas may deliver additional Gas to the Shipper at the subject Interconnection Point and charge the Shipper the charge for Backstopping Gas as set out in the Table of Charges. If Terasen Gas is unable to ascertain which Shipper's supply has caused a deficiency, Terasen Gas may, in its discretion, interrupt or curtail service to the Shippers on a prorata basis or another basis deemed equitable by Terasen Gas based on available information. Terasen Gas will reallocate the deficiency as soon as reasonable if it obtains information that allows it to determine responsibility and Terasen Gas will disclose to the Shippers how it allocated or reallocated the deficiency.

7.7 **Authorized Quantity** - Terasen Gas will take such action as is reasonable in all the circumstances to advise the Shipper or the Shipper Agent if the portion of the Authorized Quantity from a Transporter is less than the portion of the Requested Quantity to be delivered to Terasen Gas at the Interconnection Point with the Transporter.

7.8 **Determination of DTQ** - The Shipper will provide to Terasen Gas by fax or other method approved by Terasen Gas 30 Days prior to the Commencement Date of each Contract Year the Shipper's DTQ for the following Contract Year. If a Shipper appoints a Shipper Agent to act on its behalf, the Shipper authorizes the Shipper Agent to determine the DTQ set out in the Transportation Agreement, for each Contract Year. This authorization will remain in effect for the term of the Transportation Agreement or so long as the Shipper Agent acts as agent for the Shipper, whichever period is shorter.

8. Gas Balancing

8.1 **Monthly Adjustments** - With the exception of unreturned Peaking Gas, Terasen Gas will make adjustments at the end of each Month for the differences between the sum of the Authorized Quantities and the Shipper's actual consumption as measured daily by Terasen Gas as follows

(a) for overdeliveries (the sum of the Authorized Quantities is greater than the Shipper's actual monthly consumption) Terasen Gas will maintain an inventory account for the Shipper and will increase the balance in the inventory account by the excess amount received. Terasen Gas reserves the right to limit Gas quantities maintained in the Shipper's inventory account and will from time to time in consultation with the Shipper return excess inventory at no charge to the Shipper; this will not relieve the Shipper from its obligation to provide accurate nominations pursuant to section 7.2 (Requested Quantity), and

(b) except in the case of Backstopping Gas and Unauthorized Overrun Gas, for underdeliveries (the sum of the Authorized Quantities is less than the Shipper's actual Monthly consumption as measured by Terasen Gas), Terasen Gas will sell to the Shipper the deficiency quantities at the Balancing Gas charge set out in the Table of Charges.

8.2 **Imbalance Following Termination** - If Terasen Gas has received a quantity of Gas in excess of the quantity delivered to the Shipper during the term of a Transportation Agreement, then the Shipper may request the excess quantity be returned within 90 Days following termination of the Transportation Agreement.

8.3 **Balancing of Peaking Gas** - Balancing of Peaking Gas is described in section 10.7.

9. Group Nominations and Balancing

9.1 **Group Nomination and Balancing** - If a Shipper appoints a Shipper Agent and becomes a member of a Group and if the Shipper and Shipper Agent have agreed to execute or have executed a Shipper Agent Agreement, and if the members of the Group are in the same Service Area of Terasen Gas and receive service under a transportation Rate Schedule, the Shipper Agent will nominate and balance on behalf of all members of the Group on an aggregate basis pursuant to sections 7 (Nomination), 8 (Gas Balancing), 10 (Peaking Gas) and 11 (EKE Receipt Service) of this Rate Schedule, as modified by this section, and the Shipper Agent will be the agent for each of the members of a Group for the purposes of any and all matters set out in sections 7 (Nomination), 8 (Gas Balancing), 10 (Peaking Gas) and 11 (EKE Receipt Service). Notwithstanding the foregoing, where a Shipper under Rate Schedules 22, 22A or 22B is a member of the Group, section 9 (Gas Balancing) and section 10 (Group Nomination and Balancing) of Rate Schedule 22 will apply to the Group on an aggregate basis. The Shipper Agent may also elect, pursuant to the Shipper Agent Agreement, to pay some or all of the charges specified in sections 5.1 and 6.1 for and on behalf of the Shippers in its Group. The Shipper acknowledges and agrees that Terasen Gas may rely, for the purpose of payment allocations, on verbal notification from the Shipper Agent of such election as a basis for the Shipper Agent's authority to act on behalf of the Shipper. Where the Shipper Agent fails to execute a Shipper Agent Agreement, the Shipper will be deemed to be and treated by Terasen Gas as an individual Group of one Shipper, except for the purposes of sections 9.5 and 13.1 hereunder, and will be deemed to have agreed to purchase Gas from Terasen Gas pursuant to the applicable transportation schedule and will accordingly be responsible for the payment of all charges thereunder, including any and all Balancing Gas and Unauthorized Overrun Gas charges attributable to that Shipper.

9.2 **Requested Quantity from Shipper Agent** - The Shipper Agent will notify Terasen Gas of the Shipper's Requested Quantity described in section 7.2 (Requested Quantity) on behalf of all members of a Group on an aggregated basis. If the Shipper Agent does not so notify Terasen Gas, then the Group's Requested Quantity for the Day commencing in approximately 24 Hours will be deemed to be the Group's quantity pursuant to section 7.2 (Requested Quantity) for the Day just commencing.

9.3 **Determination of Charges** - The charges for Backstopping Gas, Balancing Gas, Unauthorized Overrun Gas and Replacement Gas, set out in the Table of Charges, and Demand Surcharges as set out in the Rate Schedule 22 Table of Charges, will be determined based on the quantities transported on behalf of all members of the Group on an aggregate basis. The charges for Unauthorized Transportation Service will be determined based on the quantities delivered to each Shipper.

9.4 **Security** - Terasen Gas may require the Shipper Agent to provide security, as set out in section 3.2 (Security), with necessary changes, for the performance of the Shipper Agent's obligations under the Shipper Agent Agreement.

9.5 **Notices To and From Shipper Agents** - If the Shipper is a member of a Group then:

(a) communications regarding curtailments or interruptions arising from Gas supply constraints and limitations, quantities of Gas requested and quantities of Gas authorized will be between the Shipper Agent for the Group and Terasen Gas; and

(b) notices from Terasen Gas with respect to interruption or curtailment pursuant to section 4.3 (Notice of Curtailment) arising from Gas supply constraints or limitations will be to the Shipper Agent for the Group and will specify the quantity of Gas to which the Group is curtailed and the time at which such curtailment is to be made; it will be the responsibility of the Shipper Agent to notify Shippers which are members of the Group of interruptions or curtailments.

10. Peaking Gas Service

10.1 **Applicability** - In each Contract Year, Peaking Gas Service is available only to Non-Bypass Shippers for Gas which is delivered to a Delivery Point in the Inland Service Area, Lower Mainland Service Area or Columbia Service Area and for which the Transportation Agreement was in effect on the 1st Day of November of the subject Contract Year.

10.2 **15-Day Maximum** - A Non-Bypass Shipper may request Peaking Gas for a maximum of 15 Days during each Contract Year. Any Day for which any portion of the Shipper's Peaking Gas Quantity is requested and authorized will be considered one of the 15 Days of Peaking Gas entitlement even if the quantity of authorized Peaking Gas is not used or only partially used.

10.3 **Contract Year 2000/2001** - Should the Southern Crossing Pipeline ("SCP") not be fully operational by the 1st Day of November 2000, the number of Days for which Peaking Gas may be requested during the Contract Year which commences on the 1st Day of November 2000 will be:

$$\frac{\text{the number of Days that SCP is operational during the 2000/2001 Contract Year} * 15}{365}$$

rounded to the nearest whole number. Peaking Gas may only be requested after the SCP has become fully operational.

10.4 **Peak Day Demand** - For purposes of determining the Peaking Gas Quantity available to a Non-Bypass Shipper on a Day, the Peak Day Demand of a Rate Schedule 25 Shipper is equal to Daily Demand as defined in Note 2 of the Table of Charges. In instances respecting which it is agreed by Terasen Gas and Shipper that a Shipper's Gas consumption during the preceding Contract Year is not indicative of prospective consumption, Terasen Gas will set the Peak Day Demand of that Shipper after consultation with that Shipper.

10.5 **Peaking Gas Quantity** - The quantity of Peaking Gas available on a Day to a Non-Bypass Shipper ("Peaking Gas Quantity") will be a percentage of that Shipper's Peak Day Demand. The Peaking Gas Quantity available to Non-Bypass Shippers for the next Contract Year will be determined by Terasen Gas, and Terasen Gas will in writing notify each Non-Bypass Shipper of that Shipper's Peaking Gas Quantity, at least 30 Days prior to the commencement of each Contract Year. The Peaking Gas Quantity available to a Non-Bypass Shipper in a Contract Year will be:

(a) $$\frac{\text{Total Non-Bypass Transport Demand}}{\text{Forecast Sales Demand + Non-Bypass Transport Demand}} = \text{Peaking Gas Factor}$$

(b) Peaking Gas Factor * SCP Peaking Gas = Non-Bypass Transport Volume

(c) $$\frac{\text{Non-Bypass Transport Volume}}{\text{Non-Bypass Transport Demand}} = \text{Peaking Gas Percentage}$$

(d) Peaking Gas Percentage * a Non-Bypass Shipper's Peak Day Demand = Peaking Gas Quantity

Where:

"Non-Bypass Transport Demand" is the aggregate Peak Day Demand of all Non-Bypass Shippers for the Contract Year commencing the next November 1; "Forecast Sales Demand" is the Terasen Gas forecast of the aggregate peak day demand for the Year commencing the next November 1 for all Gas sales Customers of Terasen Gas excluding those in the Fort Nelson Service Area; and "SCP Peaking Gas" is the quantity of peaking Gas available to Terasen Gas in the Year commencing the next November 1 due to the operation of the Southern Crossing Pipeline.

10.6 **Requested Peaking Gas Quantity** - Shipper will notify Terasen Gas of its Requested Peaking Gas Quantity pursuant to nomination procedures described in section 7.2 except as otherwise described in section 10.6 (a) and 10.6 (b) below. The Requested Peaking Gas Quantity must be explicitly stated on the nomination and may be less than but may not exceed the Shipper's Peaking Gas Quantity described in section 10.5.

(a) **Prior Day Notices of Curtailment** - On a Day when Terasen Gas has given notice of curtailment for the next or subsequent Day, a Shipper may notify Terasen Gas of its Requested Peaking Gas Quantity for the next Day up until one Hour prior to the evening nomination cycle on the Day preceding the Day for which notice of curtailment has been given.

(b) **Same Day Notices of Curtailment** - On a Day when Terasen Gas has given notice of curtailment to be effective during that Day, a Shipper may notify Terasen Gas of its Requested Peaking Gas Quantity up until one Hour after the notice of curtailment has been given by Terasen Gas; provided that Terasen Gas has usable nomination cycles available during that Day with the Transporter(s). Requests for Requested Peaking Gas Quantity received after the time when Terasen Gas has usable nomination cycles available during that Day will be authorized only on an as available basis. If notice of Requested Peaking Gas Quantity is given to Terasen Gas during the Day for which Peaking Gas is being requested then the Peaking Gas Quantity available to Shipper on that Day will be reduced consistent with the elapsed pro-rata practices of applicable Transporter(s).

(c) **Non-Curtailment Days** - On Days for which Terasen Gas has not given notice of curtailment, requests for Peaking Gas Quantity shall be made in accordance with the provisions described in section 7.2.

10.7 **Return of Peaking Gas Quantity** - Terasen Gas will, within 4 business days following the date for which Peaking Gas is authorized, provide to the Shipper a statement indicating the amount of Peaking Gas authorized and used, and this will be the statement used for the purposes of tracking the authorization and use of Peaking Gas. Peaking Gas must be returned to Terasen Gas within 6 Business Days of the Day in respect of which it was authorized. Shipper must notify Terasen Gas that it is returning Peaking Gas Quantity with its nomination for Requested Quantity described in section 7.2. Peaking Gas returned will be applied against the earliest Peaking Gas Quantity authorized and not yet returned. Shipper has option to elect to return Peaking Gas from the Peaking Gas inventory which is kept for this purpose. If Peaking Gas is not returned to Terasen Gas within 6 Business Days, Terasen Gas will provide Shipper with an equivalent quantity of Replacement Gas. The charge for Replacement Gas will be as set out in the Table of Charges.

10.8 **Last Gas Ordered** - Peaking Gas Quantity will be considered the last Gas ordered and taken during the Day.

10.9 **Transport of Peaking Gas Quantity** - Peaking Gas Quantity will be deemed to be provided to the Shipper at the Interconnection Point, and the volumes consumed by the Shipper will be included in the Shipper's monthly transport volume for the purposes of calculating monthly transport charges.

11. Access to East Kootenay Exchange (EKE) Interconnection Point

11.1 Firm EKE Receipt Service

(a) **Applicability** - Firm receipt service access from the EKE Interconnection Point ("Firm EKE Receipt Transport") is available to Non-Bypass Shippers for Gas which is delivered to a Delivery Point in the Inland Service Area and for which the Shipper has a Transportation Agreement which is effective on the August 1st preceding the subject Contract Year ("Inland Non-Bypass Shippers").

(b) **Availability** - The total quantity of Firm EKE Receipt Service available in aggregate to Inland Non-Bypass Shippers ("EKE Transport Volume") will be determined by Terasen Gas for each Contract Year. Terasen Gas shall publish the EKE Transport Volume which is available for the next Contract Year by July 31 of each Year. The EKE Transport Volume shall be determined as follows:

$$\frac{\text{Inland Non-Bypass Transport Demand}}{\text{Forecast Inland Sales Demand + Inland Non-Bypass Transport Demand}} * \text{ITS Constraint} = \text{EKE Transport Volume}$$

Where:

"Inland Non-Bypass Transport Demand" is the aggregate Peak Day Demand of all Non-Bypass Shippers in the Inland Service Area for the Contract Year commencing the next November 1; "Forecast Inland Sales Demand" is the Terasen Gas forecast of the aggregate peak day demand for the Year commencing the next November 1 for all firm Gas sales Customers of Terasen Gas in the Inland Service Area; and "ITS Constraint" is the capacity of the Terasen Gas Interior transmission system available to flow Gas from Oliver in a northbound direction during periods of peak demand.

(c) **Election** - Annual elections for Firm EKE Receipt Service for the next Contract Year must be submitted in writing by Shippers to Terasen Gas within 5 Business Days of the date on which Terasen Gas publishes the EKE Transport Volume. The election must indicate the quantity of Firm EKE Receipt Service requested. The quantity requested must not exceed the Shipper's Peak Day Demand. Terasen Gas will pro-rate the Firm EKE Receipt Service requests based on the requested quantities if aggregate Firm EKE Receipt Service requests exceed the available EKE Transport Volume. Terasen Gas will notify Shippers of the Shippers' quantity of Firm EKE Receipt Service within 10 Business Days of the date on which Terasen Gas publishes the EKE Transport Volume.

11.2 **Interruptible EKE Receipt Service**

(a) **Applicability** - Interruptible receipt service access to the EKE Interconnection Point ("Interruptible EKE Receipt Service") is available only to Non-Bypass Shippers for which Gas is delivered to a Delivery Point in the Inland Service Area and Lower Mainland Service Area ("Eligible Interruptible Non-Bypass Shippers").

