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Report on Énergir's Cost Allocation and Pricing of Gas Supply, Transportation and Load Balancing Services and Supply of Interruptible Service

Client: Régie de l'énergie

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EXECUTIVE SUMMARY

The Régie de l'énergie (Régie) issued its "Mandat d'expert relatif à la révision des services de fourniture, de transport et d'équilibrage ainsi que de l'offre de service interruptible d'Énergir" dated August 17, 2018. Elenchus Research Associates Inc. (Elenchus) was retained by the Régie for this project.

This report provides an overview of Énergir's analysis and proposals for changing its cost allocation methodology for its gas supply costs[1] as well as Elenchus' assessment of those proposals. Elenchus has also identified and discussed alternatives that appear to merit consideration; however, since this report has not benefit from the scrutiny of Énergir's evidence that has yet to be undertaken, the conclusions of Elenchus are subject to reconsideration when more complete information is on the record of the proceeding.

Énergir's proposals for adopting a new approach to allocating its gas supply costs to its customer classes have resulted from the transformation of the tools that it uses to meet the gas supply needs of its customers. In 2014, the Régie prepared a report on the natural gas commodity and transportation resources needed to meet the medium and long-term requirements of Quebec's natural gas consumers. That report included an excellent discussion of the developments in the North American natural gas market that have transformed the market in recent decades. The most significant change was the development of shale gas production from the Northeastern United States (the Marcellus Formation). This new supply is a significant source of low-cost natural gas located near the major consumer markets in Eastern North America, including Quebec that has disrupted the North American natural gas market. A related development that has led to changes in Énergir's gas supply planning was the large increase in the cost of Énergir's traditional source of gas supply from Western Canada which required purchased at the Empress trading hub and transportation across Canada through the TC Energy pipeline.

Énergir, like all distributors, utilizes a set of supply tools to maintain a reliable source of supply for its customers. The primary tools are (i) purchasing of natural gas, (ii) transportation of the purchased gas (long haul and short haul), and (iii) storage to balance deliveries and consumption both over the year (seasonal storage) and daily (load balancing storage). Énergir also uses interruptible service as an alternative to storage. These tools are managed by Énergir to make unbundled gas supply, load balancing and other services available to the various types of customers it serves, including:

- customers whose entire needs are met by the distributor;

[1] The Régie proceeding and therefore this evidence does not deal with the allocation of capital and operating costs related to Énergir's distribution assets.

- direct purchase customers that purchase gas from an entity other than Énergir (i.e., a marketer/reseller/retailer or producer) and whose transportation and load balancing services are provided by the distributor; and
- direct purchase customers who also provide their transportation and load balancing services.

Énergir's supply plan restructuring has involved the following changes:

- the relocation of the supply structure from Empress to Dawn;
- migration of interruptible service customers to continuous service;
- return of customers to Énergir's transportation service;
- the revision of interruptible conditions of service; and
- the contracting of additional transportation capacity.

These changes to Énergir's approach to supply planning have had implications for the way in which the cost allocation principles that have been accepted by the Régie in the past are applied. In particular, in assessing how costs are caused by customers, it is reasonable to view Énergir's costs on an integrated basis by function. For example, it is reasonable to adopt the view that customer demand does not directly drive the need for gas purchases, transportation and storage, but to take the view instead that customer demand drives the need to accommodate (i) the customers' annual volumetric requirement and (ii) the need for load balancing. These needs can be met through a variety of gas purchasing options (i.e., at different locations and different periods of time) and corresponding transportation and storage options. This restructuring of Énergir's gas supply planning strategy has resulted from the changes in the industry and has resulted in a reconsideration of its approach to cost allocation.

Énergir's reconsideration of its cost allocation methodology led to Énergir's proposed approach to replace its current functionalization methodology which functionalizes its supply costs to the tools it uses to provide its supply services with an alternate approach (referred to as Énergir's alternate conceptual framework in this report) that conceptually functionalizes its costs directly to the services that it provides to customers rather than to the tools that are utilized to provide those services.

Based on a review of the models that have been filed in this proceeding, it appears to Elenchus that Énergir has not modified its cost allocation methodology in a manner that directly implements the alternate conceptual framework that appears to be implicit in Énergir's evidence. It is not clear why the cost allocation methodology has not been modified to directly and transparently implement the alternate conceptual framework. It may be that the methods used by Énergir have indirectly had the same result; however, if that is the case it is the result of methodological changes that have changed the input

values used by the models. In Elenchus view, the alternate conceptual framework makes sense and could be implemented explicitly.

In Elenchus view, acceptance of the proposed model should be based on three questions.

1. Recognizing Énergir's current operating context, is functionalizing its supply costs based on service conceptually superior to functionalizing cost based on tools?
2. If the proposed conceptual framework is preferred, has the proposed model implemented this approach in a way that is consistent with the guiding principles for cost allocation that have been endorsed by the Régie?
3. Is the proposed cost allocation methodology as implemented in Énergir's models, as filed, the most appropriate way to implement the conceptual framework?

