Pacific Northern Gas Ltd.
750 – 888 Dunsmuir Street
Vancouver, BC V6C 3K4
Tel: (604) 691-5680
Fax: (604) 697-6210
Email: votto@png.ca

Verlon G. Otto
Director, Regulatory Affairs

Via E-File

May 12, 2020

B.C. Utilities Commission
Suite 410, 900 Howe Street
Vancouver, BC V6Z 2N3

File No.: 4.2.7(2020)

Attention: Patrick Wruck
Commission Secretary and Manager, Regulatory Services

Dear Mr. Wruck:

Re: Pacific Northern Gas Ltd. and Pacific Northern Gas (N.E.) Ltd.
Application for Acceptance of 2019 Consolidated Resource Plan and for Acceptance of Energy Conservation and Innovation (ECI) Portfolio Funding for 2020 and 2022
Response to BCUC Information Request No. 2

Accompanying, please find the response of Pacific Northern Gas Ltd. and Pacific Northern Gas (N.E.) Ltd. (collectively, PNG) to British Columbia Utilities Commission (BCUC) Information Request No. 2 in the referenced proceeding.

Please direct any questions regarding this letter to my attention.

Yours truly,

Verlon G. Otto

Encl.

Pacific Northern Gas Ltd. and Pacific Northern Gas (N.E.) Ltd.
Application for Acceptance of 2019 Consolidated Resource Plan and for Acceptance of Energy Conservation and Innovation (ECI) Portfolio Funding for 2020 to 2022

INFORMATION REQUEST NO. 2
TO PACIFIC NORTHERN GAS LTD. AND PACIFIC NORTHERN GAS (N.E.) LTD.

Table of Contents **Page no.**

A. INTRODUCTION

56.0 Reference: INTRODUCTION
Exhibit B-3, BCUC IR 1.1
Resource Planning Objectives

In response to British Columbia Utilities Commission (BCUC) Information Request (IR) 1.1, Pacific Northern Gas Ltd. and Pacific Northern Gas (N.E.) Ltd. (collectively, PNG) state:

> …PNG submits that an increase of 5 percent to Objective 6 [Alignment with the BC Government's Energy Objectives] is sufficient to increase its priority relative to the other objectives, while not diminishing, significantly, PNG's focus on the provision of least cost service (Objective 2).

56.1 Please explain how the adjustments to Objectives 2 and 6 informed the decisions PNG made when preparing the 2019 Consolidated Resource Plan and ECI Portfolio funding application.

Response:

PNG has identified a number of new opportunities for itself such as: (i) providing natural gas, or CNG/LNG service to northern communities currently relying on propane for their primary space and water heating requirements; (ii) providing CNG/LNG as an alternative to diesel in the transportation sector; (iii) developing or procuring renewable natural gas (RNG) supply; and (iv) identifying and supporting the development of pre-commercial technologies that reduce greenhouse gas (GHG) emissions along the natural gas supply chain. All of these have been identified in Section 4 of the 2019 Consolidated Resource Plan. In addition, PNG has submitted a 2020 – 2022 DSM plan and expenditure schedule that increases funding to PNG Energy Conservation and Innovation (ECI) program by approximately 300 percent. The details of PNG's request can be found in Section 8 and Appendix F of the 2019 Consolidated Resource Plan.

All the initiatives identified in the foregoing are expected to reduce GHG emissions resulting from natural gas consumption by PNG's customers, albeit with some impact to costs borne by all of PNG's customers. As stated in PNG's response to BCUC IR 1.1, PNG does not believe that the costs of complying with the CleanBC 15 percent renewable target, with the Methane Regulations currently in effect, or any future regulations enacted to support the B.C. Governments "Energy Objectives" should be borne by its shareholder, or that PNG should attempt to reduce its cost of maintaining and operating its pipeline systems. Consequently, PNG determined that, while the Province's increased focus on reducing GHG emissions warranted an increased focus by PNG (in terms of an increased weighting on its Resource Planning Objective), PNG was not prepared to reduce its focus on providing safe and reliable service (Objective 1), nor on the environmental and socio-economic impacts of its operations (Objective 5). In addition, maintaining predictable rates for its customers (Objective 4), and ensuring the economic viability of PNG through a fair and adequate return for its shareholder (Objective 3) are in the best interests of its customers, and in the prosperity of the northern communities that PNG serves and where PNG's employees also live and work.

56.2 Could a reduction in priority of PNG's least cost objective directly or indirectly impact Objective 3 – Economic viability of the utility? Please discuss.

Response:

PNG considers a change in weighting of the "Least cost service" objective to 25 percent, from 30 percent originally, as a small adjustment to its resource planning objectives. The priority of the "Least cost service" objective with respect to the weightings of the other objectives remains the same after the adjustment as before, and therefore PNG does not consider this change in weighting to influence PNG's consideration of Objective 3 – "Economic viability of the utility" when evaluating projects against the set of resource planning objectives.

56.2.1 If yes, please explain why PNG did not adjust this objective accordingly.

Response:

Not applicable. Please see the response to Question 56.1.

56.2.2 If not, please explain why not.

Response:

Please see the response to Question 56.1. PNG has made a modest adjustment to two of the weightings of its Resource Planning Objectives to reflect an increased focus on initiatives that reduce GHG emissions and that are aligned with the B.C. Government's "Energy Objectives".

B. ENERGY MARKET OUTLOOK

57.0 Reference: ENERGY MARKET OUTLOOK
Exhibit B-1, Table 10, p.45
Pacific Northern Gas Pipeline Looping Project

In Table 10, page 45 of Exhibit B-1, PNG provides the following comment on its proposed Pacific Natural Gas Pipeline Looping project:

> Project consists of construction of a new 525 km, 24-inch natural gas pipeline between Summit Lake and Kitimat BC primarily along current pipeline right-of-ways. Project also includes a new compressor station as well as upgrades to existing stations. Pre-application phase under the BC Environmental Assessment Act has commenced.

57.1 Does PNG intend to file an Environmental Assessment Certificate (EAC) application for the PNG Pipeline Looping project?

Response:

PNG is currently monitoring opportunities for the PLP Project and only progressing project development at a gradual pace. PNG provides the following update with respect to project feasibility and permitting.