(b) **Quantity Available** - The quantity of Interruptible EKE Receipt Service available to Eligible Interruptible Non-Bypass Shippers will be determined by Terasen Gas each Day. In determining the quantity of Interruptible EKE Receipt Service available Terasen Gas will take into account system delivery constraints including the requirement to flow Gas from the facilities of Westcoast Energy Inc. into the Inland Service Area, and the quantity of Firm EKE Receipt Service not utilized. The quantity of Interruptible EKE Receipt Service available to Eligible Interruptible Non-Bypass Shippers will be a pro-rata portion of the aggregate available demands of all firm Gas sales Customers and all firm transportation Customers in the Inland and Lower Mainland Service Areas.

(c) **Maximum Nomination** - A Shipper may not request Interruptible EKE Receipt Service in excess of the Shipper's Peak Day Demand less the Firm EKE Receipt Service of the Shipper. If Terasen Gas receives requests for Interruptible EKE Receipt Service in excess of the aggregate available Interruptible EKE Receipt Service available for the Day (as determined in 11.2 (b)), Terasen Gas will apportion the available Interruptible EKE Receipt Service on a pro-rata basis of requested Interruptible EKE Receipt Service.

(d) **Incremental Costs** - Shippers will be responsible for incremental costs associated with transportation on the facilities of Westcoast Energy Inc. from the Inland Service Area to the Lower Mainland Service Area (if applicable).

12. Term of Transportation Agreement

12.1 **Term** - The initial term of the Transportation Agreement will begin on the Commencement Date and will expire at 7:00 a.m. Pacific Standard Time on the November 1st next following, provided that if the foregoing results in an initial term of less than one year, then the initial term will instead expire at the end of one further Contract Year.

12.2 **Automatic Renewal** - Except as specified in the Transportation Agreement, the term of the Transportation Agreement will continue from year to year after the expiry of the initial term unless cancelled by either Terasen Gas or the Shipper, subject to section 3.3, (Warning if Switching from Interruptible to Firm Transportation Service or Sales) upon not less than 2 months notice prior to the end of the Contract Year then in effect.

12.3 **Early Termination** - The term of the Transportation Agreement is subject to early termination in accordance with section 18 (Default or Bankruptcy).

12.4 **Survival of Covenants** - Upon the termination of the Transportation Agreement, whether pursuant to section 18 (Default or Bankruptcy) or otherwise,

(a) all claims, causes of action or other outstanding obligations remaining or being unfulfilled as at the date of termination, and,

(b) all of the provisions in this Rate Schedule and in the Transportation Agreement relating to the obligation of any of the parties to account to or indemnify the other and to pay to the other any monies owing as at the date of termination in connection with the Transportation Agreement, will survive such termination other and to pay the other any monies owing as at the date of termination in connection with the Transportation Agreement.

will survive such termination.

13. Statements and Payments

13.1 **Statements to be Provided** - Terasen Gas will, on or about the 15th day of each month, deliver to the Shipper, a statement for the preceding month showing the Gas quantities delivered to the Shipper and the amount due. If the Shipper is a member of a Group then the statement and the calculation of the amount due from the Shipper will be based on information supplied by the Shipper Agent, or based on other information available to Terasen Gas, as set out in Shipper Agent Agreement. Terasen Gas will, on or about the 45th day after the end of a Contract Year, deliver to the Shipper a separate statement for the preceding Contract Year showing the amount required from the Shipper in respect of any indemnity due under this Rate Schedule or a Transportation Agreement. Any errors in any statement will be promptly reported to the other party as provided hereunder, and statements will be final and binding unless questioned within one year after the date of the statement.

13.2 **Payment and Late Payment Charge** - Payment for the full amount of the statement, including federal, provincial and municipal taxes or fees applicable thereon, will be made to Terasen Gas at its Vancouver, British Columbia office, or such other place in Canada as it will designate, on or before the 1st business day after the 21st calendar day following the billing date. If the Shipper fails or neglects to make any payment required under this Rate Schedule, or any portion thereof, to Terasen Gas when due, Terasen Gas will include in the next bill to the Shipper a late payment charge of 1½% per month (19.56% per annum) on the outstanding amount.

13.3 **Examination of Records** - Each of Terasen Gas and the Shipper will have the right to examine at reasonable times the books, records and charts of the other to the extent necessary to verify the accuracy of any statement, charge, computation or demand made pursuant to any provisions of this Rate Schedule or the Transportation Agreement.

14. Quality

14.1 **Minimum Standards** - All Gas delivered to an Interconnection Point by or on behalf of the Shipper and all Gas delivered to the Delivery Point will conform to the quality specifications set out in the applicable Transporter's Service Terms.

15. Measuring Equipment

15.1 **Facilities and Equipment** - Terasen Gas will install, maintain and operate at the Delivery Point such metering and communications facilities and equipment as Terasen Gas determines are necessary or desirable for measuring the quantity of Gas delivered pursuant to this Rate Schedule to the Shipper and the Shipper will permit Terasen Gas, without cost to Terasen Gas, to use the Shipper's communications lines and power for the purpose of installing, maintaining and operating the measuring equipment of Terasen Gas. Communication facilities and equipment will be installed at the cost of the Shipper.

15.2 **Measuring Site** - If Terasen Gas reasonably determines that it is necessary to install the facilities and equipment referred to in section 15.1 (Facilities and Equipment) on the Shipper's property, the Shipper will, without charge, provide a suitable site along with utilities and enclosures for the installation of the facilities and equipment of Terasen Gas. Terasen Gas will at all times have clear access to the site and to all of its facilities and equipment. All facilities and equipment installed by Terasen Gas on the Shipper's property will remain the property of Terasen Gas and may be removed by Terasen Gas upon termination of the Transportation Agreement.

15.3 **Calibration and Test of Measuring Equipment** - The accuracy of the measuring equipment of Terasen Gas will be verified by standard tests and methods at regular intervals and at other times at the initiative of Terasen Gas or upon the reasonable request of the Shipper. Notice of the time and nature of each test conducted in response to communications with or at the request of the Shipper will be given by Terasen Gas to the Shipper sufficiently in advance to permit a representative of the Shipper to be present. If during a test the measuring equipment is found to be registering inaccurately, it will be adjusted at once to read as accurately as possible. The results of each test and adjustment, if any, made by Terasen Gas, whether or not the Shipper is present for such test, will be accepted until the next test. All tests of such measuring equipment of Terasen Gas will be made at the expense of Terasen Gas, except that the Shipper will bear the expense of tests made at its request if the measuring equipment is found to be inaccurate by an amount equal to 2% or less.

15.4 **Inaccuracy Exceeding 2%** - If upon any test the measuring equipment is found to be inaccurate by an amount exceeding 2%, any previous readings of such equipment will be corrected to zero error for any period during which it is definitely known or is agreed upon that the error existed. If the period is not definitely known or is not agreed upon, such correction will be for a period covering the last half of the time elapsed since the date of the last test. Provided that under no circumstances will an adjustment be made for a period of more than the preceding 12 months.

15.5 **Correction of Measuring Errors** - If the measuring equipment is out of service or out of repair so that the quantity of Gas delivered cannot be correctly determined by the reading thereof, the Gas delivered during the period such measuring equipment is out of service or out of repair will be estimated on the basis of the best available data, using the first of the following methods which is feasible

(a) by correcting the error if the percentage of error is ascertained by calibration test or mathematical calculation,

(b) by using the registration of any check measuring equipment if installed and accurately registering, and

(c) by estimating the quantity of Gas delivered to the Shipper during the preceding periods under similar conditions when the meter was registering accurately.

15.6 **Shipper's Equipment** - The Shipper may at its own expense install, maintain and operate its own measuring equipment for the purpose of monitoring or checking the measuring equipment of Terasen Gas, provided that the Shipper will install such equipment so as not to interfere with the operation of the measuring equipment of Terasen Gas.

15.7 **Right to be Present** - Terasen Gas and the Shipper will have the right to inspect all equipment installed or furnished by the other and the charts and other measurement or test data of the other at all times during business hours, and to be present at the time of any installing, testing, cleaning, changing, repairing, calibrating or adjusting done in connection with the measuring equipment of the other party, but all such activities will be performed by the party furnishing the measuring equipment.

15.8 **Preservation of Records** - Both parties will cause to be preserved each test datum, chart and other record of Gas measurement for a period of 2 years.

16. Measurement

16.1 **Unit of Volume** - The unit of volume of Gas for all purposes hereunder will be 1 cubic metre at a temperature of 15^{o} Celsius and an absolute pressure of 101.325 kilopascals.

16.2 **Determination of Volume** - Gas delivered hereunder will be metered using metering apparatus approved by the Standards Division, Industry Canada, Office of Consumer Affairs and the determination of standards volumes delivered hereunder will be in accordance with terms and conditions pursuant to the *Electricity and Gas Inspection Act* of Canada.

16.3 **Conversion of Energy Units** - In accordance with the *Electricity and Gas Inspection Act* of Canada, volumes of Gas delivered each Day will be converted to energy units by multiplying the standard volume by the Heat Content of each unit of Gas. Volumes will be specified in 10^3m^3 rounded to two decimal places and energy will be specified in Gigajoules rounded to one decimal place.

17. Representations, Warranties and Covenants

17.1 **Title** - The Shipper represents and warrants with Terasen Gas that the Shipper will have good title to all Gas to be delivered to Terasen Gas at the Interconnection Point on behalf of the Shipper from Suppliers other than Terasen Gas, free and clear of all liens, encumbrances and claims.

17.2 **Title Not That of Terasen Gas** - Terasen Gas agrees that title of all Gas transported pursuant to the Transportation Agreement remains with the Shipper.

17.3 **Acknowledgement** - The Shipper acknowledges that the Gas transported under the Transportation Agreement will be commingled with Gas within the Terasen Gas System.

18. Default or Bankruptcy

18.1 **Default** - If the Shipper at any time fails or neglects

(a) to make any payment due to Terasen Gas or to any other person under this Rate Schedule or the Transportation Agreement within 30 days after payment is due, or

(b) to correct any default to any of the other terms, covenants, agreements, conditions or obligations imposed upon it under this Rate Schedule or the Transportation Agreement, within 30 days after Terasen Gas gives to the Shipper notice of such default or, in the case of a default that cannot with due diligence be corrected within a period of 30 days, the Shipper fails to proceed promptly after the giving of such notice with due diligence to correct the same and thereafter to prosecute the correcting of such default with all due diligence,

then Terasen Gas may in addition to any other remedy that it has, including the rights of Terasen Gas set out in section 4.4 (Default Regarding Curtailment), and 6 (Unauthorized Gas Use), at its option and without liability therefore

(a) suspend further transportation service to the Shipper and may refuse to deliver Gas to the Shipper until the default has been fully remedied, and no such suspension or refusal will relieve the Shipper from any obligation under this Rate Schedule or the Transportation Agreement, or

(b) terminate the Transportation Agreement, and no such termination of the Transportation Agreement pursuant hereto will exclude the right of Terasen Gas to collect any amount due to it from the Shipper for what would otherwise have been the remainder of the term of the Transportation Agreement.

18.2 **Bankruptcy or Insolvency** - If the Shipper becomes bankrupt or insolvent or commits or suffers an act of bankruptcy or insolvency or a receiver is appointed pursuant to a statute or under a debt instrument or the Shipper seeks protection from the demands of its creditors pursuant to any legislation enacted for the purpose, Terasen Gas will have the right, at its sole discretion, to terminate the Transportation Agreement by giving notice in writing to the Shipper and thereupon Terasen Gas may cease further delivery of Gas to the Shipper and the amount then outstanding for Gas provided under the Transportation Agreement will immediately be due and payable by the Shipper.

19. Notice

19.1 Notice - Any notice, request, statement or bill that is required to be given or that may be given under this Rate Schedule or under the Transportation Agreement will, unless otherwise specified, be in writing and will be considered as fully delivered when mailed, personally delivered or sent by fax to the other in accordance with the following:

if to Terasen Gas	TERASEN GAS INC.	
MAILING ADDRESS:	16705 Fraser Highway Surrey, B.C. V4N 0E8	C
NOMINATIONS AND FORCE MAJEURE:	Attention: Marketing Services Representative Telephone: (604) 592-7788 Fax: (604) 592-7892	
BILLING AND PAYMENT:	Attention: Industrial Billing Telephone: (604) 663-3677 Fax: (604) 663-3683	C

CUSTOMER RELATIONS:	Attention:	Key Account Manager
	Telephone:	(604) 592-7843
	Fax:	(604) 592-7894
LEGAL AND OTHER:	Attention:	Vice President & General Counsel; Corporate Secretary
	Telephone:	(604) 293-8631
	Fax:	(604) 293-8640

C

If to the Shipper, then as set out in the Transportation Agreement.

If to the Shipper Agent, then as set out in the Shipper Agent Agreement.

19.2 **Specific Notices** - Notwithstanding section 19.1 (Notice), notices with respect to Force Majeure will be sufficient if:

(a) given by Terasen Gas in writing by fax, or orally in person, or by telephone (to be confirmed in writing) to the person or persons designated from time to time by the Shipper as authorized to receive such notices, or

(b) given by the Shipper by telephone (to be confirmed by fax) in the following manner:

To claim Force Majeure…"Please be advised that (name of company and location of plant) has (reason for claiming Force Majeure as provided in section 21) and hereby claims suspension by reason of Force Majeure in accordance with the terms of Rate Schedule 25 effective 7:00 a.m. Pacific Standard Time (date Force Majeure suspension to become effective, but not to be retroactive)."

To terminate Force Majeure…"Please be advised that (name of company and location of plant) requests a return to normal natural gas service in accordance with Rate Schedule 25 and the Transportation Agreement effective 7:00 a.m. Pacific Standard Time (date Force Majeure suspension to end, but not to be retroactive) whereby the suspension by reason of Force Majeure currently in force will be terminated."

20. Indemnity and Limitation on Liability

20.1 **Limitation on Liability** - Terasen Gas, its employees, contractors or agents are not responsible or liable for any loss or damages for or on account of any interruption or curtailment of transportation service permitted under the General Terms and Conditions of Terasen Gas, or this Rate Schedule.

20.2 **Indemnity** - The Shipper will indemnify and hold harmless each Terasen Gas, its employees, contractors and agents from and against any and all adverse claims, losses, suits, actions, judgments, demands, debts, accounts, damages, costs, penalties and expenses (including all legal fees and disbursements) arising from or out of each of the following

(a) any defects in title to any Gas delivered to Terasen Gas at the Interconnection Point on behalf of the Shipper from Suppliers other than Terasen Gas, or arising from any charges that are applicable to the Gas delivered to Terasen Gas,

(b) Franchise Fees not otherwise collected by Terasen Gas under the Table of Charges,

(c) nominations made in accordance with sections 7 or 9 of this Rate Schedule by Terasen Gas to the Transporter with respect to the Shipper's transportation volumes, whether or not the Shipper is a member of a Group,

(d) Gas delivered by the Transporter or Shipper to Terasen Gas failing to meet the quality specifications set out in section 14.1 of this Rate Schedule, and

(e) all federal, provincial, municipal taxes (or payments made in lieu thereof) and royalties, whether payable on the delivery of Gas to Terasen Gas by the Shipper or on the delivery of Gas to the Shipper by Terasen Gas, or on any other service provided by Terasen Gas to the Shipper.

20.3 **Principal Obligant** - If the Shipper is a member of a Group, the obligations of each of the Shipper Agent (acting for and on behalf of the Shippers that are members of the Group) and the Shipper (in the event of the failure of the Shipper Agent to make such payments and limited to the charges related to that Shipper) to pay to, or to the order of, Terasen Gas the charges for Backstopping Gas, Balancing Gas, Replacement Gas, unauthorized overruns set out in the Table of Charges, and Demand Surcharges set out in the Rate Schedule 22 Table of Charges, are those of principal obligant and not of surety and are independent of the respective obligations of the Shipper Agent and the Shipper towards each other pursuant to the Shipper Agent Agreement.