With respect to the first question, this report concludes that the alternate conceptual approach that is implicit in Énergir's evidence has clear conceptual advantages.

With respect to the second question, Elenchus has been unable to confirm that the methodology as implemented by Énergir is consistent with the guiding principles for cost allocation that have been endorsed by the Régie. It appears to be consistent in general; however, the models as currently implemented do not provide all the detail needed to confirm this observation. Final conclusions are subject to additional detail being made available on the record of this proceeding.

With respect to the third questions, Elenchus has identified what may be a more transparent, more easily understood, and possibly more equitable approach to implementing the alternate conceptual framework that is implicit in Énergir's evidence.

Elenchus' assessment of Énergir's proposed methodology begins with a review of the guiding principles that the Régie has accepted in the past for reviewing Énergir's current methodology. Elenchus believes that the transformation of the North American natural gas market has no impact on the appropriateness of those guiding principles, which are:

- allocate costs to the customers that cause them, to the greatest extent possible;
- no service should be provided at no cost to customers;
- provide for a fair and equitable sharing of costs and benefits; and
- identification of cost allocation methods that are accurate, reliable, stable and, to the extent possible, simple to apply.

The primary shortcoming of Énergir's current methodology is that it does not take into account the reality that the tools that are utilized to provide the services that Énergir offers depend on the overall gas supply plan. Each tool can serve multiple purposes and as a result they are, to some extent, substitutable. Without examining the drivers for the costs of individual tools from the perspective of the cost effectiveness of the overall plan, it is difficult if not impossible to identify the extent to which the costs are caused by each

customer class – the cost causality principle is therefore difficult to adhere to. The causality principle can be applied more clearly when the functions that are allocated to customer classes are the services that they use directly rather than the tools that they use indirectly. This concept of cost causality leads to Énergir's alternate conceptual framework that is the based for the proposed approach to allocating its total supply costs to its customer classes. Énergir says that it now views its supply cost on an integrated basis that can be broken most meaningfully into three functions that are required to supply customers with the gas throughout the year at the lowest practical cost. These functions each may utilize multiple tools and the tools can be used in different ways to provide the required services. The functions, or services, that Énergir provides are:

- annual volumetric supply (i.e., delivery at 100% load factor);
- seasonal load balancing (to address the winter peak demand); and
- operational flexibility (to manage daily demand variances from the day-ahead forecast).

In its supply plan, the tools that it uses are determined by taking into account the following three categories of tools that it uses to optimize its supply plan:

- Cost optimization using seasonal tools;
- Cost optimization vs. the requirements of an extreme winter; and
- Use of the tools during a peak day.

In Elenchus' view, Énergir's proposed cost allocation methodology is conceptually consistent with Énergir's approach to gas supply planning. It is also consistent with the central principle of cost allocation (cost should be allocated based on cost causality) since the costs associated with each function are allocated to each class based on the extent to which the class drives the level of cost incurred to fulfill each function.

Énergir's proposed approach is an innovative deviation from the standard practice of Canadian natural gas utilities. The essential difference between the current (traditional) and alternate conceptual frameworks can be summarized as follows.

The traditional conceptual framework used by Énergir in the past is aligned with the approach taken by other natural gas distributors in Canada and abroad. The essence of this approach is that all costs as functionalized to distinct gas supply functions that correspond to the basic gas supply tools: Supply (gas purchases), Transportation and Load Balancing (primarily associated with storage), as described in section 2.2 of this report. The cost of each of these functions is allocated to customer classes based on relevant costs drivers, including annual (or average daily) volume, peak demand, etc.

The alternate conceptual framework that reflects Énergir discussion of its proposed approach to cost allocation in this proceeding is to take a global view of costs that links

very closely to the relevant cost drivers for cost allocation. Cost that are incurred, or caused by, the need to deliver the annual volume to Énergir's service area are allocated based on the average daily volume of each class. These costs would include gas purchase, transportation and other costs that would be incurred to meet the needs of Énergir's customers if they all consumed gas at 100% load factor. Under this approach, load balancing costs are the incremental costs to accommodate the deviation from 100% load factor in the demand of customers.[2]

Both the traditional and the alternate conceptual approaches are intended to allocate costs to customer classes in a manner that is consistent with the principles that have been endorsed by the Régie and used over the years to review and approve Énergir's current methodology. Hence, changing the conceptual framework is not intended to alter the guiding principles that have been accepted by the Régie for Énergir's current cost allocation methodology. Rather, the intent is to modify the method used to implement the principles to be more consistent with Énergir's current operating environment.

In addition, under the proposed approach the cost of interruptible demand is based on the avoided costs that can be attributed to Énergir's optimal use of interruptible service in the plan. In Elenchus view, a reasonable alternative approach that appears to be more consistent with Énergir's proposed methodology would be to view the interruptible tool like all other tools – that is, determine the cost of acquiring the tool as required for the optimal plan. The cost of acquiring the tool, like the cost of any other tool, is the incremental cost of adding it to Énergir's supply portfolio. A hypothetical supply plan could be developed based on the assumption that there is no interruptible service. The difference between the two supply plans would be the cost of the interruptible tool.