Project Feasibility

With a resurgence in LNG markets in the past 2 years, PNG made modest progress by actively advancing discussions with domestic and international customers interested in a pipeline expansion. PNG had some discussions on commercial arrangements with project proponents to serve several major industrial developments. At this time, these discussions have not resulted in any commercial contracts. For that reason, PNG's primary focus has been on the RECAP project to add additional industrial customers to its existing network, with some smaller scale expansions expected to benefit existing PNG customers in the near term.

With the PLP Project, PNG has undertaken some analysis on commercial and engineering approaches that could deliver the natural gas throughput more economically. The Company is aware of the sensitivity to pipelines in the region amongst Indigenous Nations and stakeholders. Thus, PNG has worked closely with Indigenous Nations over the past several years, seeking to provide meaningful community benefits from the project if it were to advance.

PNG believes that given its investment to date and its strategic position in the region, the PLP Project has the potential to provide significant benefit to the regions of northwestern British Columbia. These benefits could be realized from the expansion of PNG's unique position of offering natural gas transportation service to multiple industrial projects along British Columbia's west coast.

Permitting

The PLP Project entered the Environmental Assessment Certification (EAC) process in 2013. The majority of environmental, socio-economic and engineering studies to support the EAC Application for the project were completed by the end of 2015. However, due to deteriorating market conditions for natural gas at that time, work on the project and the EAC Application was paused. This work was backstopped and paid for by a major industrial customer.

In 2018, markets began to show signs of recovery and there was increased interest in demand on PNG's system. In 2019, PNG made some progress in the following areas:

- Conducted the Multi-Lateral Process (MLP) to confirm market demand for pipeline capacity; this work ultimately resulted in insufficient commercial interest for a major pipeline expansion, but enough commercial interest to actively proceed with the RECAP process;
- Engaged with Indigenous Nations and stakeholders along the pipeline corridor; and
- Undertook smaller field studies on caribou, fish and fish habitat to update baseline studies conducted in 2014 and 2015. PNG also advanced winter tracking studies. In all studies, PNG worked with local Indigenous Nations.

More recently, after discussions with the BC Environmental Assessment Office (BC EAO), PNG informed the BC EAO that it would like to transition to the new environmental assessment process under the BC *Environmental Impact Assessment Act 2018*. The Company recognizes that this will require additional field work, application process and engagement with Indigenous Nations. PNG would only proceed with such work if backstop arrangements were in place with major customers.

In recent weeks, communication networks and business processes have been severely affected by the COVID-19 pandemic. As a utility, PNG's primary focus has been, and will continue to be, on maintaining essential services to residential and commercial customers. Furthermore, Indigenous communities are also justifiably focusing their resources and attention on the health of their people and communities.

In summary, the PLP Project continues to be strategic opportunity for PNG, but it is moving at a very slow pace of development in order to retain the optionality for future growth. With respect to growth on its pipeline system, PNG's primary focus is RECAP at this time.

57.1.1 If so, please identify any deadlines for PNG to submit the EAC application.

Response:

Please see the response to Question 57.1.

58.0 Reference: POLICY ENVIRONMENT AND OUTLOOK
Exhibit B-3, BCUC IRs 3.1, 4.1
Federal and Provincial Policies and Initiatives

In response to BCUC IR 4.1, PNG states:

> PNG has explained how specific regulations, standards and policies have been reflected in the development of load forecasts in Section 7 of the Application. Please see also the response to Question 3.1. Those policies not directly reflected in the forecasting model influence PNG's strategy regarding new opportunities and innovation (Application, Section 4), the development of its GHG reduction plans (Application, Section 5) and the development of its Energy Conservation and Innovation (ECI) programs (Application, Section 8).

58.1 For each service area, please provide a table in a similar format to the table below, summarizing at a high level the impact of the specific regulations, standards and policies that have been reflected in the development of PNG's load forecast.

Federal/Provincial Policy or Initiative	Overall Impact on Load (%)		
	Reference Scenario	Competitive Gas Scenario	Competitive Electricity Scenario

Response:

Please see the tables that follow that present the impact of four CleanBC policy items on the total forecast demand in 2030: (i) the impact of building energy retrofits on the residential and commercial sectors; (ii) increased efficiency of new construction in the residential and commercial sectors; (iii) an increased penetration of electricity for space heating and domestic hot water heating in the in the residential and commercial sectors; and (iv) electrification of industry, particularly of the upstream oil and gas industry.

Differences across PNG's four systems are due to the relative demand of the residential and commercial sectors, compared to the total demand on each system. The electrification of the upstream oil and gas industry is expected to impact demand on the Fort St. John system only, and this policy accounts for the anticipated larger reductions under the Reference and Competitive Electric scenarios, as compared to the other three systems.

At this point, where federal and provincial regulations enabling the Clean Fuel Standard and CleanBC policies have not yet been created, the forecast impacts presented in these tables reflect PNG's judgement of how these policies could influence demand in 2030.

PNG-West			
Federal/Provincial Policy or Initiative	Overall Impact on Load (%)		
	Reference Scenario	Competitive Gas Scenario	Competitive Electricity Scenario
CleanBC	-2.9%	-0.5%	-3.8%

Fort St. John			
Federal/Provincial Policy or Initiative	Overall Impact on Load (%)		
	Reference Scenario	Competitive Gas Scenario	Competitive Electricity Scenario
CleanBC	-15.6%	-1.9%	-22.9%

Dawson Creek			
Federal/Provincial Policy or Initiative	Overall Impact on Load (%)		
	Reference Scenario	Competitive Gas Scenario	Competitive Electricity Scenario
CleanBC	-0.8%	-0.8%	-4.9%

Tumbler Ridge			
Federal/Provincial Policy or Initiative	Overall Impact on Load (%)		
	Reference Scenario	Competitive Gas Scenario	Competitive Electricity Scenario
CleanBC	-1.2%	-0.2%	-1.6%

C. NEW OPPORTUNITIES AND INNOVATION

59.0 Reference: NEW OPPORTUNITIES AND INNOVATION
Exhibit B-3, BCUC IRs 13.3, 39.1
PNG's RNG Strategy

In response to BCUC IR 13.3, PNG states:

> The supply forecast presented in Table 18 of the Application is a representative trend in supply required to meet the 2019 [*sic*] CleanBC target of including a blend of 15 percent RNG in deliveries to residential and industrial customers by 2030. Table 18 illustrates the quantity of the supply that is required to be brought online over the next 10 years. The table does not reflect any specific sources of supply at this time.