21. Force Majeure

21.1 **Force Majeure** - Subject to other provisions of this section 21, if either party is unable or fails by reason of Force Majeure to perform in whole or in part any obligation or covenant set out in this Rate Schedule under which service is rendered or in the Transportation Agreement, the obligations of both Terasen Gas and the Shipper will be suspended to the extent necessary for the period of the Force Majeure condition.

21.2 **Curtailment Notice** - If Terasen Gas claims suspension pursuant to this section 21, Terasen Gas will be deemed to have issued to the Shipper a notice of curtailment.

21.3 **Exceptions** - Neither party will be entitled to the benefit of the provisions of section 21.1 under any of the following circumstances

(a) to the extent that the failure was caused by the negligence or contributory negligence of the party claiming suspension,

(b) to the extent that the failure was caused by the party claiming suspension having failed to diligently attempt to remedy the condition and to resume the performance of the covenants or obligations with reasonable dispatch, or

(c) unless as soon as possible after the happening of the occurrence relied on or as soon as possible after determining that the occurrence was in the nature of Force Majeure and would affect the claiming party's ability to observe or perform any of its convenants or obligations under the Rate Schedule or the Transportation Agreement, the party claiming suspension will have given to the other party notice to the effect that the party is unable by reason of Force Majeure (the nature of which will be specified) to perform the particular covenants or obligations.

21.4 **Notice to Resume** - The party claiming suspension will likewise give notice, as soon as possible after the Force Majeure condition has been remedied, to the effect that it has been remedied and that the party has resumed, or is then in a position to resume, the performance of the covenants or obligations.

21.5 **Settlement of Labour Disputes** - Notwithstanding any of the provisions of this section 21, the settlement of labour disputes or industrial disturbances will be entirely within the discretion of the particular party involved and the party may make settlement of it at the time and on terms and conditions as it may deem to be advisable and no delay in making settlement will deprive the party of the benefit of section 21.1.

21.6 **No Exemption for Payments** - Notwithstanding any of the provisions of this section 21, Force Majeure will not relieve or release either party from its obligations to make payments to the other.

21.7 **Periodic Repair by Terasen Gas** - Terasen Gas may temporarily shut off the delivery of Gas for the purpose of repairing or replacing a portion of the Terasen Gas System or its equipment and Terasen Gas will make reasonable efforts to give the Shipper as much notice as possible with respect to such interruption, not to be less than 8 hours' prior notice except when prevented by Force Majeure. Terasen Gas will make reasonable efforts to schedule repairs or replacements to minimize interruptible or curtailment of transportation service to the Shipper, and to restore service as quickly as possible.

21.8 **Shipper's Gas** - If Terasen Gas curtails or interrupts transportation of Gas by reason of Force Majeure the Shipper will make its supply of Gas available to Terasen Gas, to the extent required by Terasen Gas, to maintain service priority to those customers or classes of customers which Terasen Gas determines should be served. Terasen Gas, in its sole discretion, will either increase the balance in the Shipper's inventory account by the amount taken by Terasen Gas and return an equivalent quantity of Gas to the Shipper as soon as possible, or pay the Shipper an amount equal to either Terasen Gas' average Gas cost, or the Shipper's average Gas cost, for the Day(s) during which such Gas was taken, whichever Gas cost the Shipper, in its sole discretion, elects.

21.9 **Alteration of Facilities** - The Shipper will pay to Terasen Gas all reasonable costs associated with the alteration of facilities made at the discretion of Terasen Gas to measure quantities reduced by reason of Force Majeure claimed by the Shipper and to restore such facilities after the Force Majeure condition ends.

22. Arbitration

22.1 **Arbitration** - Any dispute between the parties arising from this Rate Schedule or the Service Agreement will be resolved by a single arbitrator pursuant to the Commercial Arbitration Act of British Columbia or successor legislation, save as expressly provided herein.

22.2 **Demand for Arbitration** - Either party may commence arbitration proceedings by sending to the other party a demand for arbitration setting out the nature of the dispute.

22.3 **Arbitrator** - The parties will have 10 days from receipt of the demand referred to in section 22.2 of this Rate Schedule to agree upon the arbitrator, failing which either party may apply to the Supreme Court of British Columbia to select the arbitrator. The arbitrator must be sufficiently qualified by education and training to decide the particular questions in dispute. Unless otherwise agreed, the arbitrator may not be a past or present employee, officer or director of any of the parties or their respective successors or affiliates, any customer or supplier of the Shipper or Terasen Gas.

22.4 **Commencement and Decision** - The arbitrator will proceed immediately to hear and determine the matter in dispute and will render a written decision, signed by the arbitrator, within 45 days after the appointment, subject to any reasonable delay due to unforeseen circumstances. Notwithstanding the foregoing, if the arbitrator fails to render a decision within 60 days after the appointment then either party may elect to have a new arbitrator appointed in like manner as if none had previously been appointed.

22.5 **Decision** - The decision of the arbitrator will be final and binding upon the parties and the parties will abide by the decision and perform the terms and conditions thereof.

23. Interpretation

23.1 **Interpretation** - Except where the context requires otherwise or except as otherwise expressly provided, in this Rate Schedule or in a Transportation Agreement

(a) all references to a designated section are to the designated section of this Rate Schedule unless otherwise specifically stated,

(b) the singular of any term includes the plural, and vice versa, and the use of any term is equally applicable to any gender and, where applicable, body corporate,

(c) any reference to a corporate entity includes and is also a reference to any corporate entity that is a successor of such entity,

(d) all words, phrases and expressions used in this Rate Schedule or in a Transportation Agreement that have a common usage in the gas industry and that are not defined in the General Terms and Conditions of Terasen Gas, the Definitions or in the Transportation Agreement have the meanings commonly ascribed thereto in the gas industry, and

(e) the headings of the sections set out in this Rate Schedule or in the Transportation Agreement are for convenience of reference only and will not be considered in any interpretation of this Rate Schedule or the Transportation Agreement.

24. Miscellaneous

24.1 **Waiver** - No waiver by either Terasen Gas or the Shipper of any default by the other in the performance of any of the provisions of this Rate Schedule or the Transportation Agreement will operate or be construed as a waiver of any other or future default or defaults, whether of a like or different character.

24.2 **Enurement** - The Transportation Agreement will enure to the benefit of and be binding upon the parties and their respective successors and permitted assigns, including without limitation successors by merger, amalgamation or consolidation.

24.3 **Assignment** - The Shipper will not assign the Transportation Agreement or any of its rights and obligations thereunder without the prior written consent of Terasen Gas which consent will not be unreasonably withheld or delayed. No assignment will release the Shipper from its obligations under this Rate Schedule or under the Transportation Agreement that existed prior to the date on which the assignment takes effect. This provision applies to every proposed assignment by the Shipper.

24.4 **Amendments to be in Writing** - Except as set out in this Rate Schedule, no amendments or variation of the Transportation Agreement will be effective or binding upon the parties unless such amendments or variation is set out in writing and duly executed by the parties.

24.5 **Proper Law** - The Transportation Agreement will be construed and interpreted in accordance with the laws of the Province of British Columbia and the laws of Canada applicable therein.

24.6 **Time is of Essence** - Time is of the essence of this Rate Schedule, the Transportation Agreement and of the terms and conditions thereof.

24.7 **Subject to Legislation** - Notwithstanding any other provision hereof, this Rate Schedule and the Transportation Agreement and the rights and obligations of Terasen Gas and the Shipper under this Rate Schedule and the Transportation Agreement are subject to all present and future laws, rules, regulations and orders of any legislative body, governmental agency or duly constituted authority now or hereafter having jurisdiction over Terasen Gas or the Shipper.

24.8 **Further Assurances** - Each of Terasen Gas and the Shipper will, on demand by the other, execute and deliver or cause to be executed and delivered all such further documents and instruments and do all such further acts and things as the other may reasonably require to evidence, carry out and give full effect to the terms, conditions intent and meaning of this Rate Schedule and the Transportation Agreement and to assure the completion of the transactions contemplated hereby.

24.9 **Form of Payment** - All payments required to be made under statements and invoices rendered pursuant to this Rate Schedule or the Transportation Agreement will be made by wire transfer to, or cheque or bank cashier's cheque drawn on a Canadian chartered bank or trust company, payable in lawful money of Canada at par in immediately available funds in Vancouver, British Columbia.

Table of Charges

		Lower Mainland Service Area	Inland Service Area	Columbia Service area	
1.	**Transportation**				
(a)	Basic Charge per Month	$ 587.00	$ 587.00	$ 587.00	
(b)	Demand Charge per Month per Gigajoule of Daily Demand	$ 15.554[2]	$ 15.554[2]	$ 15.554[2]	A
(c)	Delivery Charge per Gigajoule	$ 0.629	$ 0.629	$ 0.629	A
(d)	Administration Charge per Month	$ 78.00	$ 78.00	$ 78.00	
2.	**Sales**				
(a)	Charge per Gigajoule of Balancing Gas supplied	Sumas Daily Price[1] Average for the Month	Sumas Daily Price[1] Average for the Month	Sumas Daily Price[1] Average for the Month	
(b)	Charges for Backstopping Gas	Sumas Daily Price[1]	Sumas Daily Price[1]	Sumas Daily Price[1]	
(c)	Replacement Gas[3]	Sumas Daily Price[1] plus 20 Percent	Sumas Daily Price[1] plus 20 Percent	Sumas Daily Price[1] plus 20 Percent	
(d)	Unauthorized Overrun Charges				
	(i) Per Gigajoule on first 5 percent of specified quantity	Sumas Daily Price[1]	Sumas Daily Price[1]	Sumas Daily Price[1]	
	(ii) Per Gigajoule on all Gas over 5 percent of specified quantity	The greater of $20.00/GJ or 1.5 x the Sumas Daily Price[1]	The greater of $20.00/GJ or 1.5 x the Sumas Daily Price[1]	The greater of $20.00/GJ or 1.5 x the Sumas Daily Price[1]	
3.	**Rider 2** per Gigajoule	$ 0.025	$ 0.025	$ 0.025	N
4.	**Rider 3** per Gigajoule	$ (0.017)	$ (0.017)	$ (0.017)	A/C
					O

Rider 1 **Propane Surcharge** - Not applicable.

Rider 2 **Recovery of July to December 2009 Approved Return on Equity and Capital Structure** - Applicable to Lower Mainland, Inland and Columbia Service Area Customers for the period January 1, 2010 to December 31, 2010. C

Rider 3 **Earnings Sharing Mechanism** - Applicable to Lower Mainland, Inland and Columbia Service Area Customers for the Year ending December 31, 2010. C

Rider 4 (Reserved for future use.) C

Rider 5 **Revenue Stabilization Adjustment Charge** - Not applicable.

Franchise Fee Charge of 3.09% of the aggregate of the above charges, is payable (in addition to the above charges) if the facilities to which Gas is delivered under this Rate Schedule are located within the municipal boundaries of a municipality or First Nations lands (formerly, reserves within the *Indian Act*) to which Terasen Gas pays Franchise Fees.

Minimum Charge per month - The minimum charge per month will be the aggregate of the Basic Charge, Demand Charges, the Transportation Administration charge and the Franchise Fee charge.

Permanent Rate Establishment - Pursuant to British Columbia Utilities Commission Order No. G-158-09, Terasen Gas Inc. interim delivery rates are made permanent effective July 1, 2009. The 2009 deferred deficiency resulting from Order No. G-158-09 will be recovered by Rate Rider 2 from January 1, 2010 to December 31, 2010. C

Notes:

1. **Sumas Daily Price** - means the "NW Sumas" Daily Midpoint Price as set out in Gas Daily's Daily Price Survey for Gas delivered to Northwest Pipeline Corporation at Sumas, converted to Canadian dollars using the noon exchange rate as quoted by the Bank of Canada one business day prior to Gas flow date, for each Day. Energy units are converted from MMBtu to Gigajoule by application of a conversion factor equal to 1.055056 Gigajoule per MMBtu.

2. Daily Demand is equal to 1.25 multiplied by the greater of:

   (a) the Customer's highest average daily consumption of any month during the winter period (November 1 to March 31), or

   (b) one half of the Customer's highest average daily consumption of any month during the summer period (April 1 to October 31).

   The calculation of Daily Demand will be based on the Customer's actual gas use during the preceding Contract Year.

3. The Sumas Daily Price for the sixth Business Day following the Day for which the Peaking Gas was authorized plus 20 percent.

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TRANSPORTATION AGREEMENT FOR
RATE SCHEDULES 22, 22A, 22B, 23, 25 AND 27

This Agreement is dated _____, 20___, between Terasen Gas Inc. ("Terasen Gas") and _____ (the "Shipper").

WHEREAS:

A. Terasen Gas owns and operates the Terasen Gas System; and

B. The Shipper has requested that Terasen Gas arrange for the transportation of Gas on a firm and/or interruptible basis through the Terasen Gas System to _____ located in or near _____ British Columbia in accordance with a transportation Rate Schedule as set out below and the terms set out herein.

NOW THEREFORE THIS AGREEMENT WITNESSES THAT in consideration of the terms, conditions and limitations contained herein, the parties agree as follows:

1. Specific Information

Applicable Rate Schedule:	☐ 22 ☐ 22A ☐ 22B ☐ 23 ☐ 25 ☐ 27
Type of Service:	☐ Firm ☐ Interruptible ☐ Firm and Interruptible
Firm DTQ / DTQ:	_____ Gigajoules per day
Shipper Agent and / or Group, if applicable:	_____
Commencement Date:	_____
Expiry Date:	_____ (only specify expiry date if term not automatically renewed as set out in the Automatic Renewal section of the applicable transportation Rate Schedule)
Delivery Point:	_____
Pressure at the Delivery Point:	_____ (only specify where applicable as set out in the Gas Pressure section of the applicable transportation Rate Schedule)
Service Address:	_____
Account Number:	_____

N

Interconnection Point:	The point at (_____ km-post _____) where the Transporter's pipeline system in British Columbia interconnection with the Terasen Gas System
Address of Shipper for receiving notices:	
_____ (name of Shipper)	Attention: _____
_____ (address of Shipper)	Telephone: _____
_____	Fax: _____
_____	Email: _____ N
_____	

The information set out above is hereby approved by the parties and each reference in either this agreement or the applicable transportation Rate Schedule to any such information is to the information set out above.

2. Rate Schedule 22 / 22A / 22B / 23 / 25 / 27

2.1 **Additional Terms** - All rates, terms and conditions set out in the applicable transportation Rate Schedule (22, 22A, 22B, 23, 25, or 27) and the General Terms and Conditions of Terasen Gas, as any of them may be amended by Terasen Gas and approved from time to time by the British Columbia Utilities Commission, are in addition to the terms and conditions contained in this Transportation Agreement and form part of this Transportation Agreement and bind Terasen Gas and the Shipper as if set out in this Transportation Agreement.

2.2 **Payment of Amounts** - Without limiting the generality of the foregoing, the Shipper will pay to Terasen Gas all of the amounts set out in the applicable transportation Rate Schedule for the services provided under such Rate Schedule and this Transportation Agreement.

2.3 **Conflict** - Where anything in either the applicable transportation Rate Schedule or the General Terms and Conditions of Terasen Gas conflicts with any of the terms and conditions set out in this Transportation Agreement, this Transportation Agreement governs. Where anything in the applicable transportation Rate Schedule conflicts with any of the rates, terms and conditions set out in the General Terms and Conditions of Terasen Gas, the Rate Schedule governs.

2.4 **Member of a Group** - Where the Shipper will be a member of a Group which has a Shipper Agent acting as agent for the members of the Group, Shipper must complete Appendix "A" attached to this Transportation Agreement and Shipper thereby agrees that the terms and conditions of Appendix "A" form part of this Transportation Agreement and bind the Shipper as if set out in this Transportation Agreement.