Elenchus also notes that the proposed approach appears not to consider any difference in the cost causality of diversifiable and non-diversifiable aspects of the class load balancing and operational flexibility requirements. In the event that the coincident peak allocator used for allocating costs is defined on the basis of more than the single annual peak, explicitly recognizing the extent to which class variances in demand from the annual average could be considered. To the extent that forecast variances are diversified, it is only the transaction costs for diversification, if any, that need to be recovered from customers. Diversification differs from storage and interruptible service in that it occurs naturally among classes with non-coincident demand variations. Using a single coincident peak as the allocator does not recognize this feature of load balancing and operational flexibility requirements fully. Load Factor (LF) captures the issue only if it is calculated using average demand / coincident peak demand. A refinement to Énergir's proposed

[2] Énergir's evidence does not explicitly describe this alternate conceptual framework. Rather, the alternate conceptual framework reflects Elenchus' attempt to synthesize Énergir's rationale for changing its approach to cost allocation.

methodology could examine this issue as an option for refining the method in the future. Put simply, the load balancing costs that are incurred through the supply planning process are not caused by the relative demands on a single peak day; they are also caused by aggregate seasonal difference and within season variances in demand.

A further observation of Elenchus is that conceptually it should be feasible for Énergir to analyze the amount of operational flexibility that has been required historically by each rate class. This could be done by comparing the daily forecast demand of each class to its actual demand. In practical terms, however, this exercise may be limited by the availability of the required data at this time. Based on Elenchus' understanding that it is not practical to determine the actual flexibility requirements of each rate class, it appears reasonable to Elenchus to allocate Énergir's operational flexibility costs on a volumetric basis as proposed by Énergir. Nevertheless, Énergir's fundamental premise is that since operational flexibility is defined as the ability to adjust deliveries during a day in response to the differences between forecast demand for that day and actual consumption during the day, it follows that the relevant costs are the costs associated with maintaining and utilizing within-day flexibility. This flexibility depends on the availability of nomination windows throughout the day for deliveries of gas to Énergir's franchise area.

Énergir uses the average daily withdrawals that would be required to withdraw 100% of seasonal storage over the 90-day period December to February as the seasonal withdrawal capacity needed (with the balance of withdrawal capacity permitted by Union deemed to be operational flexibility). It appears to Elenchus that this approach may overstate the withdrawal capacity needed for seasonal storage since there will be winter withdrawals before December and after February. A possible alternate approach would be to estimate total withdrawals over the 90 days divided by 90 to derive the average daily withdrawals, or to derive the average requirement over a more complete winter period (e.g., all days with heading degree days in excess of a defined minimum). Furthermore, a volumetric approach may be a logical approach to allocating withdrawal capacity costs.

In addition, Elenchus notes that Énergir's allocation of withdrawals rights is used also to allocate storage costs to the two services since there is a fixed ratio between the storage/withdrawal rights and the storage volume rights. It is unclear, however, whether the driver (cost causality) for storage costs is storage capacity or the injection/withdrawal rates. The injection ratio is 0.75% which means that this can be spread over 133.3 days. More operational data than that which has been included in the evidence filed by Énergir to date is required to resolve the question of whether it would be more appropriate to treat storage capacity storage/withdrawal rights as the cost driver for cost allocation purposes.

On the issue of direct purchase services, in the view of Elenchus, the simplest way to view the treatment of direct purchase (DP) within Énergir's supply planning process is to view the DP supplies as a set of firm contracts with committed volumes to be delivered to Énergir's various delivery points (Empress, Dawn, GMIT EDA and GMIT NDA). Given

those deliveries along with all other firm and spot purchases by Énergir, storage and transportation capacities are planned so as to meet total customer demand at minimum cost, subject to its pre-existing commitments and other constraints.

It follows that all customers, whether system gas (SG) or DP should pay the same price for transportation, load balancing and operational flexibility. Although differences in load profile may result in differences in total cost, it would probably not be practical to track these differences within each rate class given the limitations on data availability and the movement of customers between DP and SG.

The substitutability of transportation capacity, storage and interruptible demand is a factor that needs to be considered in determining how transportation and storage costs are allocated and how interruptible service should be priced and factored into the cost allocation model.

Énergir's evidence raises specific issues related to the allocation of Champion costs. In Elenchus view, resolution of this issue rests on the Régie's view of which of the following two commonly accepted principles should predominate in this case.

- The **postage stamp approach** to setting rates adheres to the view that all customers should pay the same rate regardless of location. From this perspective intra-class equity is achieved by allocating costs to classes with no regional sub-classification since all customers in a class are viewed as being the same although some may fortuitously be located in less costly to serve locations than others.
- The **regional causal cost** view takes a different approach, by identify distinct regions that have different costs of service. Under this view, customers in different regions with different costs should pay different rates that reflect the differences in the cost to serve those regions.