In response to BCUC IR 39.1, PNG states:

> …PNG does not have a dedicated planning department and the responsibility for developing all aspects of a resource plan, including the associated DSM Plan, falls under the responsibility of the Manager, Energy Management and DSM. This individual also has other responsibilities which include executing PNG's initiatives such as the ECI program, developing its RNG strategy and managing the implementation of its geographic information system (GIS) as well as addressing gas supply matters

59.1 Please discuss the personnel resources PNG plans to allocate to its Renewable Natural Gas (RNG) strategy and how this resourcing may impact PNG's ability to acquire RNG to meet CleanBC objectives.

Response:

PNG plans to allocate the effort of developing its RNG strategy to the Manager, Energy Solutions (a change in title from "Manager, Energy Management and DSM", while maintaining similar responsibilities), as well as to the Director Business Development and Stakeholder Relations. The Regulatory Affairs, Operations and Engineering groups will provide appropriate support when required.

PNG continues to actively work to identify RNG supply, both within and outside of PNG's service areas. Consistent with the priorities set by its Resource Planning Objectives, PNG continues vigilance on containing costs that would otherwise be borne by its customers. At this stage in PNG's RNG strategy, PNG cannot justify the cost of an additional full-time staff person allocated solely to executing PNG's RNG strategy.

D. DEMAND FORECASTING

60.0 Reference: RESIDENTIAL AND SMALL COMMERCIAL DEMAND
Exhibit B-1; Section 1, p. 20; Section 6, Exhibit B-3, BCUC IR 25.1, 25.2
Residential End Use Survey

On page 20 of the Application, PNG includes the following table providing the current status of BCUC requests and directives:

G-155-15	The Panel directs PNG(N.E.) to include a summary of the assessments performed and the results of such assessments PNG relied on to inform the timing of the REUS and small commercial customer survey in the next resource plan filing. (p. 8)	PNG decided not to refresh the results of the entire 2013 REUS. PNG has no indications from the year over year trend of its residential and small commercial use per accounts, that customer characteristics or end use behaviour has changed substantially. However in 2019, PNG completed a Customer Attitudes Survey targeted at both residential and commercial customers, that addressed a range of topics including attitudes and beliefs about the environment, natural gas and renewable energy; satisfaction with customer service interactions; interest in online services from PNG; participation and interest in energy-efficiency initiatives, and willingness-to-purchase natural gas augmented with bio-methane. A set of questions on customers natural gas appliances and dwelling characteristics, similar to those included in the 2013 REUS, where included as well. Section 3 presents a summary of the results.

In response to BCUC IR 25.2, PNG states:

> Therefore in 2019, six years after the first REUS was completed, PNG decided to test continued validity of its 2013 REUS results with a new survey that would collect a new set of information from residential and commercial customers and also collect data on dwellings and primary end uses of natural gas that can be compared to the results from the 2013 REUS. As discussed in the response to Question 25.1, the results from the 2019 Customer Attitudes Survey validated the continued applicability of the results from the 2013 REUS. Based on these findings, and on the response to Question 25.1, PNG does not anticipate undertaking the considerable expense and effort to update the 2013 REUS in the immediate future.

60.1 Please explain how the assessments performed, as directed by BCUC Order G-155-15, informed the timing of the next Residential End Use Survey (REUS).

Response:

The assessments performed by PNG have been explained in PNG's response to BCUC 25.2. Consistent with the priorities set by its Resource Planning Objectives, namely the provision of "Least Cost Service", PNG remains vigilant on containing costs that would otherwise be borne by its customers. As stated in PNG's response to BCUC 25.7, PNG estimates that completing a REUS and the associated Conditional Demand Analysis (CDA) that forms the basis for the residential forecasting model would cost in the neighbourhood of $125 thousand to $150 thousand.

PNG has concluded that updating the REUS and CDA in order to, possibly, improve the load forecast of residential customers, which themselves comprise only 30 percent of the entire throughput on PNG's distribution systems, is not warranted for the foreseeable future. The table presented in PNG's response to BCUC 25.1 and reproduced below illustrates the continued validity of PNG REUS and CDA in forecasting residential use per account (UPA).

Residential Use per Account	PNG-West	FSJ	DC	TR
2014 Forecast for 2018	69.5	112.5	98.9	79.0
2018 Actual	66.8	107.6	98.8	72.8
Difference	**-3.9%**	**-4.4%**	**-0.1%**	**-7.8%**

PNG submits that its forecasting error of residential UPA of less than 5 percent in all divisions except Tumbler Ridge illustrates that the current residential UPA forecasting model remains valid. PNG submits that the comparison of actual and forecast UPA does not suggest that a fundamental change in natural gas consumption behaviour amongst residential customers has occurred over the past six years since the REUS was completed.

60.2 Please provide the estimated timing of the next REUS.

Response:

Please see the response to Question 60.1.

In response to BCUC IR 25.1, PNG states:

> PNG does not view the differences between the results from the 2013 REUS and the 2019 Customer Attitudes Survey as significant.

Further, PNG provides the following tables to compare results of the 2013 REUS and 2019 Customer Attitudes survey:

Comparison of natural gas penetration rates by end use: 2013 REUS and 2019 Customer Attitudes Survey

	Penetration of Natural Gas - Primary Space Heating		Penetration of Natural Gas - Secondary Space Heating		Penetration of Natural Gas - Domestic Hot Water	
	2013	2019	2013	2019	2013	2019
PNG-West	83.9%	90.2%	23.4%	30.4%	64.2%	70.1%
PNG(N.E.)	97.9%	97.2%	13.7%	22.3%	79.0%	79.5%

Comparison of residential dwelling types: 2013 REUS and 2019 Customer Attitudes Survey (Reproduced from Figure 20, p. 79 of the Application)

	SFD		MFD		Apartments		Mobile Homes	
	2013 (1)	2019 (2)	2013	2019	2013	2019	2013	2019
PNG-West	84.5%	93.1%	6.2%	2.5%	0.4%	0.5%	8.3%	4.0%
PNG(N.E.)	80.0%	80.6%	7.0%	13.3%	0.3% (3)	0.0%	11.0%	6.2%

60.3 Please explain what PNG considers as 'significant' differences to inform the timing of the next REUS.

Response:

The accuracy of the 2013 REUS survey is +/- 2.3 percent, while that of the Customer Attitudes Survey is +/- 4.0 percent. Differences in results between the two surveys that are less than +/- 6.3 percent (the sum of the accuracies of the two surveys) are therefore statistically insignificant. Applying this criterion to the two tables in the preamble, PNG notes that only changes in the penetration of natural gas as a secondary source of space heating, and the prevalence of single-family dwellings (SFD) in PNG-West are statistically significant.