2.5 **Acknowledgement** - The Shipper acknowledges receiving and reading a copy of the applicable transportation Rate Schedule (22, 22A, 22B, 23, 25 or 27) and the General Terms and Conditions of Terasen Gas and agrees to comply with and be bound by all terms and conditions set out therein. Without limiting the generality of the foregoing, where the transportation service is interruptible, the Shipper acknowledges that it is able to accommodate such interruption or curtailment and releases Terasen Gas from any liability for the Shipper's inability to accommodate such interruption or curtailment of transportation service.

IN WITNESS WHEREOF the parties hereto have executed this Transportation Agreement.

TERASEN GAS INC.

_____
(here insert name of Shipper)

BY: _____
(Signature)

_____
(Title)

_____
(Name – Please Print)

DATE: _____

BY: _____
(Signature)

_____
(Title)

_____
(Name – Please Print)

DATE: _____

APPENDIX A

NOTICE OF APPOINTMENT OF SHIPPER AGENT

1. _____ (Shipper) hereby gives notice to Terasen Gas that
(Name of Shipper)
Shipper has appointed _____ (the Shipper Agent) to act as
(Name of Shipper Agent)
agent for Shipper in all matters relating to gas supply and to transportation service on the Terasen Gas System. Shipper also gives notice to Terasen Gas that Shipper wishes to be a member of a Group, and the Shipper will cause the Shipper Agent to enter into a Shipper Agent Agreement or other agreement with Terasen Gas that binds the Shipper Agent to pay the charges which the Shipper Agent elects to pay for and on behalf of the Shipper.

2. Shipper acknowledges and agrees that the Shipper Agent will provide aggregate nominations for the Group to Terasen Gas.

3. Shipper acknowledges and agrees that if the Group includes a member which is a Shipper under Rate Schedule 22, 22A, or 22B then section 10 (Group Nominations and Balancing) of Rate Schedule 22 will apply to the Group on an aggregate basis, and the Group and its members will be subject to the Demand Surcharge provisions of Rate Schedule 22.

4. Shipper acknowledges and agrees that when there are constraints or limitations of Gas supply Terasen Gas will notify the Shipper Agent and it will then be the responsibility of the Shipper Agent to notify Shipper of any curtailment or interruption arising from the constraint or limitation of Gas supply.

5. Shipper acknowledges and agrees that the Shipper Agent will provide Gas supply priority schedules to Terasen Gas which will advise Terasen Gas of the allocation of Gas supply amongst members of the Group during constraints or limitations of Gas supply.

6. Shipper acknowledges and agrees that the Shipper Agent will provide Terasen Gas with information which will be used by Terasen Gas to bill Shipper for Backstopping Gas, Balancing Gas, unauthorized overrun charges and Demand Surcharges. C

7. Shipper acknowledges that Terasen Gas will bill Shipper on the basis of information provided to Terasen Gas by the Shipper Agent. Shipper agrees that it is bound by the information supplied to Terasen Gas by the Shipper Agent and Shipper agrees that it will not dispute the information provided to Terasen Gas by the Shipper Agent. Shipper agrees that the Shipper Agent may elect to pay some or all of the charges for Gas identified in section 3.8 of the standard form Shipper Agent Agreement and Shipper acknowledges that if the Shipper Agent fails to provide information to Terasen Gas then notwithstanding any election that has been made by the Shipper Agent to pay some or all of the charges for Gas identified in section 3.8 of the standard form Shipper Agent Agreement, Terasen Gas will bill Shipper directly on the bases set out in section 3.9 of the standard form Shipper Agent Agreement of Terasen Gas. Shipper agrees to pay Terasen Gas as billed, and if Shipper disagrees with any of the billing information used by Terasen Gas the Shipper will deal with the Shipper Agent to resolve that disagreement. Disputes between the Shipper and the Shipper Agent shall not constitute a basis for non-payment by Shipper to Terasen Gas of the amounts billed.

8. Shipper shall provide Terasen Gas with 30 days notice, except with the prior approval from Terasen Gas, if Shipper wishes to leave the Group, to be effective on the beginning of the next calendar month following the expiry of the notice period.

9. Shipper acknowledges and agrees that Terasen Gas may disband the Group pursuant to section 10 of the standard form Shipper Agent Agreement.

10. Shipper will indemnify and hold harmless each of Terasen Gas, its employees, contractors and agents from and against any and all adverse claims, losses, suits, actions, judgments, demands, debts, accounts, damages, costs, penalties and expenses (including all legal fees and disbursements) arising from any act or omission of the Shipper Agent related to the agency created by the Shipper Agent Agreement.

11. Shipper acknowledges receiving a copy of the standard form Shipper Agent Agreement of Terasen Gas.

_____
(here insert name of Shipper)

BY: _____
(Signature)

_____
(Title)

_____
(Name - Please Print)

DATE: _____

SHIPPER AGENT AGREEMENT

This Agreement is dated _____, 20___, between Terasen Gas Inc. ("Terasen Gas") and _____ (the "Shipper Agent").

WHEREAS:

The Shipper Agent wishes to act as agent on behalf of all members of a Group in respect of transportation service on the Terasen Gas System; and

The Shippers who are members of the Group have entered into Transportation Agreements with Terasen Gas.

NOW THEREFORE THIS AGREEMENT WITNESSES THAT in consideration of the terms, conditions and limitations contained herein, the parties agree as follows:

1. Specific Information

Members of Group:
(if space is insufficient, continue list on an additional page)

Commencement Date of this agreement:

_____

Expiry Date of this agreement:

_____
(no expiry date need be specified)

Address of Shipper Agent for receiving notices:

_____
(name of Shipper Agent)

_____
(address of Shipper Agent)

_____

_____

Attention: _____

Telephone: _____

Fax: _____

Alternate Tel(s): _____

_____

The information set out above is hereby approved by the parties and each reference in either this agreement or the applicable Transportation Rate Schedules to any such information is to the information set out above.

2. Definitions

2.1 **Definitions in Rate Schedule 25** - Except where the context requires otherwise or except as otherwise expressly provided in this agreement, all words and phrases defined in Rate Schedule 25 or in the General Terms or Conditions of Terasen Gas have the meanings set out in the Rate Schedule 25 and in the General Terms and Conditions of Terasen Gas.

3. Shipper Agent Obligations

3.1 **Management of Balancing Gas** - The Shipper Agent is responsible for the management of all Balancing Gas for the Group and its members.

3.2 **Management of Backstopping Gas** - The Shipper Agent is responsible for the management of all Backstopping Gas supplied by Terasen Gas to the Group and its members.

3.3 **Management of Peaking Gas Service** - The Shipper Agent is responsible for the management of all Peaking Gas supplied by Terasen Gas to the Group and its members as well as the return of Peaking Gas Quantities and any Replacement Gas.

3.4 **Management of West to East SCP Transportation Service Imbalances** - The Shipper Agent is responsible for the management of Positive Imbalances and Negative Imbalances for West to East SCP Transportation Service under Rate Schedule 40 supplied by Terasen Gas to the Group and its members.

3.5 **Group Nominations and Balancing** - The Shipper Agent will provide Group nomination and balancing to Terasen Gas in accordance with the sections of the applicable transportation Rate Schedules except where a Shipper under Rate Schedules 22, 22A or 22B is a members of the Group, in which case section 9 (Gas Balancing) and section 10 (Group Nomination and Balancing) of Rate Schedule 22 will apply to the Group on an aggregate basis.

3.6 **Standard Gas Supply Priority Schedule (Standard Priority Schedule)** - Before the Commencement Date of this agreement and before the commencement of each Contract Year the Shipper Agent will provide to Terasen Gas a Standard Priority Schedule which will advise Terasen Gas of the priority between members of the Group if a constraint or limitation of Gas supply occurs. The Shipper Agent may provide to Terasen Gas a revised Standard Priority Schedule from time to time and will provide to Terasen Gas a revised Standard Priority Schedule if there is a change in membership of the Group.

3.7 **Gas Supply Constraints or Limitations** - Upon receipt of a notice from Terasen Gas of curtailment or interruptions pursuant to section 4.4 (Notice of Gas Supply Constraint or Limitation) Shipper Agent will determine the allocation of Gas supply between members of the Group and will notify the Shippers which are members of the Group of the curtailment or interruption. Within two hours of receipt of notice from Terasen Gas pursuant to section 4.4, or such longer period as Terasen Gas considers reasonable in the circumstances, the Shipper Agent will provide to Terasen Gas a schedule setting out the Gas supply allocation for the Group to apply during that curtailment or interruption. If the Shipper Agent fails to provide a schedule setting out the Gas supply allocation for the Group to apply during the curtailment or interruption then Terasen Gas will curtail Shippers on the basis set out in the Standard Priority Schedule.

3.8 **Monthly Billing Information** - At the end of each month, and within two business days of Terasen Gas providing to the Shipper Agent a schedule pursuant to section 4.2 (Monthly Provision of Data), the Shipper Agent will provide to Terasen Gas an allocation schedule setting out the daily Gas takes of each member of the Group and identifying for each member of the Group the Backstopping Gas and the Balancing Gas taken, any Unauthorized Overrun Gas taken, any Replacement Gas incurred, and any Positive Imbalance and Negative Imbalance incurred under Rate Schedule 40. The Shipper Agent will also notify Terasen Gas which charges the Shipper Agent elects to pay on behalf of the members of the Group and, if notice is not received, Terasen Gas will bill the Shippers directly. C C C

3.9 **Lack of Allocation Information** - If, at the end of a month, the Shipper Agent fails to provide to Terasen Gas the monthly allocation schedule pursuant to section 3.8 (Monthly Billing Information) then Terasen Gas will bill on the basis of the best available information. For Balancing Gas Terasen Gas will bill on a basis proportional to the actual takes of the Shippers during the month. For Backstopping Gas Terasen Gas will bill on a basis proportional to the actual Day-to-Day takes of the Shippers during the Days when Backstopping Gas was supplied. For Unauthorized Overrun Gas Terasen Gas will bill on the basis of the schedule(s) setting out the Gas supply allocation for the Group provided to Terasen Gas pursuant to section 3.8, or if the Shipper Agent fails to provide a schedule pursuant to section 3.8, then on the basis of the applicable Standard Priority Schedule provided by the Shipper Agent pursuant to section 3.6. For Replacement Gas Terasen Gas will bill on a basis proportional to actual Day-to-Day takes of the Non-Bypass Shippers during the Day for which the Peaking Gas Quantities were not returned. For Positive Imbalances and Negative Imbalances for West to East SCP Transportation Service Terasen Gas will bill on a basis proportional to the Peak Day Demand of the Non-Bypass Shippers. If further information becomes available, Terasen Gas will adjust the billings on the basis of the further information. C

3.10 **Lack of Gas Supply or Nomination** - If the Shipper Agent becomes aware that a Supplier has ceased, or will cease, to supply Gas to a member of the Group; or if the Shipper Agent provides to Terasen Gas a Requested Quantity for the Group which does not include a quantity for a member of the Group, due to a lack of Gas supply to the member of the Group or due to concerns about a possible lack of Gas supply to the member of the Group, then the Shipper Agent will immediately notify Terasen Gas. If the Shipper Agent fails to so notify Terasen Gas then the Shipper Agent is liable to Terasen Gas for the price of any Gas which Terasen Gas delivers to that member of the Group after the time when the Shipper Agent should have provided notice to Terasen Gas.

3.11 **Charges for Extra Services** - If Terasen Gas incurs extra expenses from a Shipper Agent failing to provide information, or failing to provide information in a timely manner, or failing to provide correct information, or otherwise failing to meet its obligations under this agreement, then Terasen Gas may charge the Shipper Agent for such extra expenses and the Shipper Agent agrees to pay Terasen Gas the reasonable extra expenses incurred as a result of such failure.

4. Terasen Gas Obligations

4.1 **Weekly Provision of Data** - Twice a week Terasen Gas will provide to the Shipper Agent a schedule setting out Terasen Gas' best available data on the daily takes of the Group.

4.2 **Monthly Provision of Data** - Within 10 working days after the end of each month Terasen Gas will provide to the Shipper Agent a schedule setting out the daily takes of each member of the Group.

4.3 **Capacity Constraints** - If Terasen Gas, acting reasonably, determines that it does not have capacity on the Terasen Gas System to accommodate interruptible transportation service to any member of the Group then Terasen Gas will directly notify that Shipper pursuant to Notice of Curtailment section of the applicable Rate Schedule and will deal directly with the Shipper if the Shipper takes Unauthorized Overrun Gas or Unauthorized Transportation Service.

4.4 **Notice of Gas Supply Constraint or Limitation** - If Gas supply constraints or limitations occur; either due to a constraint or limitation of supply from Terasen Gas of Backstopping Gas or Balancing Gas, or a constraint or limitation of supply from another Supplier; Terasen Gas will notify the Shipper Agent of any curtailment or interruption, will specify the quantity of Gas to which the Group in aggregate is curtailed and the time at which time such curtailment is to be made. Terasen Gas will make reasonable efforts to give the Shipper Agent as much notice as possible with respect to such curtailment or interruption, not to be less than 4 hours prior notice unless prevented by Force Majeure. C

5. Changes to Group

5.1 **Amendments to Group** - Schedule "A" sets out the Shippers who are the members of the Group represented by the Shipper Agent to this agreement. No additions or deletions may be made to the Group without the Shipper Agent providing notice to Terasen Gas of such addition and deletions through provision to Terasen Gas of an amended Schedule "A" showing such additions and deletions and the effective dates of such additions and deletions in accordance with section 5 of this agreement.

5.2 **Deletions From Group** - If the Shipper Agent wishes to cease acting as agent for a Shipper or a Shipper wishes to cease being a member of the Group, upon receipt by Terasen Gas of not less than, except with the prior approval from Terasen Gas, 30 days prior written notice from either the Shipper or Shipper Agent and provided that the Shipper Agent has provided to Terasen Gas an amended Schedule "A" showing the effective date of deletion of the Shipper from the Group, such Shipper shall be deleted from the Group effective on the beginning of the next calendar month following the expiry of the notice period.

5.3 **Additions To Group** - If the Shipper Agent wishes to add a Shipper to a Group and the Shipper wishes to be added to the Group, and the Shipper has entered into a Transportation Agreement and completed an Appendix "A" - Notice of Appointment of Shipper Agent, and both the Shipper and the Shipper Agent have given to Terasen Gas not less than, except with the prior approval from Terasen Gas, 30 days prior written notice of such addition and provided that the Shipper Agent has provided to Terasen Gas an amended Schedule "A" showing the effective date of the addition of the Shipper to the Group, such Shipper shall be added to the Group effective on the beginning of the next calendar month following the expiry of the notice period.

6. Statements and Payments

6.1 **Statements to be Provided** - If the Shipper Agent elects to pay some or all of the charges for Gas taken by the Shippers as described in section 3.8, Terasen Gas will, on or about the 15th day of each month, deliver to the Shipper Agent a statement for the preceding month showing the Gas quantities, and the applicable charges for which the Shipper Agent is responsible and the amount due. Any errors in any statement will be promptly reported to the other party as provided hereunder, and statements will be final and binding unless questioned within one year after the date of the statement.