It is Elenchus understanding that Énergir's position is based on its view that when Champion is functionalized as transmission, customers that contract for GMIT-NDA will not pay for transmission although they will still use Champion. To avoid this inequity, the costs of the Champion pipeline can be functionalized as distribution in the unbundled world. This approach resolves the question of which of the two principles stated above should prevail on the basis of a purely pragmatic consideration of the equity of the end result. This result appears to Elenchus to be reasonable based on the information and analysis included in Énergir's evidence.

Énergir's proposals for modifying interruptible service are linked to its current view that the sole purpose of interruptible service should be as a tool to optimize its supply costs.

1 INTRODUCTION

1.1 TERMS OF REFERENCE

The Régie de l'énergie (Régie) issued its "Mandat d'expert relatif à la révision des services de fourniture, de transport et d'équilibrage ainsi que de l'offre de service interruptible d'Énergir" dated August 17, 2018. The mandate for the project appears in section 2.3.

> *2.3 SERVICES À RENDRE*
>
> *La Régie cherche à mettre sous contrat un consultant dont le mandat est de rechercher, analyser et faire rapport en matière d'étude d'allocation des coûts de fourniture, de transport et d'équilibrage d'Énergir dans le cadre de la phase 2 du dossier R-3867-2013.*
>
> *Dans le cadre de son processus décisionnel, la Régie souhaite disposer d'une expertise externe et indépendante lui permettant d'appuyer les régisseurs dans le cadre de la revision des méthodes de fonctionnalisation, de classification et d'allocation des coûts et de tarification des services de fourniture, de transport et d'équilibrage ainsi que de l'offre de service interruptible d'Énergir.*

Elenchus Research Associates Inc. (Elenchus) was retained by the Régie for this project.

This report has been prepared based primarily on the evidence filed by Énergir for Phase 2 of the *Demande portant sur allocation des coûts et la structure tarifaire de Gaz Métro*, R-3867-2013 (Phase 2). Elenchus has reviewed all evidence filed in Phase 2, relying primarily on the English translations that are on the record. Where relevant, Elenchus has also reviewed evidence from previous proceedings and Régie decisions.

In preparing this report, Elenchus has not had an opportunity to clarify Énergir's proposals and rationale through information requests or cross-examination. Elenchus also did not participate in the Phase 2 stakeholder workshop, nor has Elenchus discussed any of the issues with Énergir or any other stakeholder. Furthermore, Énergir's evidence has not yet been subject to discovery through information requests and cross-examination by the stakeholders. Finally, neither the stakeholders nor their experts have submitted their analysis and positions at this stage of the process.

Elenchus notes that cost allocation and rate design are aspects of the regulatory process that require regulators to balance multiple principles and policy objectives in determining the methodologies that best serve the public interest. Elenchus therefore recognizes that further refinement of its summaries of the Énergir's evidence and the opinions expressed in this report may be appropriate as the parties test both the evidence of Énergir and the content of this report. Furthermore, the discussion of some topics in this report explicitly identifies the need for additional information before Elenchus can comment in detail.

1.2 BACKGROUND OF THE REVIEW

Énergir Inc. (Énergir) submitted an application in late 2013 to deal with its distribution costs and rate structure. The Régie initially separated this application into two phases: Phase 1 to deal with cost allocation of distribution costs; and Phase 2 to address rate structure, inter financing, and the rate strategy.

On August 4, 2016, in its decision D-2016-126 the Régie split the application into four phases. The review of Énergir's tariff structure, inter financing and tariff strategy of its distribution service is deferred to phase 4. Phase 2 was initially intended to review only a few components of the load balancing service. Subsequent changes to the gas supply market led the Régie to expand the scope of the review. The topics discussed under phase 2 now include a more comprehensive review covering the following range of topics:

- allocation of costs, pricing and conditions of service relating to supply, transportation and load balancing services;
- costs associated with operational flexibility, to be paid into a new function;
- follow-up from previous decisions that relate to the rates and terms of service associated with these services; and
- revision of the interruptible service offer.

The evidence filed to date in Phase 2 is comprised of the eight documents filed by Énergir and five Excel workbooks. Translated versions of each of the text documents have also been filed.[3]

Énergir suggested that the topics identified for review by the Régie are interrelated and should be assessed as part of a global analysis and not individually. This approach allows for an overall analysis of Énergir's supply cost allocations. The allocation of costs for interruptible service is included in the Phase 2 review because it is directly related to the purchase of supply tools reviewed in this phase. Elenchus agrees with this approach.