More importantly, however, are notable changes in the penetration of natural gas as a fuel for space and domestic hot water heating, along with notable changes in the mix of dwelling types. PNG considers notable changes to be those that erode the accuracy of PNG's current forecasting method and have the potential to consider PNG to alter its ECI offers. As stated in the response to Question 60.1, the continued validity of PNG's residential end-use model is evidence that no such fundamental changes in gas consumption behaviour have occurred.

61.0 Reference: RESIDENTIAL AND SMALL COMMERCIAL DEMAND
Exhibit B-1; Section 7.3.1.2, p. 85-90; Exhibit B-3, BCUC IR 27.1
Residential Use per Account Forecast

In response to BCUC IR 27.1, PNG states:

> PNG has adjusted its end-use forecasting model to account for the expected impact of the CleanBC Plan, namely a sharper decrease in the natural gas consumption in new construction dwellings, penetration of natural gas for space heating applications that declines over the planning period, new customer capture rates that decline over the planning period, and an increased impact of energy retrofits on existing homes to make them more energy efficient.

61.1 Please explain how PNG has calculated the decrease in Residential Use per Account (UPA) to account for the impact of the CleanBC Plan.

Response:

PNG has included an overall decline of 5 percent by 2030 in that portion of residential UPA serving the space heating load to account for the collective impact of energy retrofits on existing dwellings. PNG has reduced the UPA of new customers by up to 80 percent by 2032 to reflect the CleanBC goal of "net-zero" ready new construction by 2032. PNG has also reduced the capture rates for new customers to reflect the increasing penetration of electricity for space and water heating. All these factors are presented in Appendix C of the 2019 Consolidated Resource Plan.

61.1.1 Please provide details of all assumptions to calculate the impact of the CleanBC Plan on the residential UPA.

Response:

Please see the response to Question 61.1.

62.0 Reference: SENSITIVITY ANALYSIS
Exhibit B-1; Section 2.4, p. 57; Section 7.4.3, p. 113; Exhibit B-3, BCUC IRs 10.1, 32.1, 32.3
Summary of Scenarios

On page 113 of the Application, PNG states:

> In all systems, the residential and small commercial use per accounts forecast exhibits declines under all three scenarios (Figure 51 through Figure 58).

62.1 Please discuss the impact of declining UPA on PNG's economic viability over the short, medium and long-term.

Response:

Insofar as the majority of a natural gas distribution utility's costs are fixed, regardless of the amount of deliveries and especially over the short term, declining deliveries will result in upward pressure on delivery rates charged to customers. Declining residential and small commercial use per accounts (UPA's) by themselves do not necessarily result in reduced deliveries and resultant higher delivery rates. Only when the demand generated by net customer additions (new customers less exiting customers) is insufficient to offset the reduction in average UPA would throughput from that customer class decline. As well, deliveries to residential and small commercial customers comprises only half of the total throughput on PNG's four distribution systems. Under the Reference Scenario, total throughput on the PNG-West and Tumbler Ridge systems between 2018 and 2038 is expected to increase by 6 and 63 percent, respectively. Under the Competitive Electric Scenario that adopts a more aggressive reduction in natural gas demand in response to climate change policies and regulations, total throughput on the PNG-West is expected to decrease by only 2 percent, while throughput on the Tumbler Ridge system is still expected to increase by 53 percent.

The Fort St. John and Dawson Creek systems are expected to exhibit larger declines over the 2018 to 2038 planning period. Under the Reference Scenario, total throughput on the Fort St. John and Dawson Creek systems is forecast to decline by 15 and 12 percent, respectively. Under the Competitive Electric Scenario, total throughput on the Fort St. John and Dawson Creek systems is forecast to decline by 27 and 15 percent, respectively.

In Figure 9 on page 57 of the 2019 Consolidated Resource Plan, and in response to BCUC IR 32.2, PNG has provided a comparison of PNG's burner tip rates and electricity costs over the next ten years. These charts illustrate that changes to the forecast UPA and system throughput under each of the planning scenarios are not significant enough to materially change the competitiveness of natural gas with respect to electricity. In Fort St. John and Dawson Creek, the price gap remains significant, whereas natural gas is expected to face some challenges to its cost competitiveness in PNG-West beginning in the latter part of this decade. Whether competitiveness alone will result in customer losses is unknowable. Many factors including regulations and incentives promoting electrification, and customer's attitudes will also play a significant role.

62.1.1 Please discuss whether PNG considered adjusting the weighting of Objective 3 – Economic viability of the utility, when preparing its 2019 Consolidated Resource Plan.

Response:

PNG did not consider adjusting the weighting of Objective 3 – "Economic viability of the utility". Please see also the responses to Questions 56.1 and 56.2.

62.1.2 If not, please explain why not.

Response:

Please see the responses to Questions 56.1 and 56.2.

In response to BCUC IR 32.1, PNG states:

> PNG is unclear on the reference to "operational limit". The design day demand is relevant to system capacity planning. Table 35, p. 122 of the Application shows that all of PNG's systems have adequate capacity to reliably serve current and forecast demand during a design day, which is the demand on the coldest day that is forecast to occur once in 50 years. Declining throughput [*sic*] is not a factor affecting the reliability of the gas distribution system. The distribution system can be thought of as a "pressurized storage bottle" holding a quantity of natural gas at some operating pressure that is automatically regulated through controlled inflows of gas from supply sources when the pressure of the system drops due to demand from customers

62.2 Please explain whether PNG's gas distribution system requires a minimum demand to operate economically.

Response:

PNG is uncertain on the context of the question. In an economic context, the minimum demand is that required to result in rates for delivered natural gas that do not by themselves foster a significant degree of fuel switching away from natural gas. In its response to the Question 61.1, PNG has argued that natural gas service from PNG is expected to remain cost competitive with electricity over the next ten years.