6.2 **Payment and Interest** - Payment for the full amount of the statement, including federal, provincial and municipal taxes or fees applicable thereon, will be made to, or to the order of, Terasen Gas at its Surrey, British Columbia office (mailing address: P.O. Box 48230 Bentall Centre, Vancouver, B.C., V7X 1N8), or such other place in Canada as it will designate, on or before the 1st business day after the 10th calendar day following the billing date. If the Shipper Agent or Shipper fails or neglects to make any payment required under this Shipper Agent Agreement, or any portion thereof, to or to the order of Terasen Gas when due, interest on the outstanding amount will accrue, at the rate of interest declared by the chartered bank in Canada principally used by Terasen Gas, for loans in Canadian dollars to its most creditworthy commercial borrowers payable on demand and commonly referred to as its "prime rate", plus:

(a) 2% from the date when such payment was due for the first 30 days that such payment remains unpaid and 5% thereafter until the same is paid where the Shipper Agent or Shipper has not, during the immediately preceding 6 month period, failed to make any payment when due hereunder; or

(b) 5% from the date when such payment was due to and including the date the same is paid where the Shipper Agent or Shipper has, during the immediately preceding 6 month period, failed to make any payment when due hereunder.

7. Term

7.1 **Term** - The term of this agreement will commence on the commencement date specified in section 1 of this agreement and will expire either

(a) 30 days following notice from the Shipper Agent that the Shipper Agent wishes to cease to nominate for transportation service and balancing on behalf of the Group, or

(b) the expiry or termination of the Transportation Agreements of all of the members of the Group, or

(c) the expiry date specified in section 1 of this agreement, or

(d) 5 days following notice from Terasen Gas to the Shipper Agent, and to the Shippers which are members of the Group, under section 10.1 (Failure to Provide Information or Default).

whichever date is earlier.

7.2 **Survival of Covenants** - Upon the termination of this agreement,

(a) all claims, causes of action or other outstanding obligations remaining or being unfulfilled as at the date of termination, and,

(b) all of the provisions in this agreement relating to the obligation of either of the parties to provide information to the other in connection with this agreement,

will survive such termination.

8. Representations, Warranties and Covenants

8.1 **Representations and Warranties** - The Shipper Agent represents and warrants to and covenants with Terasen Gas as follows

(a) the members of the Group are listed in section 1 of this agreement,

(b) the Shipper Agent is the agent of each of the members of the Group and has the authority of each of the members of the Group for the purposes of any and all matters set out in the applicable transportation Rate Schedule and this agreement, and

(c) Terasen Gas may rely on any act or thing done, or document executed, by the Shipper Agent in connection with of any and all matters set out in the applicable transportation Rate Schedule and this agreement.

9. Limitation on Liability and Indemnity

9.1 **Limitation on Liability** - Neither Terasen Gas, its employees, contractors or agents will be liable in damages for or on account of any interruption or curtailment of transportation service or Gas supply.

9.2 **Indemnity** - The Shipper Agent will indemnify and hold harmless each of Terasen Gas, its employees, contractors and agents from and against any and all adverse claims, losses, suits, actions, judgments, demands, debts, accounts, damages, costs, penalties and expenses (including all legal fees and disbursements) arising from any act or omission of the Shipper Agent related to the agency created by the Shipper Agent Agreement.

10. Disbanding of the Group

10.1 **Failure to Provide Information** - If the Shipper Agent fails to provide Terasen Gas with the information or schedules which the Shipper Agent is required to provide to Terasen Gas pursuant to this agreement or is otherwise in breach of this agreement then, acting reasonably in the circumstances and on 5 days notice to the Shipper Agent and to the members of the Group, Terasen Gas may disband the Group and deal directly with the Shippers which were members of the Group.

10.2 **Default** - If any Shipper which is a member of the Group is in default under the Default or Bankruptcy section of the applicable Rate Schedule or becomes bankrupt or insolvent, then that Shipper will cease to be a member of the Group.

11. Arbitration

11.1 **Arbitration** - Any dispute between the parties arising from this agreement will be resolved by a single arbitrator pursuant to the *Commercial Arbitration Act* of British Columbia or successor legislation, save as expressly provided herein.

11.2 **Demand for Arbitration** - Either party may commence arbitration proceedings by sending to the other party a demand for arbitration setting out the nature of the dispute.

11.3 **Arbitrator** - The parties will have 10 days from receipt of the demand referred to in section 11.2 to agree upon the arbitrator, failing which either party may apply to the Supreme Court of British Columbia to select the arbitrator. The arbitrator must be sufficiently qualified by education and training to decide the particular questions in dispute. Unless otherwise agreed, the arbitrator may not be a past or present employee, officer or director of either of the parties or their respective successors of affiliates, any supplier of the Shipper or Terasen Gas, or any member of the Group.

11.4 **Commencement and Decision** - The arbitrator will proceed immediately to hear and determine the matter in dispute and will render a written decision, signed by the arbitrator, within 45 days after the appointment, subject to any reasonable delay due to unforeseen circumstances. Notwithstanding the foregoing, if the arbitrator fails to render a decision within 60 days after the appointment then either party may elect to have a new arbitrator appointed in like manner as if none had previously been appointed.

11.5 **Decision** - The decision of the arbitrator will be final and binding upon the parties and the parties will abide by the decision and perform the terms and conditions thereof.

12. Notice

12.1 **Notice** - Any notice, request, statement or bill that is required to be given or that may be given under this agreement will, unless otherwise specified, be in writing and will be considered as fully delivered when mailed, personally delivered or sent by fax to the other party.

13. Acknowledgement

13.1 **Acknowledgement** - The Shipper Agent acknowledges receiving and reading a copy of Rate Schedules 22, 22A, 22B, 23, 25 and 27 and the General Terms and Conditions of Terasen Gas and will comply with and be bound by all terms and conditions set out therein. C

IN WITNESS WHEREOF the parties hereto have executed this agreement.

TERASEN GAS INC.

_____
(here insert name of Shipper Agent)

BY: _____
(Signature)

_____
(Title)

_____
(Name – Please Print)

DATE: _____

BY: _____
(Signature)

_____
(Title)

_____
(Name – Please Print)

DATE: _____

Appendix D

Appendix D-1

WASTE MANAGEMENT (WM) CONTRACT

FILED CONFIDENTIALLY

Appendix D-2

WASTE MANAGEMENT (WM) CORPORATE FACT SHEET






2010 Fact Sheet

What we do. Today's customers—in homes, businesses and communities across North America—want to know that the waste they generate is handled in the smartest ways possible. They want waste solutions that are better for the environment and, at the same time, better for the bottom line. They want solutions that focus on reducing, recycling and recovering waste. And more. They want solutions that actually use waste in beneficial ways, such as generating renewable energy to power communities. Or converting landfill gas into clean-burning vehicle fuel. In short, they want waste solutions that make good sense from an economic and environmental perspective.

So do we. At Waste Management, we recognize that the best way to build a stronger company is to listen closely to what customers want. And deliver it. That's why we are investing our time, energy, technology and expertise in developing waste solutions for a changing world. It's good for business. It's good for the planet. It's good for us all.

We are the largest waste company in North America. As the leading provider of comprehensive waste and environmental services, Waste Management serves nearly 20 million municipal, commercial and industrial customers in the U.S., Canada and Puerto Rico.

We operate the largest network of landfills in our industry, with 273 active sites. In order to make disposal more practical for larger urban markets, where the distance to landfills or waste-to-energy facilities tends to increase, we manage 345 transfer stations that consolidate, compact and transport waste efficiently and economically.

We use waste to create energy. One of the ways this can be done is by recovering the naturally occurring gas in landfills for use in the generation of electricity. At the end of 2009, we operated 119 beneficial-use landfill-gas projects, producing about 540 megawatts of green energy—enough to power approximately 400,000 homes.

We also use waste to create energy through a highly efficient combustion process. Our waste-to-energy subsidiary, Wheelabrator Technologies Inc., operates 16 plants that produce enough clean, renewable energy to power 650,000 homes and replace nearly 7 million barrels of oil. In 2009 alone, Wheelabrator processed over 7 million tons of municipal solid waste into nearly 4 million megawatt-hours of electricity, while also recycling 142,500 tons of ferrous and non-ferrous metals.

We recycle waste. As North America's largest recycler, Waste Management managed more than 8.5 million tons of material that was recycled or reused in 2009. These materials include paper, cardboard, glass, plastic, metal and electronics. Through our operations, we provide cost-efficient, environmentally sound programs for municipalities, businesses and households across the U.S. and Canada. In 2009, we recycled enough waste to:

- Fill a train of 17,000 cars, or 2,068 miles long
- Fill the Empire State Building 12.5 times
- Fill more than 111,500 Boeing 737s

We are growing. In addition to traditional waste operations, Waste Management is expanding to increase the service offerings we provide for our customers.

- Healthcare Solutions -- a business that offers healthcare facilities quality disposal and recycling programs.
- LampTracker®-- North America's largest bulb recycler, handling the collection and processing of CFLs and fluorescent lights.
- Green Squad℠-- a program helping businesses identify savings through waste reduction and energy efficiency.
- Bagster®-- the company's newest innovation that allows customers to purchase a "Dumpster in a Bag."

SENIOR MANAGEMENT

David P. Steiner
Chief Executive Officer

Mr. Steiner joined the company in November 2000 as Vice President and Deputy General Counsel and was appointed Senior Vice President, General Counsel and Corporate Security in July 2001. In April 2003, he was elected CFO before being elected CEO in March 2004.

Robert Simpson
Chief Financial Officer

Prior to becoming CFO, Mr. Simpson was Senior Vice President and Chief Accounting Officer and Vice President, Tax for Waste Management. Before joining the company, he served as Vice President and General Manager of Tenneco Business Services, Tenneco's shared-service arm.

WASTE MANAGEMENT®






Sustainability Goals

Given the difficult economic environment of 2009, it would have been easy to set aside the sustainability goals that we announced in 2007. But we didn't. These goals are critical to our future role as a company that not only manages waste, but increasingly manages resources. More and more, our customers look to us for solutions to a wide range of environmental needs. We are responding with new and different ways to help businesses, governments and communities advance their own sustainability goals. Here's what we will achieve by the year 2020:

1. **Waste Management produces enough energy to power more than one million homes every year. By 2020, we expect to double that output, creating enough power for more than two million homes.** Waste is a renewable energy source. Landfill-gas-to-energy plants convert an otherwise powerful greenhouse gas, methane, into an energy source, while our Wheelabrator facilities provide electricity for the communities they serve.

2. **By 2020, we expect to nearly triple the amount of recyclable materials we manage, from 8 million to more than 20 million tons.** As North America's largest residential recycler, we are committed to reducing waste. Part of that is coming from expanding on proven technology, like the kind we see at our single-stream processing plants, to make recycling easier for consumers. Another part will be investing in technologies for the future, such as converting roof shingles into an asphalt product, which is now being piloted in Texas.

3. **Over the next 10 years, we plan to reduce emissions and increase efficiency of our fleet by 15 percent.** Today, we have more than 18,000 vehicles, which includes over 800 natural gas-powered trucks. We plan to add 200 more in 2010. Last year, we tested parallel hybrid trucks in Texas, and actually put one on the road in Pennsylvania for a yearlong test drive. We are committed to using technology to reduce the fuel we burn. When fully implemented, this is expected to save 9 million gallons of fuel per year.

4. **By 2020, we want Waste Management to achieve a fourfold increase in the number of our facilities certified by the Wildlife Habitat Council.** That means that 100 of our sites will be certified and we will have set aside more than 25,000 acres for conservation and wildlife habitat. Over the last few years, we have made tremendous progress. As of November 2009, we had certifications on a total of 73 facilities and had protected a total of 24,000 acres.

Our focus remains steadfastly on continuing to lead the industry in our core businesses of collection and disposal, while also charting the course for the future management of waste. We will extract greater value from the wide range of materials that make up the waste stream. Our customers are counting on us to develop and deliver waste solutions that are good for business and good for the planet. **And we are.**

CORPORATE INFORMATION

FINANCIAL HIGHLIGHTS:
All information as of 12/31/2009

For the year ended December 31, 2009:

Total Revenue	$11.79 billion
Net Income	$994 million
Diluted Earnings Per Share	$2.01
Total Assets	$21.154 billion

NYSE: WM

Fiscal Year Ends: December 31

Shares Outstanding: 491.2 million

52-Week Stock Price Range:
$22.10 – $34.18

OPERATING AREAS:
47 states, District of Columbia, Canada, and Puerto Rico

CUSTOMERS SERVED
Nearly 20 million

ACTIVE LANDFILLS: 273

COLLECTION OPERATIONS: 390

TRANSFER STATIONS: 345

COLLECTION VEHICLES: 18,829

LNG AND CNG-POWERED VEHICLES: 853

RECYCLING:

- **Recycling Facilities:** 98
- **Single Stream Facilities:** 30
- **Recycling Materials Managed:** 8.5 million tons

EMPLOYEES: Approximately 43,400

INVESTOR INFORMATION
Jim Alderson (713) 394-2281
jalderson@wm.com

MEDIA INFORMATION
Lynn Brown (713) 394-5093
lynnbrown@wm.com

CORPORATE OFFICE
Waste Management, Inc.
1001 Fannin, Suite 4000
Houston, Texas 77002
(713) 512-6200
www.wm.com

Appendix E

FINANCIAL SCHEDULES

FILED CONFIDENTIALLY

Appendix F
LETTERS OF SUPPORT

British Columbia Ferry Services Inc.
500-1321 Blanshard Street
Victoria, BC V8W 0B7
www.bcferries.com

September 30, 2010

Mr. David Bennett
Director, Resource Planning & Market Development
Terasen Gas Inc.
16705 Fraser Highway
Surrey, BC V4N 0E8

Dear Mr. Bennett:

I am in receipt of your letter dated August 19, 2010, wherein you describe the natural gas initiative you are undertaking.

BC Ferries supports your filing in that it is very likely to assist in the reduction of greenhouse gas emissions in our area.

Sincerely,

Mark F. Collins,
Vice President, Engineering

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

c/o Terasen Gas Inc.
16705 Fraser Highway
Surrey, BC V4N 0E8
Attention: David Bennett

September 8, 2010

Dear Mr. Bennett:

Letter of support for Terasen Gas Natural Gas Vehicles initiative

As we discussed, BC Transit is committed to exploring and assessing new and cleaner technologies in the public transportation sector. This includes natural gas buses.

I understand that, as part of Terasen Gas Inc's natural gas vehicle program, you will be filing an application to the British Columbia Utilities Commission. The proposed application will include existing refueling and transportation services as well as offer compression, fuel storage and dispensing services to customers so as to grow the market for natural gas vehicles in B.C.

BC Transit is the provincial crown agency charged with coordinating the delivery of public transportation throughout British Columbia outside Metro Vancouver. BC Transit owns and operates a fleet of over 1000 buses. We are a leader in adopting new and cleaner technologies in the public transportation sector. During 2009 we demonstrated North America's first hybrid electric diesel double deck bus in Victoria and introduced the world's largest hydrogen bus fleet in operational service in the Resort Municipality of Whistler.

In line with the goals of the Provincial Transit Plan to advance sustainable public transportation in British Columbia, and in support of the province's greenhouse gas (GHG) reduction targets, BC Transit wishes to see a broader range of lower carbon fuels effectively serving the heavy duty vehicle market. Accordingly, we support Terasen's application.

BC Transit operates under a shared service delivery model with local government partners. On May 31, 2010 we were advised by the Regional District of Nanaimo of its interest in participating in a pilot study that would explore the benefits of using natural gas vehicles for transit.

BC Transit looks forward to your successful application and further exploring the use of natural gas.

Sincerely,

Manuel Achadinha
President & CEO
BC Transit

CITY OF SURREY

the future lives here.