The full scope of the issues addressed in this proceeding is highlighted in Énergir's filed documents. For example, in GM-5 Doc 1 *Review of Supply, Transportation, and Load-Balancing Service*[4] (Review Report) Énergir notes that it has addressed the following topics at the direction of the Régie:

> *Initially, other than questions related to the distribution service, only a few components of the load balancing service were intended to be reviewed in this case,*

[3] Document references are labeled in a shortened form as follows: GM-5, Doc 1 refers to "Gaz Métro – 5, Document 1" A full list of proceeding documents referred to in this report is included as Appendix B

[4] Documents B-0133, page 8-9 and B-0344, page 8-9.

but in recent years, several follow-ups have been requested by the Régie, mainly due to changes in the gas supply market since unbundling, including:

- *Accessibility threshold for customized load balancing rates (D-2011-182)*
- *Minimum and maximum load balancing prices (D-2011-182 and D-2013-106)*
- *Pricing of operational flexibility costs (D-2012-175)*
- *Functionalization of natural gas purchase costs (D-2014-065 and D-2014-165)*
- *Functionalization of transportation and load balancing costs (D-2014-065 and D-2014-165)*
- *Breakdown of overpayments and shortfalls in transportation and load balancing (D-2014-065 and D-2014-165)*
- *Handling of transportation and reduction MAOs (D-2014-065)*
- *Migration of interruptible customers between interruptible and continuous services (D-2014-201)*
- *The 2% purchased volume leeway for customers with combined rates (D-2014-201)*

Énergir addressed four topics that relate directly to interruptible service in GM-5, Doc 2 *Re-Engineering of Interruptible Service*[5]. This report includes two topics that were addressed more generally in Énergir's Review Report.

- *Consideration of Option consommateurs ("OC") proposals to eliminate free-rider[6] interruptible customers (D-2012-158);*
- *Minimizing of the impact of interruptible customer migrations to continuous service on continuous service customers (D-2014-201);*
- *Including of the 2% operational flexibility in the subscribed volume of interruptible customers (D-2014-201);*
- *Functionalizing income for unauthorized withdrawals and tax ceilings caps among different services (D-2015-125).*

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5 Documents B-0134, page 7 and B-0345, page 7.

6 Free riders are customers that contract for interruptible service and obtain a lower rate although they do not experience interruptions and would not request interruptible service during a period when interruptions are expected. As a result, they would receive a reduced rate without providing a tangible benefit to the system.

Énergir also notes that it has addressed nine additional topics in GM-5, Doc 3 *Follow-ups and Complementary Information to the Supply, Transportation, and Load-Balancing Service Review*[7] (Follow-ups Report)

> *The topics analyzed in this exhibit include the following follow-ups and complementary information:*
>
> - *Notice of entry or withdrawal from the transportation service and MAO (section 1);*
> - *Supply costs to transfer to load-balancing (section 2);*
> - *Processing of stranded costs (section 3);*
> - *Parameter calculation period (section 4);*
> - *Minimum and maximum load-balancing rates (section 5);*
> - *Thresholds for customized calculation (section 6);*
> - *Evaluation of peak load for customers on a monthly reading cycle (section 7);*
> - *Pricing mechanism for non-uniform deliveries (section 8);*
> - *Supplement for peak service (section 9).*

Énergir identifies eight additional topics from the Régie's decision in D-2016-126 in GM-5, Doc 5 *Rate reform – Phase 2: Additional evidence – Follow-Up on Decision D-2016-126*[8].

- *Allocation of supply costs;*
- *Functionalization of the Champion Pipelines;*
- *Benchmarking;*
- *Cross-subsidization;*
- *Hourly management of the network;*
- *Advanced metering infrastructure;*
- *Parameters used for the load-balancing rates; and*
- *Supply service with transfer of ownership.*

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7 Documents B-0136, page 4 and B-0346, page 4.

8 Documents B-0185, page 2-3 and B-0348, page 2-3.

1.3 GUIDING PRINCIPLES FOR ÉNERGIR'S COST ALLOCATION

A further aspect of the context for this review of Énergir's changes to its cost allocation methodology is the guiding principles that the Régie has endorsed in previous decisions. In particular, three guiding principles for cost allocation were set out in section 5.1 of decision D-97-47.[9]

> *5. CONCLUSIONS DE LA RÉGIE*
>
> ***5.1 Les principes***
>
> *Les principes qui ont guidé la Régie dans ses conclusions sont sensiblement les mêmes que ceux énoncés dans la décision G-429, à savoir:*
>
> - *la relation causale la plus directe possible entre les coûts et les clients qui les ont engendrés;*
> - *l'absence de service gratuit;*
> - *un partage juste et équitable des économies et des déséconomies.*
>
> *De plus, la Régie doit tenir compte, d'une part, des réalités nouvelles des marchés mais aussi des réalités opérationnelles et techniques de la gestion des outils de transport et d'entreposage de SCGM.*[10]

Elenchus notes that these principles appear to be consistent with the ten "attributes of a sound rate structure" that are found in Chapter 16 of the seminal work of James Bonbright.[11] Those principles are frequently referenced and restated by regulators across Canada and internationally. Based on these principles, fairness and equity are commonly understood to mean that the utility's assets and expenses are apportioned to the customer classes in a manner that has cost causality as the main criterion. Cost causality is the first of the Régie's three principles quoted above.