In an operational context, PNG stands by its response to BCUC IR 32.1. There are is no minimum flow rate or demand required in order to maintain and operate the system economically.

62.2.1 If so, please elaborate further on the minimum demand required in each service area, and provide any supporting analyses, plans or studies conducted by PNG.

Response:

Not applicable. Please see the response to Question 62.2.

62.2.2 For each of the Reference, Competitive Gas and Competitive Electricity scenarios, please discuss whether the forecast demand approaches the minimum demand required to operate economically.

Response:

Please see the response to Question 62.2.

62.2.2.1 How would PNG mitigate the effects, and the impact to customers, if the demand was to meet the minimum demand required to operate economically?

Response:

Not applicable. Please see the response to Question 62.2.

In response to BCUC 32.3, PNG states:

> PNG is evaluating opportunities to supply remote communities by connecting via our pipeline system or alternate natural gas pipeline supplies.
>
> …
>
> In addition, PNG continues to review opportunities to utilize CNG or LNG to supply the transportation market in Northern BC. Please see also the response to Question 10.1.

In response to BCUC IR 10.1, PNG states:

> With the down turn of the oil and gas and mining sectors in B.C., heavy haul truck fleets have focussed on rationalizing their capital and operating budgets and have not been focussed on pursuing alternate fuel options. With the implementation of the federal Clean Fuel Standard for liquid fossil fuels expected on January 1, 2022, PNG expects to see renewed interest in lower GHG emissions alternatives as these regulations bring more clarity to the marketplace.

62.3 Please elaborate further on PNG's evaluation of opportunities to supply remote communities by connecting to its existing pipeline system or alternate natural gas pipeline supplies, explaining how PNG identifies, evaluates and pursues opportunities.

Response:

PNG is in communications with local governments and First Nations to identify communities that may be candidates for further evaluation of the feasibility of providing natural gas service, either through an extension of PNG's existing system, from third party pipelines, or from LNG deliveries. PNG's evaluation includes an assessment of the load requirements and cost to construct the necessary facilities, and, in the case of non-utility connected supply, the cost of the natural gas commodity or LNG delivered to serve that demand.

All these costs are considered in PNG's Mains Extension Test which is equally applicable to evaluating the impact on existing ratepayers of mains extensions, as it is to evaluating the impact of LNG deliveries or third-party supply. In all cases, PNG's fundamental principle is that any extension of service to remote communities must, as a minimum, result in no adverse impact to existing ratepayers.

The opportunities examined to date would not pass this hurdle without either a contribution in aid of construction, significant increases in load in the remote community, government grants, or surcharges on delivery rates charged customers in that community.

62.3.1 If PNG were to extend service to any remote communities, please discuss what safeguards PNG would put in place to protect existing ratepayers from increased rates.

Response:

Please see the response to Question 62.3.

62.4 Please discuss whether PNG has identified any opportunities to utilize Compressed Natural Gas (CNG) or Liquefied Natural Gas (LNG) to supply the transportation market in Northern British Columbia as a result of the federal Clean Fuel Standard. If so, please elaborate further on any opportunities currently being pursued.

Response:

PNG has not identified any opportunities to utilize Compressed Natural Gas (CNG) or Liquefied Natural Gas (LNG) to supply the transportation market in Northern British Columbia as a result of the Federal Clean Fuel Standard.

E. DEMAND SIDE MANAGEMENT

63.0 Reference: DEMAND SIDE MANAGEMENT
Exhibit B-1, p. 21,130, 132; Appendix V of Appendix F, p. 28, 32; Exhibit B-3, BCUC IR 36.3;
PNG(N.E.) 2015 Resource Plan for the Fort St. John, Dawson Creek and Tumbler Ridge Distribution Systems Decision and Order G-155-15 dated September 30, 2015, p. 10
DSM Scenarios

In response to BCUC IR 36.3, PNG states:

> The most appropriate use of the 2017 CPR Market Potential Review is to provide portfolio level directional guidance to PNG DSM planning. The CPR market potential estimates are not intended to be program-specific and are most reasonable when results are considered in aggregate. PNG completed cost-effectiveness calculations for the "reference" scenario that is the ECI portfolio proposed for 2020-2022 and presented in the DSM Plan. Please refer to section 10 of the DSM Plan. PNG did not complete high-level calculations of the cost-effectiveness of the "high DSM" scenario.

On page 10 of its Decision, attached to Order G-155-15, approving the 2015 Resource Plan for PNG(N.E.), the BCUC directed PNG as follows:

> To promote regulatory efficiency of future resource plan filings, the Panel directs PNG(N.E.) to include in its next and subsequent resource plans the following information:
>
> - Different DSM funding scenarios which should at a minimum include a “reference” DSM funding scenario with “high DSM” and “low DSM” scenarios relative to the reference funding scenario;
> - An estimate of the demand for energy that the public utility expects to serve after it has taken all reasonable cost-effective demand-side measures. …
> - An analysis of each DSM funding scenario, including average bill and rate impacts for each customer class;

On page 21 of the Application, PNG states:

> PNG presents its analysis of a “reference” and “high DSM” funding scenarios in Section 8. PNG has not included an analysis of a “low DSM” funding scenario. PNG submits that a low DSM funding scenario corresponds to a DSM portfolio that meets the adequacy requirements of the DSM Regulation only. PNG’s current ECI portfolio, while it includes initiatives that go beyond the minimum adequacy requirements, has not achieved significant market

> penetration of its additional, commercial programs to date. Consequently, the current performance of the current ECI portfolio is considered comparable to a hypothetical "low DSM" scenario.

On page 130, in the section regarding the reference case, PNG estimates that the impact to its residential customers would be in the neighbourhood of $8 per year.

With respect to the alternative high scenario, PNG states on page 132:

> Once participation in the ECI programs increase, PNG will be in a better position to assess the actual cost effectiveness of the ECI programs to date, and make an extrapolation of the costs to achieve further reductions approaching the theoretical market potential.

63.1 Please explain if PNG has investigated the cost of the "high DSM" scenario relative to the reference funding scenario, and if so, please provide the results of this analysis.