September 8, 2010

File: 1280-01

Terasen Gas Inc.
16705 Fraser Highway
Surrey, BC V4N 0E8

Attention: David Bennett, Director, Resource Planning & Marketing Decvelopment

Dear Mr. Bennett:

Re: Terasen Gas Natural Gas Vehicle Initiatives

On behalf of the City of Surrey, I am pleased to provide this letter of support towards Terasen's upcoming filing with the British Columbia Utilities Commission for the purpose of increasing the market for natural gas vehicles ("NGVs") in B.C.

The City of Surrey's mandate is to establish ourselves as a world-class hub for green energy innovation. As a means of achieving our objective, in 2008 the City adopted the *Surrey Sustainability Charter,* an overarching policy document that guides the City's approach to social, cultural, environmental, and economic sustainability in the future. The use of natural gas as an alternative energy source for specific fleet applications certainly falls within the realm of our Sustainability Charter objectives with respect to reducing the City's carbon foot print and seeking alternatives to gasoline and diesel use.

Based on our research, we have learned that NGV technology development has improved significantly over the past decade whereas NGV fleet usage is a standard in a number of developed nations overseas and is increasing in application within the United States due to its dependability, low maintenance requirements, lower carbon impact and significantly lower fuel costs than gasoline or diesel.

From a sustainability perspective, we believe that the local growth of the CNG and/or LNG markets are imperative both from an environmental *and* economic perspective. As you may be aware, the City is presently working in partnership with Metro Vancouver to establish an Organics Biogas Processing Facility in Surrey with the intention of producing vehicle grade natural gas from curbside food and yard waste in either a CNG or LNG form. Our early assessments determined that, based on our estimated residential organic waste stream alone, we could generate enough natural gas to fuel a fleet that is 2.5 times larger than our current waste collection fleet, at a cost that is substantially lower than the current diesel litre equivalent.

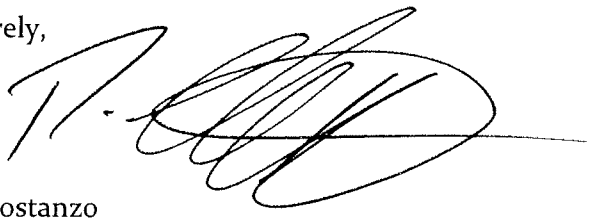
Accordingly, in early 2011 the City intends to seek competitive proposals from the waste industry for the provision of residential collection service via the use of either CNG or LNG waste collection trucks. We estimate that Surrey would require a CNG or LNG waste collection fleet comprised of approximately 50 to 60 trucks to provide daily residential collection services throughout the City.

Notwithstanding the above, through our early assessments we've acknowledge that the production of either a CNG or LNG gas at the Surrey-based facility would likely be intermittent due to fluctuations in feedstock (i.e. organic waste delivered to the site). As a result, we are working with Terasen to potentially establish a working partnership whereas the natural gas required by the City to fuel the waste fleet would be provided directly by Terasen to ensure a continuous supply, while, in turn, the natural gas produced by the processing facility could potentially be placed back into Terasen's natural gas grid.

We believe that Surrey's proposed introduction of the first full municipal NGV waste collection fleet in Canada will positively influence other municipalities, as well as private fleet owners, to follow suit. To this end, Terasen's stated objective to offer compression, fuel storage, and dispensing services to the transportation sector, in addition to their existing refueling and transportation services, is timely and imperative in ensuring the viability and growth of the environmentally and economically sustainable NGV market.

In closing, I offer my availability to verify any of the City's stated objectives as reflected above should it be required by the British Columbia Utilities Commission. Otherwise, we wish Terasen a successful outcome with respect to your application. Please don't hesitate to contact me should you have any questions.

Sincerely,



Rob Costanzo
Deputy Manager, Operations

September 10, 2010

Mr. David Bennett
Director, Resource Planning & Market Development
Terasen Gas Inc.
16705 Fraser Highway
Surrey, BC V4N 0E8

Dear Mr. Bennett,

The Canadian Natural Gas Vehicle Alliance (CNGVA) is the national, not-for-profit trade association that advocates for increased use of natural gas vehicles and refuelling infrastructure for the benefit of Canada's economy and environment. Terasen Gas is a CNGVA member and is one of four major Canadian natural gas distribution companies that are actively leading the development of the natural gas vehicle market in Canada.

Natural gas for transportation is an emerging opportunity with the potential to reduce greenhouse gas emissions from one of Canada's fastest growing sources of carbon, heavy diesel vehicles, using a cost effective and abundant Canadian fuel. The use of natural gas provides an estimated 23-27% CO_2e reduction in vehicle emissions according to Natural Resources Canada's *GHGenius* lifecycle emissions model.

The CNGVA and a broad range of other stakeholders including Terasen Gas are currently engaged with Natural Resources Canada to develop a *Deployment Roadmap* that focuses on how to increase the use of natural gas in the transportation sector. The Province of British Columbia is one of three provinces that are directly involved in the *Deployment Roadmap* work which is being carried out under the direction of Natural Resources Canada Deputy Minister Cassie Doyle.

The CNGVA strongly supports Terasen Gas' application to the British Columbia Utilities Commission to offer compression, fuel storage, and dispensing services that will support the transportation market in British Columbia. The proposed services will facilitate market development and help to de-risk the transition to a cost effective, lower carbon fuel for British Columbia-based fleets by:

1. Simplifying the fuel service offering through an "all-in-one" integrated service that makes it easier for customers to choose natural gas for their fleets in either compressed (CNG) or liquefied (LNG) form.

Canadian Natural Gas Vehicle Alliance
350 Sparks Street, Suite 809
Ottawa, Ontario K1R 7S8
Phone (613) 564-0181 - Fax (866) 690-8468
Website: www.cngva.org - E-mail: info@cngva.org

2. Facilitating fleet decision making and analysis as dispensed natural gas can be compared directly with the cost of conventional crude-oil based fuels.

3. Creating a high degree of confidence in the marketplace by allowing Terasen Gas as a trusted supplier of energy solutions to extend their service offerings.

4. Ensuring that the extensive technical and safe fuels handling expertise of Terasen Gas is leveraged to the maximum extent in developing the market for natural gas as a lower carbon transportation fuel in British Columbia.

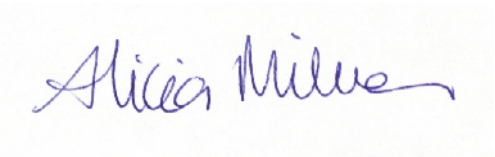
The approach proposed by Terasen Gas is being considered as a potential model for other natural gas distribution companies across Canada. Within the transportation area, it is well recognized that installing natural gas compression, storage, and fuel dispensing infrastructure is complex and technically demanding. Many fleets would prefer to rely on the expertise of an established, reliable partner such as Terasen Gas to provide these types of all-in services for CNG and LNG.

The Terasen Gas application is particularly timely not only because of the *Natural Gas for Transportation Deployment Roadmap*, but also because an increasing number of manufacturers are offering factory-direct natural gas trucks and buses. More than 15 North American manufacturers now offer these products. Manufacturers are responding to fleet demands for lower emission vehicles. The availability of proven commercial natural gas engine technologies from British Columbia-based Westport Innovations and Cummins Westport means that natural gas is well-positioned as a lower emission option for fleets operating medium- and heavy-duty vehicles along highway corridors and in return-to-base operations.

It is our understanding that Terasen Gas is actively working with a number of fleets who are interested in replacing their older, high emission diesel trucks with CNG or LNG trucks. Access to infrastructure services through Terasen Gas represents an important value add option for these fleet customers. The CNGVA urges the British Columbia Utiliies Commission to consider the net carbon benefits that can be accrued within the province by supporting the Terasen application.

Please don't hesitate to contact the CNGVA if any additional information is needed. Thank you.

Sincerely,



Alicia Milner
President

CITY OF VANCOUVER

OFFICE OF THE CITY MANAGER
Sadhu Johnston, Deputy City Manager

October 26, 2010

Teresan Gas Inc.
16705 Fraser Highway
Surrey, BC V4N 0E8

Attention: David Bennett

RE: Terasen Filing with BCUC - Natural Gas Vehicles

The City of Vancouver is supportive of the application by Terasen Gas Inc. to the British Columbia Utilities Commission to introduce a service to allow for the refuelling of Natural Gas Vehicles. We are very interested to explore using this service once it is made available, and look forward to taking advantage of both the economic and environmental benefits for fleet application that are well suited for both compressed natural gas (CNG) and Liquid Natural Gas (LNG) vehicles.

This initiative supports our local efforts to become carbon neutral in our City operations by 2012 and also local 'Green' Vancouver businesses like Westport who are world leaders in natural gas vehicle solutions.

Please expedite the review process to support our near term projects.

Yours truly,

Sadhu A. Johnston, LEED AP
Deputy City Manager
453 West 12th Avenue, Vancouver, BC V5Y 1V4
tel: 604.873.7627
fax: 604.873.7641
sadhu.johnston@vancouver.ca

ls/sj

H:\Sadhu Johnston 2010 Correspondence\Letter to Terasen Gas October 26,2010.doc

ELECTORAL AREAS

A- GOLDEN-COLUMBIA
B- REVELSTOKE-COLUMBIA
C- SOUTH SHUSWAP
D- FALKLAND-SALMON VALLEY
E- SICAMOUS-MALAKWA
F- NORTH SHUSWAP-SEYMOUR ARM

MUNICIPALITIES

GOLDEN
REVELSTOKE
SALMON ARM
SICAMOUS

781 MARINE PARK DRIVE NE
BOX 978 SALMON ARM BC
VIE 4P1
TEL: (250) 832-8194
FAX: (250) 832-3375
TOLL FREE: 1-888-248-2773
WEBSITE: www.csrd.bc.ca

September 14, 2010

FILE: 5360 36 01

David Bennett
Terasen Gas Inc.
16705 Fraser Highway
SURREY BC V4N 0E8

RE: Letter of Support for the Consideration of Natural Gas Vehicle Initiatives

The Columbia Shuswap Regional District (CSRD) understands that Terasen Gas is interested in growing the market for natural gas vehicles ("NGVs") in British Columbia by offering compression, fuel storage and dispensing services in addition to its existing refuelling and transportation services. The CSRD is offering this letter in support of the Terasen Gas's application to the Utilities Commission.

The CSRD and Terasen have recently finalized an agreement for the upgrading of raw landfill gas to pipeline quality biomethane and look forward to the implementation of this technology at the Salmon Arm landfill early in 2011. The CSRD has also partnered with the City of Salmon Arm to provide curbside recycling and waste collection to over 8,000 dwellings through contract with a local service provider. The contract supports the purchase of new NGVs within 24 months provided a local fuelling station is available. This initiative will allow waste collection vehicles to run on upgraded landfill gas.

The CSRD is encouraged by the initiatives that Terasen Gas has undertaken in order to be recognized as an industry leader in the delivery of low carbon energy and improvements in air quality. The CSRD looks forward to discussions with Terasen on the establishment of a fuelling station for waste collection and other return-to-base trucks operating within the area.

Yours very truly,

Darcy Mooney, Deputy Manager
Environment and Engineering Services

dm

August 23, 2010

Terasen Gas Inc.
16705 Fraser Highway
Surrey, BC V4N 0E8

Attention: David Bennett

Re: Terasen Gas upcoming filing with the British Columbia Utilities Commission to grow the market for natural gas vehicles ("NGVs") in B.C. by offering compression, fuel storage and dispensing services in addition to our existing refueling and transportation services.

This letter is to express support for Terasen Gas' upcoming application to the British Columbia Utilities Commission for the above noted natural gas vehicle initiative.

To develop the market for return-to-base fleet vehicles in B.C with a focus on heavy duty vehicles such as, waste haulers, transit buses, Class 8 trucks, dump trucks, and other vocational trucks, fuel storage and dispensing availability as proposed by Terasen will encourage customers to operate their fleets on clean burning BC natural gas.

The transportation sector is the largest source of GHG emissions in the Province accounting for approximately 39% of B.C.'s emissions. Diesel and gasoline are the primary fuels used in the transportation sector and as such account for a significant portion of the GHG emissions as well as contribute to a reduction in air-quality in Metro Vancouver and throughout British Columbia. NGVs can also play a role in helping the province reduce GHG emissions in the transportation sector.

Cummins Westport Inc. manufactures and sells the world's widest range of low-emissions alternative fuel engines for commercial transportation applications such as trucks and buses. CWI is a joint venture of Cummins Inc. and Westport Innovations headquarter in Vancouver, BC. The Cummins Westport ISL G natural gas engine was the first heavy duty engine in North America certified to the stringent 2010 EPA emission standards.

Regards,

Jeff W Campbell
Director, Product Marketing,
Regional Sales Canada
Cummins Westport Inc.

oil-free natural gas

September 9, 2010

B.C. Utilities Commission
Box 250, 900 Howe Street, Sixth Floor
Vancouver, BC V6Z 2N3

Re: Terasen Gas initiative to grow the NGV market in British Columbia

Dear Sir/Madam,

As a long-time manufacturer of compressed natural gas (CNG) fuelling systems and an award-winning BC exporter and employer, we wish to formally support Terasen Gas Inc's efforts to promote the development of the natural gas vehicle (NGV) market in British Columbia.

BC was a leader in the early development of CNG systems and NGV technologies in the 1980s and '90s, and continues to be a key hub in the global supply of equipment and technology for the growing global NGV market. Significant BC companies like Westport Innovations, Cummins Westport, Eco Fuel Systems and IMW have worked together for many years to develop and increase the awareness and adoption of NGVs, in order to promote the environmental and economic benefits inherent in this alternative fuel.

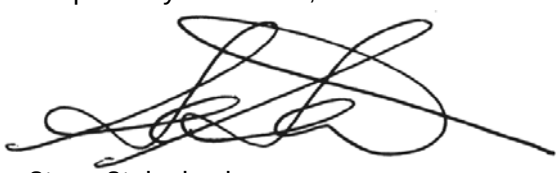
Terasen Gas has shown considerable leadership in the promotion of natural gas transportation applications, working alongside BC industry players to support the nascent NGV market and advocate to both the provincial and federal governments for their encouragement and financial support. While the long-term economic benefits of NGV adoption have been clearly demonstrated, it is generally agreed there needs to be initial support for early adopters to mitigate the incremental capital cost of NGVs.

Terasen Gas is in a unique position of being a strong and trusted supplier of energy to a wide customer base, as well as experts in the distribution, management and economics of our downstream natural gas resource. Their desire to create a sustainable new economic model for transportation fleet fuelling, based on a significantly cleaner and more abundant resource, should be encouraged and supported at the regulatory level to help grow a valuable industry as well as to help bring the benefits of CNG fuelling within reach of the many potential users that have shown interest in NGV adoption.

Terasen's NGV business will be good for BC industry, BC job creation and the BC environment; in other words, good for all British Columbians. Few market development initiatives can boast objectives that are a true win for not only the participants but also for the bystanders.

IMW Industries supports Terasen Gas Inc's efforts to develop the NGV market in BC and asks that the BC Utilities Commission consider the many benefits to potential NGV adopters, rate payers and BC residents in general. Thank you for your consideration in this matter.

Respectfully submitted,



Steve Steinebach
Sales and Business Development Manager
IMW Industries
T: 604-393-3387 C: 604-316-7214 E: ssteinebach@imw.ca

September 24th, 2010

Terasen Gas Inc.
16705 Fraser Highway
Surrey, B.C.
V4N 0E8

Dear Mr. David Bennett:

I would like to provide my endorsement of your proposal to the Utilities Commission. The Langley School District has a significant number of return-to-base commercial school buses which are primarily diesel fueled.

The Provincial Government has mandated that we, along with all other provincially run organizations, become carbon neutral. Although School Buses are not yet included in this mandate, it is understood that they are a significant contributor to Green House Gas emissions. The Provincial Government has also recognized this and has provided 3 hybrid buses to various Districts within BC for testing in the real world. To the best of my knowledge, none are currently in operation.