The Régie's second principles recognizes that although there are some services that do not directly cause any costs to be incurred by the distributor, those services should not be provided to customers for free since they utilize and benefit from the shared assets. This principle is important in considering the methodology of allocating costs to interruptible service since this service uses only spare pipeline capacity in off-peak

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[9] The decision makes reference to principles and methods for cost allocation that had previously been established in an earlier order,G-429 that was issues in 1985.

[10] For purposes of this report the following English wording for the three guiding principles is used:
- allocate costs to the customers that cause them, to the greatest extent possible;
- no service should be provided at no cost to customers;
- provide for a fair and equitable sharing of costs and benefits.

[11] *The Principles of Public Utility Rates*, James C. Bonbright, Albert L. Danielsen, David R. Kamerschen (Second Edition, 1988) Public Utilities Reports, pages 383-4.

periods. Since only spare capacity is used and no capacity is provisioned to meet the needs of this service, it does not directly cause any costs; hence, no costs would be allocated to this service based on the strict use of the cost causality principle. Nevertheless, based on the second principle, the methodology used to allocate costs to interruptible service were modified in D-97-47 since the previous methodology which adhered more strictly to the cost causality principle was deemed to be unfair in allocating costs between continuous and interruptible service customers.

The Régie also observed that seasonal storage service is used by the interruptible class but the previous allocation method, based on firm capacity, did not allocate any of these costs to the class. Additionally, in its decision, the Régie determined that firm transmission capacity costs are caused by the amount of capacity the distributor is required to contract and therefore those costs should be allocated by the annual volume parameter. A credit for interruptible customers was determined based on the average cost of the distributor's supply tools to reflect the costs avoided due to customers accepting interruptible service.

The Régie's third principle provides a broad basis for taking into account the allocation of both costs and benefit in a manner that is viewed as fair and equitable. Expanding on this broad equity principle the Régie identified for purposes of the allocation of transportation costs the following criteria that it considered for evaluating alternative methodologies:

- the recognition of the priority of service;
- recognition of the effect of diversity;
- avoidance of free service;
- the recognition of the utilization coefficient;
- the allocation when the utilization coefficient is 100%;
- the operational and technical realities of managing transportation and storage tools;
- the simplicity of application and comprehension;
- the applicability of the method to quantify disaggregated costs.

The principles that the Régie set out in decision D-97-47 have been reinforced and clarified in specific circumstance in several subsequent decisions. For example, the Régie stated the following in decision D-2012-175:

> *[69] La Régie considère que l'argument de Gaz Métro, à savoir que tout bénéfice découlant d'outils de transport détenus par Gaz Métro devrait être partagé entre tous les clients utilisant le service de transport de Gaz Métro, est déterminant. Agir*

> *autrement risquerait d'entraîner un problème d'équité entre les clients en gaz de réseau et ceux en achat direct.* [12]
>
> …
>
> *[80] La Régie considère que l'approche de Gaz Métro permet de faire, à chaque année, le partage des coûts et bénéfices découlant du portefeuille d'outils de transport entre tous les clients du service de transport.*
>
> *[81] Cette approche respecte également le principe énoncé au paragraphe 69 de la présente décision, à savoir que tout coût/bénéfice découlant d'outils de transport détenus par Gaz Métro doit être partagé entre tous les clients utilisant son service de transport.*
>
> *[82] La Régie considère que cette approche a déjà été éprouvée puisque c'est le principe sous-jacent de la méthode de fonctionnalisation qui est appliquée actuellement. De plus, la Régie juge que cette approche est beaucoup plus simple d'application et plus équitable pour l'ensemble des clients utilisant le service de transport du distributeur. Cependant, la Régie juge qu'une telle approche requiert du distributeur qu'il adopte une gestion dynamique de son portefeuille d'approvisionnement et saisisse les opportunités qui se présentent à lui afin d'en faire bénéficier l'ensemble de la clientèle utilisant le service de transport du distributeur.*[13]

Subsequently, in decision D-2014-011, the Régie reiterated the importance of basing its tariff decisions on the foundation of a rigorous cost allocation methodology based on the principles that it has established. It also emphasized that the cost causality is the primary guiding principle for cost allocation studies.

> *[20] Dans la décision D-2013-106[4], la Régie mentionnait :*
>
> > *« [571] La Régie considère que la vision tarifaire englobe les éléments fondamentaux de la fonction de distributeur de gaz naturel, à savoir, la stratégie tarifaire dans son ensemble, depuis l'étude d'allocation des coûts, en passant par la segmentation de la clientèle et les modifications aux structures tarifaires, jusqu'à l'examen de l'interfinancement. La refonte en profondeur des tarifs et de la stratégie tarifaire est un exercice effectué très rarement. En conséquence, les solutions retenues doivent être conçues pour durer. La Régie est d'avis qu'un tel exercice doit être effectué avec rigueur.*[14]
>
> …

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[12] Decision D-2012-175, page 18.