Response:

PNG has estimated the cost of the "high DSM" scenario based on program expenditures that are 2.5 percent of PNG's gross margin, approximately double the level of ECI expenditures proposed.

	2020	2021	2022
Forecast Expenditures ($) - HIGH DSM Plan Scenario	$ 1,500,000	$ 1,700,000	$ 1,800,000
Expenditure per customer	$ 39	$ 44	$ 45

63.1.1 If not, please discuss why not, including the cost to PNG of undertaking such an analysis.

Response:

Not applicable. Please see the response to Question 63.1.

63.2 Please explain if PNG has conducted an average bill and rate impact for each customer class, and if so, please provide the results of this analysis.

Response:

PNG records ECI expenditures in a rate base deferral account and amortizes the balance over five years. The annual amortization amount is recovered through delivery rates of all PNG customers. The impact of ECI expenditures related to a "high DSM" scenario, amounting to $5 million over the period 2020 through 2022 is shown in the table that follows:

All customers in:	Impact ($/GJ)	Residential UPA (GJ)	Bill Impact ($)
PNG-West	$0.20	67.0	$14
Fort St. John/Dawson Creek	$0.17	104.4	$18
Tumbler Ridge	$0.15	72.8	$11

63.2.1 If not, please discuss why not, including the cost to PNG of undertaking such an analysis.

Response:

Not applicable. Please see the response to Question 63.2.

On page 28 of the Conservation Potential Review (CPR), Navigant Consulting provides the total simulated funding for market potential from 2016 to 2035. On page 32, Navigant provides the benefit-cost test ratios for the portfolio and by sector.

63.3 Please explain whether the budgets and/or cost-effectiveness values in the CPR could be used to extrapolate a high-level forecast (with caveats) of cost-effectiveness, and in turn the rate and bill impacts, of each DSM scenario.

Response:

PNG believes this to be a reasonable approach for portfolio level calculations. Indeed, PNG used this approach in its estimate of expenditures for a High DSM scenario presented in its response to Question 63.1.

However, PNG notes the limitations to applying the cost effectiveness results from the CPR to the High DSM scenario that Navigant Consulting described on page 28 of the CPR (provided as Appendix V to the DSM Plan (itself Appendix B of the 2019 Consolidated Resource Plan)):

> "The study uses incentive levels and administrative costs derived from FortisBC Gas's historic experience as a reasonable proxy for PNG. The team recognizes that FortisBC Gas's incentive levels and administrative costs may reflect efficiencies from economies of scale and market experience that may not yet be attained by PNG's conservation efforts. Additionally, PNG may pursue different implementation plans that lead to different incentive levels and administrative costs than seen in FortisBC Gas's service territory. As such, the budgets and cost-effectiveness tests are indicative of mature program experience in the region but may differ from PNG's realized costs in the near term as its DSM programs gain experience and scale."

63.3.1 If yes, please provide this analysis along with a brief discussion of any limitations.

Response:

Please see the response to Question 63.3.

63.3.2 If not feasible, please explain why.

Response:

Please see the response to Question 63.3.

F. ENERGY CONSERVATION AND INNOVATION PORTFOLIO FUNDING

64.0 Reference: ENERGY CONSERVATION AND INNOVATION PORTFOLIO FUNDING
Exhibit B-3, BCUC IR 50.2.1
Industrial Customers

In response to BCUC IR 50.2.1, PNG states:

> PNG's industrial customers are sophisticated entities who have the capacity and knowledge to make the best decisions on upgrading equipment based on their own feasibility studies. The CleanBC Clean Industry Fund and Industrial Incentive Program, and the Innovation Clean Energy Fund (ICE) are examples of provincial programs available to assist PNG's industrial customers. PNG's ECI program, having a proposed total annual budget of less than $1 million, is too small to make a meaningful contribution to this sector.

64.1 Given the sophisticated nature of PNG's industrial customers, please discuss what role PNG expects to play with regard to offering ECI programs to these types of customers.

Response:

PNG has not identified any opportunities through its ECI program to assist its industrial customers in a meaningful way at this time. PNG's existing and proposed ECI programs targeting the commercial sector are available to industrial customers.

64.2 Please explain why the proposed annual budget of the ECI program is too small to make a meaningful contribution to the industrial sector.

Response:

PNG presents a summary of the ECI expenditures forecast over the period 2020 to 2022 in Table 24 of the DSM Plan attached as Appendix F to the 2019 Consolidated Resource Plan. PNG expects that meaningful incentives provided to a single industrial customer would constitute a significant portion of the $1.3 million in incentives that PNG has budgeted for distributing to its residential and commercial customers.

G. PORTFOLIO EVALUATION AND PLANNING

65.0 Reference: PORTFOLIO EVALUATION AND PLANNING
Exhibit B-1; Section 1.4, p. 9; Exhibit B-3, BCUC IRs 38.1, 40.3; Attachment to L-39-19, PNG 2019/2020 Annual Gas Contracting Plan, Executive Summary, p. 2
Resource Portfolios– Identification and measurement of supply and demand resources

In response to BCUC IR 38.1, PNG states:

> Every year, PNG prepares an Annual Gas Contracting Plan (ACP) that describes the physical gas supply resources PNG intends to secure to meet the projected peak day and average daily gas demand of PNG's gas sales customers over the gas year beginning November 1. Each ACP is subject to review and acceptance by the BCUC. PNG's most recent 2019/20 ACP was accepted by the BCUC by way of Letter Order L-39-19.

On page 2 of the Executive Summary to PNG's 2019/2020 Annual Gas Contracting Plan (ACP), attached to BCUC Letter L-39-19, PNG states:

> PNG will meet its gas demand requirements using a balanced approach taking into consideration cost effectiveness, security, diversity, and reliability of gas supply. In order to achieve this, PNG will continue to contract for natural gas supply from different counterparties and contract for both daily and monthly priced supply. PNG may also secure longer term supply contracts of two to three years if doing so meets the [objectives of the 2019 ACP].

In response to BCUC IR 40.3, PNG states:

> PNG is prepared to mitigate exogenous supply-side risks by maintaining a diverse mix of assets which includes: supply sourced at market hubs, supply sourced directly from the producer outlet, as well as natural gas storage capacity. PNG also works with a gas marketing company with a larger portfolio of assets to help mitigate supply disruptions.