We are aware that Natural Gas transportation is available in North America and feel that until new technology is capable of meeting the everyday rigors of a transportation schedule, Natural Gas would be both environmentally and economically better choice over diesel run buses.

I am happy to lend my support to your request.
Regards

D. Sansome

D. Sansome, CTech
Director Energy & Environment

Technocarb
Alternative Fuel Power

Technocarb Equipment (2004) Ltd.
#4 – 30435 Progressive Way
Abbotsford, BC, Canada V2T 6W3
Tel: (604) 854-6264
Fax: (604) 854-6802
Web: www.technocarb.com

August 24, 2010

Letter of support for Terasen Gas Inc.

To whom it may concern at the British Columbia Utilities Commission

Technocarb Equipment (2004) Ltd. is very pleased to write this letter of support asking the British Columbia Utilities Commission to consider Terasen Gas Inc. initiative to grow the market for natural gas vehicles ("NGVs") in B.C. by offering compression, fuel storage and dispensing services in addition to our existing refueling and transportation services. This initiative will help new customers meet GHG reduction goals while at the same time increasing the utilization of the existing system which benefits all gas customers.

Terasen Gas Inc. is actively pursuing a number of initiatives to help reduce dependence on foreign oil and reduce air pollution in British Columbia by offering the infrastructure that will facilitate the use alternative fuel conversion systems for both gasoline and diesel powered vehicles and equipment.
B C Governments numerous proposals to "clean up the environment" will be achieved much faster with support of companies like Terasen and Technocarb who offer AFFORDABLE and proven EFFECTIVE solutions to many of these issues NOW, and not possible solutions 10 years in the future.

We feel Terasen Gas is able to offer concrete solutions today that will benefit the environment and the consumer.

The Terasen Gas initiative will advance British Columbia's and Canada's competitiveness and accelerate the area's economic recovery in a long term and sustainable fashion.

The CNG conversion technology Technocarb Equipment provides for both gasoline and diesel engines will be greatly enhanced by this Terasen initiative, and I am pleased to offer this letter of support for them.

Sincerely

Peter C Gordon
Vice President
Technocarb Equipment (2004) Ltd.

PHONE: 604-464-0271
FAX: 604-941-8254
TOLL FREE: 1-800-211-6644
WEB: www.metromotors.com

2505 Lougheed Highway Port Coquitlam, B.C. V3B 1B2

DIRECT LINES
SERVICE: 604-464-7377
PARTS: 604-464-6631
BODY SHOP: 604-464-2233

Sept 22/2010

Dear British Columbia Utilities Commisson

We strongly support Terasen's Gas's Application for Compressed Natural Gas Rate 6C.

Metro Motors Ltd is a Ford Dealer Our potential investment in NGV in the next five years is $1 Millions. We employ 200 Employee's. Our annual sales are more then 100 Million.

We, along with our BC NGV industry partners are proud to stand together to encourage the provincial government's action on this important issue.

We would be pleased to work together with government to develop an incentive program that will support BC's NGV industry, and deliver a number of economic and environmental benefits to the province.

Regards,

Ken Zutz
Commercial Sales Mgr.
Metro Motors Ltd.

District of Lake Country
Councillor Noreen Guenther
10150 Bottom Wood Lake Road
Lake Country, British Columbia V4V 2M1
www.lakecountry.bc.ca

August 23, 2010

Attention: David Bennett
Terasen Gas Inc.
16705 Fraser Highway
Surrey, B.C. V4N 0E8

Dear Mr. Bennett:

Re: Terasen Gas filing with the British Columbia Utilities Commission
Letter of Support

I wish to provide Terasen with a letter of my support for Terasen's upcoming BCUC application, to improve natural gas fuel storage and dispensing services in British Columbia.

As you may be aware, local governments throughout British Columbia have signed the Climate Action Charter to become carbon neutral by 2012.

During the process of measuring and reporting our Greenhouse Gases, I noted that as an organization we have little opportunity to reduce GHG emissions with our fleet vehicles.

In researching the options, I discovered that Compressed Natural Gas (CNG) technology has improved dramatically over the past few years. The fueling infrastructure to serve these vehicles, however, has not expanded, thus limiting the potential benefits to the environment and economy of British Columbia.

Natural Gas is in abundant supply in the province. Currently Natural Gas has a 30-40% net fuel cost reduction versus diesel fuel. Natural Gas Vehicles emit 23-27% less GHG emissions than diesel vehicles and burns cleaner than conventional fuels.

Supporting Terasen's efforts to develop a market for return-to-base fleet vehicles such as waste haulers, dump trucks and class 8 trucks makes sense both from an environmental and economic perspective. If this filing is approved, our province would likely see an increase in employment, fewer vehicle emissions, and lower fuel transportation costs.

If this application is approved and the initial phases of Terasen's business plan are completed, I would encourage Terasen to look at options to provide compressed natural gas service to smaller communities and organizations.

I realize that this may require some "out of the box" thinking on Terasen's part but I do encourage it. I don't feel that a local government's population and capacity should limit its abilities to reduce greenhouse gases like their large counterparts.

Opportunities like partnering with business, neighboring communities and sales to private citizens may improve the business case for establishing more fueling stations. Without innovative thinking, it may be difficult to grow this market. Small municipalities do not have the financial means to purchase the ten large fleet vehicles all at once to make a fueling station feasible. I would encourage Terasen and the Commission to be open to this idea in the future.

Terasen is the appropriate choice to lead this market change because they have a solid history of safe and reliable fuel service to the citizens of British Columbia. I urge the commission members to support this application.

I would be happy to discuss this matter with Terasen Gas or any member of the BCUC if requested. I can be contacted at guenther@lakecountry.bc.ca or by telephone, 250-808-4094 or 250-766-5650.

Kindest Regards,

Noreen Guenther
Councillor, District of Lake Country
First Vice-President, Southern Interior Local Government Assoc.

REGIONAL DISTRICT OF NANAIMO

FILE NO.: 1130-01

September 23, 2010

David Bennett
Vice President, General Counsel & Corporate Secretary
Terasen Gas Inc.
16705 Fraser Highway
Surrey, BC V4N 0E8

Dear David Bennett:

Re: Support for Natural Gas Vehicle Initiatives

The Regional District of Nanaimo is pleased to provide this letter of support for the above-noted project. The Board of the Regional District of Nanaimo, at its regular meeting held May 25, 2010, endorsed the following motion:

> *That staff be directed to send a letter to BC Transit regarding the Board's interest in participating in a pilot study that would explore the benefits of using natural gas vehicles for Transit.*

The motion was as a result of a presentation by Terasen Gas on the benefits of using natural gas as a fuel in transit buses.

The upcoming filing with the British Columbia Utilities Commission, by Terasen Gas, to develop the market for natural gas vehicles in B.C. will make the RDN's goal of using natural gas for our transit vehicles more realistic and should be supported.

This initiative will also help the RDN meet GHG reduction goals while at the same time provide more fuel options that should help contain future costs.

We wish you success with your application and look forward to the results of your work.

Yours truly,

Joe Stanhope
Board Chair
Regional District of Nanaimo

6300 Hammond Bay Rd.
Nanaimo, B.C.
V9T 6N2

Ph: (250)390-4111
Toll Free: 1-877-607-4111
Fax: (250)390-4163

RDN Website: www.rdn.bc.ca

"Together We Learn"

SCHOOL DISTRICT NO. 23
(Central Okanagan)
OPERATIONS
685 Dease Road
Kelowna, B.C. V1X 4A4
Tel.: (250) 491-4000 Fax.: (250) 870-5094

September 22, 2010

British Columbia Utilities Commission

c/o Terasen Gas Inc.

16705Fraser Highway

Surrey, BC, V4N 0E8

To whom this may concern:

This letter is intended to be in support of a submission by Terasen Gas to the BC Utilities Commission to "grow the market in BC for natural gas vehicles" in British Columbia.

Some reasons that I would write this letter on behalf of School District No. 23 in support this application are as follows.

School buses operating in the Central Okanagan school district travelled over 1.3 million kilometres in the 2009/2010 school year with approximately 321,000 liters of diesel fuel burned in the process. The greenhouse gas produced from this travel could be reduced by approximately 453 tonnes GHG if our 70 vehicle school bus fleet was operating on CNG fuel. This figure is conservative as it is based on 2010 diesel emission standards, and was calculated utilizing GHGenius life cycle assessment report of transportation fuels.

Direct quote from the Province of BC Diesel School Bus Retrofit Program: "The BC Air Action Plan calls for making heavy duty vehicles cleaner. "Clean up school buses" falls under Action # 7 in the plan.

http://www.env.gov.bc.ca/epd/air/schoolbus/index.htm

The exhaust from diesel powered vehicles contains a variety of hazardous gases and particulate contaminants, including carbon monoxide, nitrogen dioxide, volatile organic compounds, sulphur dioxide, and fine particulate matter. Diesel exhaust is classified as a known or probable human carcinogen by various governmental organizations such as the World health Organization, and the United States Environmental health Agency.

Depending on the age and type and age of the vehicle, bus emissions make their way into the bus cabin. The pollution comes from two sources: the tailpipe and the engine crankcase. Children are especially vulnerable to air pollution because they have growing and developing bodies and breathe in more air per pound of body weight than adults. *Even though children may spend only a small portion of their day on buses, the high exposures they receive inside the bus can add considerably to their daily and annual exposures."* End quote

In addition to the distance travelled, school buses must idle when loading and unloading students in order to keep stop arm lights, heaters, fans operating - windows clear of condensation for student safety. School buses in the Central Okanagan stop almost 5000 times each day in the course of transporting students, resulting in a minimum of 120 hours of engine idling, or about 226 liters diesel burned daily as part of the total fuel volume consumed.

Direct quote from Natural Resources Canada: Emission Impacts Resulting From Vehicle Idling - What about diesel vehicles?

http://oee.nrcan.gc.ca/transportation/idling/impact.cfm?attr=8

Diesel-powered vehicles are inherently more fuel-efficient than their gasoline-powered counterparts due to the higher energy (carbon) content of diesel fuel and combustion process efficiencies. Therefore a diesel vehicle will tend to travel further on a litre of fuel than a gasoline equivalent but will also produce more CO_2 emissions (2.7 kg CO_2/L^4 – 15 percent more than gasoline).

On the other hand, heavy-duty diesel vehicles, such as school buses, delivery trucks and transit buses typically have larger diesel-powered engines and more limited emission controls as compared to light duty vehicles. These vehicles may idle for longer periods in communities and present their own specific CAC concerns and impacts on local air quality. End quote

School District No. 23 has been operating one CNG 84 passenger bus since March 2009 and another CNG special education lift equipped school bus since May 2010 both are active on regular school bus routes.

Our experience with these CG buses has been extremely positive – our cost per kilometre has been at one half that of comparable diesel buses operated throughout the period, with excellent power, reliability, and an obvious environmental advantage.

School District No. 23 is currently attempting to purchase an additional 11 CNG fueled - 84 passenger buses with results from an RFP to be known in early September 2010.

We are also currently experimenting with 2 - 5 ton dump trucks which are hybrid diesel/CNG assist. Early experience with these vehicles is very positive.

The capital cost of a CNG fuelled school bus is currently about $35,000 higher than a comparable diesel fuelled bus. The operational lifetime of an 84 passenger school bus is at 15 years. The payback on the CNG up-charge is at less than five years – with ten years of operational efficiency and a significant environmental advantage for the taxpayer remaining.

As was stated in a letter to The Honourable Barry Penner, BC Minister of Environment, in February of 2009 (attached for reference); approximately 1200 district owned school buses are operating throughout the province of BC. Therefore SD No. 23 is in support of the Terasen Gas application to "grow the market" for natural gas vehicles because this could significantly reduce CO2 and other emissions from school bus operations as well as reducing operational costs in other parts of British Columbia.

In summary,

- School District No. 23 has had a positive experience with CNG fuel school buses with operational costs to date at approximately ½ that of a comparable diesel fuelled school bus.
- School buses consume a significant volume of fuel through travel and idling each day
- Diesel fuel can have a negative impact on student passengers, which is recognized by the Province of BC – CNG fuel for school buses significantly improves this situation.
- Approximately 1200 school district owned school buses operate in the province of BC, so CNG could have a tremendous positive impact environmentally and economically throughout the province.

Sincerely,

Grant Davidson

Operations Manager

School District No. 23

(Central Okanagan)

attachment

SCHOOL DISTRICT NO. 23
(Central Okanagan)
OPERATIONS
685 Dease Road
Kelowna, B.C. V1X 4A4
Tel.: (250) 491-4000 Fax.: (250) 870-5094

"Together We Learn"

February 27, 2009

Ministry of Environment
Attention: Honourable Barry Penner
PO Box 9047
STN PROV GOVT
Victoria, BC V8W 9E2

Dear Mr. Penner

Last November I had the great pleasure to be present at the Sustainable Operations Summit in Vancouver, where I listened to you speak on a variety of initiatives including the importance of compressed natural gas fuel (CNG) for vehicles operating in the Province of British Columbia, and understood from this that Premier Campbell also wished this to occur.

I am contacting you now in my capacity as a citizen of the province of British Columbia; a manager within a provincial school district that is committed to take steps to reduce greenhouse gas emissions under the Climate Action Charter; and as the president of the School Plant Officials of BC (SPOA).

My interest as a manager within my school district relates to the fact that I wish to do my utmost to advocate for what initiatives my research and instinct tells me is the best direction for my employer, and ultimately my conscience as a citizen of the beautiful province of British Columbia - to take positive steps to reduce greenhouse gas emissions.

My interest as president of SPOA relates to the potential positive impact that 60 school districts throughout the province of BC could have on the environment of the province in operating approximately 1200 school buses.

You would not be aware that School District No. 23 (SD23) had previously issued a RFP for a new school bus that would "favour alternative fuel systems, and that would reduce life cycle costs and also reduce the carbon footprint of the bus over the anticipated lifetime". I am personally proud of the fact that the outcome of this particular RFP is that SD23 will be taking delivery of the first CNG fuel school bus in BC very early in March.

The reason that I am contacting you now is to inquire why this type of economic and environmental advantage would not be standardized across the various provincial ministries. For example, the Ministry of Education has come out in support of "clean-technology diesel engines" for approved school bus purchases.

I now understand that the Ministry of Education had been provided with incorrect information to base this position on, which is very unfortunate. The School Bus Technologies Option Report by Chris Lythgo of Seajay Consulting had indicated that CNG fuel produced 6.1% worse greenhouse gas emissions than diesel – when in fact CNG is actually 19% better than diesel – a 25% miscalculation.

One hundred and fourty school districts across the United States are utilizing natural gas vehicles, and approximately 2,800 CNG school buses are operating in the state of California alone – this is definitely proven technology.

My understanding of the situation is this:
- Natural gas is produced in the Province of British Columbia with significant reserves for the foreseeable future.
- "Made in British Columbia" technology exists on a "world stage" basis through technology companies such as IMW Inc. for natural gas fuel compressor equipment that is not currently being utilized in our province. Your reference to the Bejing Olympics and CNG improvements to the local environment was particularly notable.
- The current information available to school districts throughout the province of British Columbia is limiting foresight to diesel engine technology for new school bus purchases.
- School districts in the province operate approximately 1200 school buses - that through utilizing available CNG technology to transport these young people to and from each school day we have the ability to reduce 25% green house gas emissions currently emitted.

While the up-charge for such technology is about $30,000 to $40,000 per bus, I believe that the payback for this additional cost will be realized at approximately four years - with the additional bonus of lower overall greenhouse gas emissions for the fifteen year life of the bus.