[13] Decision D-2012-175, pages 20-21.

[14] Decision D-2014-011, page 7.

> *[22] La Régie tient à préciser que l'étude de répartition des coûts doit permettre d'allouer le plus fidèlement possible les coûts entre les différentes catégories tarifaires selon le principe de causalité des coûts. Toute autre considération de nature sociale, économique ou environnementale ne doit pas intervenir à cette étape mais plutôt lors de la détermination de la structure et de la stratégie tarifaire. Ainsi la Régie ne peut retenir la proposition du ROEÉ d'utiliser un principe du coût du réseau minimal pour améliorer l'offre de service en efficacité énergétique chez Gaz Métro.*[15]

It is also evident that the application of the principles has required clarification in the context of specific technical issues. For example, the Régie addressed the issue of whether the allocation of costs should be based on forecast or actual cost drivers in decision D-2014-064.

> *[162] La Régie souligne que les tarifs sont établis sur une base prévisionnelle. Elle est d'avis qu'il est d'usage d'apporter des ajustements en fin d'année lorsqu'il est facile de le faire et qu'il en résulte une répartition juste des coûts.*
>
> *[163] Elle comprend que, pour le Distributeur, l'ajustement en fin d'année permettrait d'attribuer les coûts des services en fonction de leur utilisation réelle.*
>
> *[164] La Régie considère que Gaz Métro n'a pas démontré que l'utilisation réelle qui est faite lors d'une année est en lien avec la causalité des coûts.*
>
> *[165] De plus, une demande de base plus faible que celle prévue aurait comme effet, aux termes de la modification proposée, de fonctionnaliser des outils d'approvisionnement à l'équilibrage plutôt qu'au transport. Pourtant, ces outils dont on change la fonctionnalisation n'auraient pas pour autant été utilisés pour assurer effectivement l'équilibrage.*
>
> *[166] La Régie est d'avis que les outils d'approvisionnement sont contractés pour satisfaire la demande prévue, tout en dotant le Distributeur d'une marge pour être en mesure de faire face à des événements de plus faible probabilité. En conséquence, elle juge que ce sont les données prévisionnelles qui doivent être maintenues, même si les données réelles sont différentes.*
>
> *[167] Ainsi, comme le souligne la FCEI, aux termes de l'ajustement proposé lorsque la demande est plus faible pour les clients à débit stable, ce sont plutôt les clients du service d'équilibrage qui se verraient imputer le coût des outils de transport inutilisé.*
>
> *[168] Pour ces motifs, la Régie rejette la proposition de Gaz Métro.*[16]

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15 Decision D-2014-011, page 8.

16 Decision D-2014-064, pages. 36 and 37.

More recently the Régie accepted, in decision D-2016-100, the addition of a fourth principle that was proposed by Énergir and further clarification.

> *4.3 OPINION DE LA RÉGIE*
>
> *[71] La Régie considère que pour statuer sur les méthodes d'allocation des coûts à retenir, elle doit s'appuyer impérativement sur des principes directeurs. Elle juge que les principes proposés par Gaz Métro, qui découlent notamment de l'ordonnance G-429 et de la décision D-97-47, sont des principes intemporels et toujours pertinents.*
>
> *[72] En conséquence, elle retient les principes suivants :*
>
> - *le respect de la causalité des coûts;*
> - *l'absence de service gratuit;*
> - *le partage juste et équitable des économies et des déséconomies d'échelle;*
> - *l'identification de méthodes d'allocation des coûts qui sont précises, fiables, stables et, dans la mesure du possible, simples d'application.*
>
> *[73] Cependant, la Régie ajoute les considérations suivantes à ces principes.*
>
> *4.3.1 RESPECT DE LA CAUSALITÉ DES COÛTS*
>
> *[74] La Régie considère, comme l'ensemble des participants au dossier, que l'Étude devrait, autant que possible, reposer sur l'identification des relations de cause à effet. Ainsi, le principe de respect de la causalité des coûts demeure central à toute étude d'allocation des coûts.*
>
> *[75] Cependant, la Régie constate que bien que ce principe fasse l'unanimité entre les différents participants, son interprétation et son application peuvent varier considérablement d'un participant à l'autre.*[17]

This section of the decision then clarified its view of how the principles should be applied with respect to directly allocated costs.

> *Allocation directe*
>
> *[76] La Régie rappelle, comme mentionné par l'UC, que dans sa décision D-97-47, elle avait défini le principe de causalité des coûts comme « la relation causale la plus directe possible entre les coûts et les clients qui les ont engenders ».*[18]
>
> …

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17 Decision D-2016-100, pages. 25 – 26. The Régie elaborated on these principles at pages 28 to 30.

18 Decision D-2016-100, page 26.

> *[83] En conséquence, la Régie juge qu'il y a lieu de préciser que l'allocation directe doit être privilégiée en tout temps lorsque l'information est disponible ou facilement accessible au prix d'un effort raisonnable.*[19]

Énergir has not suggested that these guiding principles need to be revised as a result of the changes that have taken place in the operating context of Énergir's natural gas supply.