65.1 Please provide an overview of PNG's committed supply resources, the terms of the contracts, the source of the supply (market hubs, producer outlet, storage, other as applicable) and the rationale for selecting each supply source.

Response:

PNG has provided details on its supply resources in its 2019/2020 Annual Gas Contracting Plan (ACP 2019) that it files on a confidential basis with the BCUC.

PNG has requested that the information contained in the ACP 2019 be kept confidential pursuant to the BCUC's Confidential Filings Practice Directive. The request for confidentiality is based on the consideration that the ACP 2019 includes market-sensitive volume information and details on pricing assumptions, and that the public dissemination of this information prior to negotiation of final supply contracts may prove detrimental to PNG's negotiating position and thus may have an adverse effect on supply costs incurred on behalf of ratepayers. In addition, PNG files an executive summary of the ACP with the BCUC on a non-confidential basis that summarizes PNG's supply resources. The features of ACP 2019 are summarized below:

- PNG purchases approximately 90 percent of its gas supply requirements at Station 2 under a combination of monthly and daily priced firm contracts. PNG's gas supply firm contracts are for baseload, 12-month supply, winter supply (November through March), and winter peaking supply (December through February).
- The remaining supply is purchased from producers who deliver contracted-for supply directly from their own infrastructure onto PNG's distribution systems. Tumbler Ridge and the village of Wonowon are examples of loads served directly by producers' own supply.
- PNG also makes use of a locational swap to receive its Station 2 supply at the McMahon Plant, thereby avoiding transportation charges on Westcoast T-North.
- PNG contracts for seasonal storage at Aitken Creek to provide additional winter peaking supply. Storage provides PNG with some cost certainty heading into the winter season and acts as insurance against winter weather events.
- PNG contracts for firm transportation service on the Westcoast T-South and T-North pipeline systems to move its gas supply to its load centres and to facilitate injections and withdrawals from storage at Aitken Creek. PNG also contracts for a small amount of T-North Short Haul capacity on the Ft. Nelson Mainline to serve the community of Pink Mountain.

Further information regarding term and quantities are filed with the BCUC on a confidential basis. The BCUC approved PNG's ACP 2019 by way of Order L-39-19.

65.1.1 Please discuss the pros and cons of each supply source (market hubs, producer outlet, storage, other as applicable), and discuss the conditions under which each supply source performs best.

Response:

Market hubs provide many benefits including price transparency, liquidity due to multiple counterparties, security of supply as contract language prevents volumes from being curtailed, as well as different pricing structures. Due to the multiple benefits, market hubs perform well under most market conditions and therefore PNG secures most of its supply from the Station 2 market hub.

Outlet deals are only used when there is no access to a market hub as PNG's load system is not connected to the Westcoast system. The downside of outlet deals are that they are usually done on interruptible basis as producers usually have limited if any alternative supply in the event of a loss of primary supply.

Supply sourced from storage provides a pricing alternative to the market hub by allowing PNG to have winter gas at a summer price, which is insurance against winter volatility. In addition, storage can provide supply security during production interruptions. The downside is that the cost of that insurance may be more expensive than the winter market price.

65.2 Please discuss whether PNG expects any changes to its mix of supply sources over the medium and long-term. Please explain why or why not and identify any driving factors.

Response:

PNG does not anticipate any significant changes to its mix of supply resources over the medium term. PNG evaluates the performance of each ACP prior to developing the next ACP for the coming gas year, and, after consulting with its energy management services provider, makes appropriate adjustments to the seasonal contracting profile. As clearly presented in the load forecasts provided in the 2019 Consolidated Resource Plan, PNG does not anticipate significant changes to the demand from its sales customers over the 20-year planning period.

Over the long term, when the Coastal Gas Link is completed, there may be a possibility to secure supply shipped through Coastal Gas Link to provide additional supply security and potential price diversification. Similarly, if more interconnectivity with the AECO market is developed, PNG could look to source gas from that market. However, both alternatives are purely speculative at this time.

65.3 Please discuss any issues or risks PNG has identified with respect its committed or potential supply resources that could impact PNG's gas supply.

Response:

PNG is confident that the supply picture will remain healthy at Station 2. The biggest risk continues to be a supply disruption from a pipeline event, such as the Westcoast T-South rupture in October 2018.

In response to BCUC IR 40.3, PNG states:

> …As interconnectivity between the Westcoast and NOVA systems increases, the security of supply for PNG will also increase. However, the PNG West system remains exposed to a single point of failure on the T-South system. This was highlighted by the rupture, south of Summit Lake, on the T-South System in October of 2018. PNG would rely on Line-Pack in the event of a failure north of Summit Lake, however this risk is one that PNG continues to evaluate.

65.4 Please confirm, or explain otherwise, that PNG has identified only T-South as the single point of failure and supply risk.

Response:

Confirmed.

65.5 Please elaborate further on PNG's evaluation of its exposure to a single point of failure on the T-South system, including any options currently being considered by PNG to mitigate or minimize the risk.

Response:

PNG is investigating the feasibility of constructing an LNG storage facility in Prince Rupert that could provide supply during winter peak demand as well as emergency supply in the even of an outage on the T-South or PNG-West transmission systems. PNG has also been in discussions with Coastal Gas Link regarding a possible emergency interconnection at some point along their line. PNG is also exploring the provision of LNG from small LNG facilities that could be located in PNG's service area.

66.0 Reference: PORTFOLIO EVALUATION AND PLANNING
Exhibit B-1, Section 9.4, p. 134; Exhibit B-3, BCUC IRs 39.1, 41.1; BCUC Resource Planning Guidelines, p. 5
Resource Portfolios – Development of an action plan

Section 7 of the BCUC's Resource Planning Guidelines requires the development of an action plan. In response to BCUC IR 41.1, PNG states this analysis has not been prepared.