In closing, and with respect, I request that the Ministry of the Environment review the use of CNG technology in publicly funded vehicles, and revisit the calculations contained within the Seajay Consulting report towards correcting any misunderstandings on the benefits of using CNG fuel in school bus fleets.

Sincerely,

Grant Davidson

Grant Davidson CTech, CEFM
Operations Manager
School District No. 23 (Central Okanagan)
President, School Plant Officials Association of BC

Copy: Honourable Shirley Bond, Minister of Education
Larry Paul, Secretary Treasurer, School District No. 23
Alan Cumber, Director of Operations, School District No. 23

MaX-Quip Inc.

Alternative Fuels Division

August 23, 2010

British Columbia Utilities Commission
c/o
Terasen Gas
16705 Fraser Highway
Surrey, BC
V4N-0E8

Attention: David Bennett

To whom it may concern:

Re: Letter of Support for Terasen Gas' Natural Gas Vehicles Initiative.

On behalf of MaX-Quip Inc. I would like to state our support for Terasen Gas' Initiative to grow the market for natural gas vehicles "NGVs" in British Columbia, by offering compression, fuel storage and dispensing services in addition to their existing refuelling and transportation services.

As long time NGV supporters and industry leaders, we applaud Terasen efforts in bringing "Green Solutions" to the transportation sector, mirroring their ongoing endeavours to reduce greenhouse gases in our beautiful province! ~ We should all, no doubt; strive to keep BC as the best place on earth!

Being aware that Terasen will soon be filing an application with the BCUC for approval for an NGV business model, we would like to reiterate our full support for this initiative not only as Terasen customers, but more importantly as environmentally concerned citizens.

Thanking you in advance for your valuable consideration to this, and any other environmentally oriented causes, I remain yours truly (and hopeful),

Victor Fe
Manager

 # 2, 9452 - 193A Street, Surrey, British Columbia, V4N 4N4 / Phone: 604-513-0202, Fax: 604-513-0212

WASTE MANAGEMENT
2330 United Boulevard
Coquitlam, BC V3K 6S1

August 31, 2010

British Columbia Utilities Commission
c/o Terasen Gas Inc.
16705 Fraser Highway
Surrey, BC V4N 0E8

Waste Management supports the Application by Terasen Gas Inc. to the British Columbia Utilities Commission to introduce a compression service to allow for the refueling of Natural Gas Vehicles. Our Company believes that the introduction of these service offerings and CNG infrastructure align well with our business objectives.

Waste Management provides commercial, residential and industrial waste collection service throughout the Greater Vancouver geographic area including the communities of Surrey, Richmond, Langley, Maple Ridge, Pitt Meadows, New Westminster, North Vancouver, West Vancouver, Burnaby, Coquitlam, Abbotsford and downtown Vancouver. The fleet make-up for our Coquitlam site includes over 85 heavy duty collection vehicles as well 20 light duty support vehicles.

In keeping with our sustainability goals, Waste Management is interested in introducing CNG vehicles into our British Columbia fleet. In fact, Waste Management has the largest industrial compressed natural gas fleet in the world with over 1,000 natural gas vehicles throughout our North American operation. The introduction of these vehicles in British Columbia will reduce our dependence on more expensive diesel fuel, providing cost savings and a cleaner operating environment. Terasen's service offerings as outlined in their application will make this possible. In addition, Terasen's expertise as a compression service provider makes them a desirable business partner in this market.

Your assistance in ensuring the review process in completed as expeditiously as possible is greatly appreciated.

Sincerely,

Rob Sherman
Area Director Collection Operations
British Columbia

BELKORP
Environmental Services Inc.

September 14, 2010

British Columbia Utilities Commission
Box 250, 900 Howe Street
Sixth Floor
Vancouver, B.C.
V6Z 2N3

To whom it may concern:

Belkorp Environmental Services Inc. and our subsidiary Wastech Services Ltd would like to express strong support for Terasen Gas Inc.'s application to the British Columbia Utilities Commission to grow the market for natural gas vehicles in British Columbia.

Wastech Services provides comprehensive waste management services to Metro Vancouver including the long haul of refuse to our Cache Creek Landfill. We are currently exploring the conversion of the landfill gas at Cache Creek to liquefied natural gas (LNG). We would produce about 14 million litres a year of which we would use 8 million to operate our trucking fleet.

Wastech believes Terasen's application will help advance the movement of heavy duty trucking from diesel to liquefied natural gas. This will help grow the natural gas infrastructure and allow biogenic based projects like ours to be more feasible vis-à-vis broader system support and redundancies.

Wastech is extremely excited about this opportunity and strongly recommends that the BCUC support Terasen in this venture.

Sincerely,

Russ Black, MBA, P.Eng.
General Manager
Wastech Services Ltd

cc: Mark Grist, Terasen Gas

Suite 900
1508 West Broadway
Vancouver, B.C. Canada
V6J 1W8

Telephone: *604* 688-8533
Facsimile: *604* 688-3569

Appendix G

DRAFT ORDERS AND UNDERTAKING OF CONFIDENTIALITY

Terasen Gas Inc. ("TGI")

Application for Approval of a Service Agreement for Compressed Natural Gas ("CNG") Service and for Approval of General Terms and Conditions ("GTCs") for CNG and Liquified Natural Gas ("LNG") Service (the "Application")

UNDERTAKING OF CONFIDENTIALITY

I, _____, am a participant acting for _____
(full name) (name of organization)

in the matter of the review of the above noted Application filed by TGI.

In this capacity, I request access to the confidential information in the Application and any related confidential materials filed in the proceeding including information requests, responses and submissions related to confidential information in the Application. I understand that the execution of this undertaking is a condition of an Order of the Commission, and the Commission may enforce this Undertaking pursuant to the provisions of the *Administrative Tribunals Act.*

I hereby undertake

a) to use the information disclosed under the conditions of the Undertaking exclusively for duties performed in respect of this proceeding;
b) not to divulge information disclosed under the conditions of this Undertaking except to a person granted access to such information or to staff of the Commission;
c) not to reproduce, in any manner, information disclosed under the conditions of this Undertaking except for purposes of the proceeding;
d) to keep confidential and to protect the information disclosed under the conditions of this Undertaking, including by means of filing information requests that refer to confidential materials separately, in confidence, such that they are available only to those individuals who have executed this Undertaking;
e) to return to TGI, under the direction of the Commission, all documents and materials containing information disclosed under the conditions of this Undertaking, including notes and memoranda based on such information, or to destroy such documents and materials and to file with the Commission a certification of destruction at the end of the proceeding or within a reasonable time after the end of my participation in the proceeding; and
f) to report promptly to the Commission any violation of this Undertaking.

Dated at _____ this _____day of _____, 2010.

Signature: _____

Name: _____
(please print)

Address: _____

Telephone: _____

Fax: _____

E-mail: _____

SIXTH FLOOR, 900 HOWE STREET, BOX 250
VANCOUVER, B.C. V6Z 2N3 CANADA
web site: http://www.bcuc.com

BRITISH COLUMBIA UTILITIES COMMISSION

ORDER NUMBER G-XX-XX

TELEPHONE: (604) 660-4700
BC TOLL FREE: 1-800-663-1385
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DRAFT ORDER

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

and

An Application by Terasen Gas Inc.
for Approval of a Service Agreement for Compressed Natural Gas Service
and
for Approval of General Terms and Conditions for
Compressed Natural Gas and Liquified Natural Gas Service

BEFORE:

[month] [day], 2011

O R D E R

WHEREAS:

A. On December 1, 2010, Terasen Gas Inc. (Terasen Gas) applied (the Application) to the British Columbia Utilities Commission (the Commission), pursuant to sections 59 to 61 of the *Utilities Commission Act* (the Act), for approval of a Service Agreement with Waste Management Canada Corporation for compression and dispensing service for Compressed Natural Gas (the WM Agreement); and

B. Terasen Gas also applied pursuant to section 44.2 of the Act for acceptance of the expenditures required to provide compression and dispensing service for Compressed Natural Gas under the WM Agreement; and

C. Terasen Gas also applied pursuant to sections 59 to 61 of the Act for approval of General Terms and Conditions (GT&Cs) for compression and dispensing service for Compressed Natural Gas Service (CNG Service) and transportation, delivery, fuel storage and dispensing service for Liquified Natural Gas (LNG Service) that would be used for future service agreements with customers; and

D. Terasen Gas sought an expedited process with respect to approval of the WM Agreement, requesting a permanent rate on or before January 14, 2011, or alternatively an interim rate approval pursuant to section 89 of the Act on or before that date; and

E. By Order No. XXX, the Commission established an expedited written hearing process in respect of the WM Agreement, and established a written hearing process on a non-expedited timetable for the remainder of the Application; and

F. The Commission has considered the Application and the other evidence filed in the written public hearing process thus far and has determined that the WM Agreement is just and reasonable and can be approved on a permanent basis on the expedited timeline sought by Terasen Gas;

NOW THEREFORE, pursuant to sections 59-61 of the Act, the Commission orders as follows:

1. The WM Agreement is approved as filed.

2. The Commission will issue any reasons for decision in respect of the approval of the WM Agreement in conjunction with its final Order in this proceeding.

DATED at the City of Vancouver, in the Province of British Columbia, day of , 2011.

BY ORDER

Original signed by:

XXX XXX
Commissioner

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BRITISH COLUMBIA UTILITIES COMMISSION

ORDER NUMBER G-XX- XX

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DRAFT ORDER

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

and

An Application by Terasen Gas Inc.
for Approval of a Service Agreement for Compressed Natural Gas Service
and
for Approval of General Terms and Conditions for
Compressed Natural Gas and Liquified Natural Gas Service

BEFORE:

(Date)

WHEREAS:

A. On December 1, 2010, Terasen Gas Inc. ("Terasen Gas") applied (the "Application") to the British Columbia Utilities Commission (the "Commission"), pursuant to sections 59 to 61 of the *Utilities Commission Act* (the "Act"), for approval of a Service Agreement with Waste Management Canada Corporation for compression and dispensing service for Compressed Natural Gas (the "WM Agreement"); and

B. Terasen Gas also applied pursuant to section 44.2 of the Act for acceptance of the expenditures required to provide compression and dispensing service for Compressed Natural Gas under the WM Agreement; and

C. Terasen Gas also applied pursuant to sections 59 to 61 of the Act for approval of General Terms and Conditions ("GT&Cs") for compression and dispensing service for Compressed Natural Gas Service ("CNG Service") and transportation, delivery, fuel storage and dispensing service for Liquified Natural Gas ("LNG Service") that would be used for future service agreements with customers; and

D. Terasen Gas sought an expedited process with respect to approval of the WM Agreement, requesting a permanent rate on or before January 14, 2011, or alternatively an interim rate approval pursuant to section 89 of the Act on or before that date; and

E. By Order No. G-XX-10, the Commission established an expedited written hearing process in respect of the WM Agreement, and established a written hearing process on a non-expedited timetable for the remainder of the Application; and

F. By Order No. G-XX-10, the Commission approved the WM Agreement on a permanent basis with reasons for decision to accompany the Commission's final Order in this Application; and

G. The Commission has considered the Application, the other evidence filed, and the submissions filed in the written public hearing and has determined that the proposed rates are just and reasonable, and that the expenditures to provide service under the WM Agreement are in the public interest.

NOW THEREFORE sections 44.2, 59-61 of the Act, the Commission orders as follows:

1. The proposed GT&Cs for CNG Service and LNG Service are approved.

2. The Commission will accept, subject to timely filing, the GT&Cs in accordance with the terms of this Order.

3. The expenditures required for Terasen Gas to provide compression and dispensing service under the WM Agreement, as outlined in Section 4 of the Application, are accepted.

4. TGI shall comply with directions of the Commission Panel in the Decision that accompanies this Order as Appendix A.

DATED at the City of Vancouver, In the Province of British Columbia, this day of <MONTH>, 2010.

BY ORDER

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BRITISH COLUMBIA UTILITIES COMMISSION

ORDER NUMBER G-XX-11

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DRAFT

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

and

An Application by Terasen Gas Inc.
for Approval of a Service Agreement for Compressed Natural Gas Service
and
for Approval of General Terms and Conditions for
Compressed Natural Gas and Liquified Natural Gas Service

BEFORE:

[month] [day], 2011

O R D E R

WHEREAS:

A. On December 1, 2010, Terasen Gas Inc. (Terasen Gas) applied (the Application) to the British Columbia Utilities Commission (the Commission), pursuant to sections 59 to 61 of the *Utilities Commission Act* (the Act), for approval of a Service Agreement with Waste Management Canada Corporation for compression and dispensing service for Compressed Natural Gas (the WM Agreement); and

B. Terasen Gas also applied pursuant to section 44.2 of the Act, for acceptance of the expenditures required to provide compression and dispensing service for Compressed Natural Gas under the WM Agreement; and

C. Terasen Gas also applied pursuant to sections 59 to 61 of the Act for approval of General Terms and Conditions (GT&Cs) for compression and dispensing service for Compressed Natural Gas Service (CNG Service) and transportation, delivery, fuel storage and dispensing service for Liquified Natural Gas (LNG Service) that would be used for future service agreements with customers; and

D. Terasen Gas sought an expedited process with respect to approval of the WM Agreement, requesting a permanent rate with respect to provision of CNG service to Waste Management on or before January 14, 2011, or alternatively an interim rate approval pursuant to section 89 of the Act on or before that date; and

E. The Commission has considered the Application and believes that it is in the public interest to establish an expedited written public hearing process to consider the WM Agreement, and to establish a written public hearing process on a non-expedited timetable for the remainder of the Application;

NOW THEREFORE, the Commission orders as follows:

1. The Application will be examined by a Written Public Hearing process, in accordance with the Regulatory Timetable for the hearing that is established and attached as Appendix A to this Order.

2. The Application, together with any supporting materials, will be made available for inspection at the Terasen Gas Office, 16705 Fraser Highway, Surrey, BC, V4N 0E8 and at the British Columbia Utilities Commission, Sixth Floor, 900 Howe Street, Vancouver, BC, V6Z 2N3 and will also be available on the Terasen Gas and Commission websites at www.terasengas.com and www.bcuc.com.

3. Intervenors or Interested Parties should register with the Commission, in writing or electronic submission, by Monday, December 6, 2010. Intervenors should specifically state the nature of their interest in the Application, and identify generally the nature of the issues that they intend to pursue during the proceeding and the nature and extent of their anticipated involvement in the review process.

DATED at the City of Vancouver, in the Province of British Columbia, day of XXX , 2011.

BY ORDER

Original signed by:

XXX XXX
Commissioner

Attachments

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APPENDIX A
REGULATORY TIMETABLE

ACTION	DATE (2010 - 2011)
Intervenor and Interested Party Registration	Monday, December 6, 2010
Commission Information Request No. 1 on Terms and Conditions of WM Agreement only	Friday, December 10, 2010
Terasen Gas Response to Commission Information Request No. 1 on Terms and Conditions of WM Agreement Only	Wednesday, December 22, 2010
Commission Information Request No. 2 (On Remainder of the Application)	Wednesday, January 12, 2011
Anticipated Commission Decision on Terms and Conditions of WM Agreement Only	On or before January 14, 2011
Intervenor Information Request No. 1 (On Remainder of the Application)	Tuesday, January 18, 2011
Terasen Gas Response to Commission Information Request No. 2 and Intervenor Information Request No. 1	Tuesday, February 1, 2011
TGI Written Final Submission	Friday, February 11, 2011
Intervenor Written Final Submission	Tuesday, February 18, 2011
TGI Written Reply Submission	Tuesday, February 25, 2011