In response to BCUC IR 39.1, PNG states:

> PNG's 2019 Consolidated Resource Plan presents the results of data gathering, fact finding, strategic planning and analyses…PNG respectfully submits that the BCUC Resource Planning Guidelines (2003 Guidelines), which outline a process to assist in the development of resource plans to be filed with the BCUC, do not distinguish between utilities that provide generation, transmission or distribution services. Therefore, some aspects of the 2003 Guidelines, including the analysis of supply-side resources, apply more readily to integrated electric utilities.
>
> PNG submits that the BCUC, when reviewing resource plans, should consider the unique operating circumstances of the utility in question when referring to the 2003 Guidelines. PNG has adhered to the 2003 Guidelines where, in PNG's view, they are relevant and applicable to PNG's operating environment.
>
> PNG submits that it has considered the 2003 Guidelines in the context of a small natural gas distribution utility when developing its 2019 Consolidated Resource Plan and has endeavoured to adhere to those 2003 Guidelines in a practical and cost effective manner.

66.1 In PNG's opinion, would the development of an action plan over the medium term (3 to 5 years) be more practical and cost effective? Please discuss.

Response:

PNG submits that an action plan having a three to five year planning horizon will be more relevant and applicable to PNG's current situation. However, PNG wishes to be clear that the context for the reference PNG made to "the unique operating circumstances of the utility" is the amount of research and analysis required for the development of a resource plan. The scope of research and analysis, and the content of PNG's 2019 Consolidated Resource Plan is consistent with that of the PNG-West 2014 Resource Plan, and the PNG(N.E.) 2015 Resource Plan, both of which were approved by the BCUC by way of Orders G-140-14 and G-155-15, respectively. Absent any lessening of expectations on the amount of analysis related to preparing an action plan over a three to five year timeframe, PNG does not expect such an action plan to be more cost effective.

66.1.1 Please discuss the pros and cons of an action plan over a shorter horizon with respect to resources required for PNG's gas distribution business.

Response:

Please see the response to Question 66.1.

66.2 Please discuss PNG's resource planning process over the medium term (3 to 5 years), outlining steps taken to acquire any necessary resources and the associated timelines.

Response:

PNG constantly evaluates and responds to changes in market conditions, resource alternatives and public policy and regulation. PNG's customer service, business development and gas supply processes are engaged with stakeholders, project developers, housing contractors and prospective customers to understand opportunities for serving additional customers or for undertaking reinforcements to the system to ensure secure and reliable service. The regulatory and business development teams monitor developments in policy and regulations, most notably those that impact GHG emissions from the natural gas industry, in order to inform PNG's operations practices and also to evaluate opportunities for alternative investments in emission reduction and energy efficiency technologies.

The analysis and evaluation that PNG diligently performs over the course of preparing its resource plans that are submitted every five years, its revenue requirements applications, submitted either annually or bi-annually, its annual reports and annual gas contracting plans, and its DSM plans, DSM expenditure schedules, and CPCN applications all reflect a consideration of the most current socio-economic environment in which PNG operates.

For PNG to adhere strictly, to the BCUC 2003 Resource Planning Guidelines (Guidelines) would require a significant amount of additional research, analysis and evaluation. PNG estimates requiring an additional full-time-equivalent for at least 12 months in order to complete a resource plan that meets all the requirements of the Guidelines. However, as stated in PNG's response to BCUC IR 39.1, PNG submits that some aspects of the 2003 Guidelines, including the analysis of supply side resources, apply more appropriately to integrated electric utilities.

66.2.1 Please discuss what provisions PNG has put in place to enable it to respond to changes in circumstances, such as an increase or decrease in load, market conditions or resource options in the medium term (3 to 5 years).

Response:

Please see the response to Question 66.2.

67.0 Reference: PORTFOLIO EVALUATION AND PLANNING
Exhibit B-1, Section 9.4, p. 135
Integrity Management Program

On page 135 of Exhibit B-1, PNG states:

> PNG's System Betterment/General Plant capital plans are driven primarily by PNG's asset risk management process and regulatory compliance requirements. PNG has embarked on a sequence of activities to assess the integrity of the PNG-West and Tumbler Ridge transmission systems over the next five years and will be addressed in either future rate applications or CPCN applications. These include:
>
> - Electromagnetic Acoustic Technology (EMAT) tool runs to help PNG determine whether instances of Stress Corrosion Cracking (SCC), known for catastrophic pipeline failures in industry incidents, exist on PNG's transmission systems.
> - Pipeline Cut Outs: With increased EMAT tool runs, PNG expects to identity additional segments of pipe to be cut out and replaced.
> - Salvus to Galloway Remediation: Repair of sections of the Prince Rupert eight inch pipeline traversing treacherous mountainous terrain in environmentally sensitive areas between Salvus and Galloway.
> - New Pig Barrels: Three new pig receiving barrels are required on the PNG-West and Tumbler Ridge transmission systems in order to properly inspect segments of high-pressure pipeline.

67.1 Please discuss whether PNG assessed any risk management alternatives other than the activities listed in the preamble, such as installing pressure regulating stations to limit operating stress to below 30 percent of the specified minimum yield strength (SMYS) of the pipe.

Response:

The activities listed in the preamble are some of the examples of the many pipeline system integrity risk management activities undertaken annually by PNG as part of its documented Transmission Integrity Management Plan (TIMP) and associated programs. The activities within this plan are required by CSA Z662-19, are regulatory requirements of the BC Oil and Gas Commission (BCOGC), are well aligned with industry best practice, and are recognized as the established standard for pipeline risk management. As a result, given the specific intended purpose and objective of each of the activities identified in the preamble, no alternatives were considered.

PNG's transmission systems are designed and operated in order to efficiently and safely transmit gas across significant distances and variable terrain. The suggested alternative of installing pressure

regulating stations to limit operating stress to below 30 percent of SMYS of each specific transmission pipe segment would not allow PNG to deliver the currently required volumes to communities and industrial customers at the required pressures. This is most commonly done at high pressures that are at a high percent of SMYS, consistent with industry standard and the requirements of CSA Z662.

However, regardless of the foregoing, PNG wishes to clarify that the integrity issues that PNG's risk management activities will assess cannot be mitigated solely by reducing the operating pressure.

PNG has provided a substantial amount of detailed information on its integrity management activities in it's 2020-2021 Revenue Requirements Applications submitted for each of PNG-West and PNG(N.E.) that are currently under review in separate Commission proceedings.

67.1.1 If so, please describe each assessed risk management alternative including the estimated capital costs and explain why it was not selected.

Response:

Not applicable. Please see the response to Question 67.1

67.1.2 If not, why not?

Response:

Please see the response to the Question 67.1.