For purposes of this report on Énergir's proposed approach, these guiding principles provide relevant and applicable context.

1.4 STRUCTURE OF THE REPORT

This report provides an overview of Énergir's analysis and its proposals for changing its cost allocation methodology for its gas supply costs[20] as well as Elenchus' assessment of those proposals. Elenchus has also identified and discussed alternatives that appear to merit consideration.

This report includes five additional sections. Section 2 discusses the evolution of Énergir's operational context as it has migrated its gas supply from Empress to Dawn. The changing operational context is the primary driver for Énergir's cost allocation proposals and the related changes to the pricing of its services. Developments in the natural gas market also underpin the changes to Énergir's rates and service conditions over the last 30 years in line with the changes to supply strategies[21]. While the fundamental principles of cost allocation are not changed by these developments in the North American natural gas market, Énergir is proposing to change the way in which the principles are applied. Section 2 also reviews other contextual background information including Énergir's distribution network, customer and services and it approach to developing its supply plan.

Section 3 discusses Énergir's approach to cost allocation in the context of the conceptual framework that appears to be implied based o Elenchus understanding of Énergir's evidence. The difference between the more common approach, the traditional conceptual framework and the approach that is implicit in Énergir's alternate conceptual framework are discussed.

Other issues raised in Énergir's evidence are addressed in Section 4.

Approaches to determining Énergir's coincident peak are discussed in Section 5.

A summary of the report and Elenchus' conclusions are contained in section 6.

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19 Decision D-2016-100, page 28.

20 The Régie proceeding and therefore this evidence does not deal with the allocation of costs related to Énergir's distribution assets.

21 Decision D-2016 -126, pages 8-9, paragraphs 19 to 21

2 OPERATIONAL CONTEXT FOR THE ANALYSIS OF ÉNERGIR'S PROPOSALS

This section describes the developments that have disrupted the North American natural gas market over the past 15 years as well as the resulting changes in Énergir's supply arrangements.[22] An overview of Énergir's service area, customer base and natural gas services is also included to provide context for the discussion of Énergir proposed changes to its cost allocation methodology.

2.1 TRANSFORMATION OF THE NORTH AMERICAN NATURAL GAS MARKET

In response to a request from the Ministre de l'Energie et des Ressources naturelles in 2014, the Régie conducted a review of the natural gas commodity and transportation resources needed to meet the medium and long-term requirements of Quebec's natural gas consumers.[23] The Régie's report included discussion of the developments in the North American natural gas market that are key factors leading to the changes being proposed by Énergir at this time.

Based on the input of stakeholders, the Régie concluded that natural gas demand in Quebec was likely to increase by about 2% per year until at least 2030, requiring a steady increase in purchases of gas for the Quebec market and the acquisition of corresponding increases in transportation capacity.[24] More importantly, the Régie noted that a new source of supply was becoming available to meet the needs of Quebec as a result of the development of shale gas production from the northeastern United States (the Marcellus Formation). This development has disrupted the North American natural gas market since it is a significant new source of low-cost natural gas from deposits that are located near the major consumer markets in Eastern North America, including Quebec.[25]

The emergence of this new shale gas supply presented the opportunity for Énergir to diversify or replaces its traditional commodity and transportation arrangements for supply from the natural gas exchange hub at Empress (on the Alberta-Saskatchewan border). The new opportunity involves purchasing gas at the Union Gas Dawn trading hub which is located in Southwestern Ontario, a location that is much closer to Énergir's service

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22 A much more detailed discussion of these developments can be found in the Régie's Avis sur les approvisionnements en fourniture et transport de gaz naturel nécessaires pour répondre aux besoins en gaz naturel des consommateurs québécois à moyen et long termes (A-2014-01, R-3900-2014)

23 See Avis A-2014-01.

24 Ibid., page 16.

25 Ibid., pages 43-45.

territory. To make this change required a complete restructuring of Énergir's long-standing gas supply arrangements.

The benefit for Quebec natural gas customers of taking advantage of this new source of supply related as well to the significant increases in the cost of transporting natural gas on the TC Energy (formerly TransCanada Pipeline) mainline from Empress to Dawn and Énergir's delivery points. The escalation of these transportation rates, which are regulated by the National Energy Board (NEB), was a direct result of the construction of the Alliance and Vector pipelines. These pipelines provide an alternate route for the transportation of western natural gas (through the U.S.) to the Dawn hub. As a result of these pipelines coming into service in 2000, volumes transported from Western Canada on the TC Energy network declined significantly as shippers migrated to the new, lower cost routes. Since TC Energy's costs, like those of other pipelines, are mostly fixed, this decline in volume put upward pressure on transportation rates. During the 2007-2011 period, the long-haul tariff increased from $0.99/GJ to $2.24/GJ.[26]

Énergir could not take advantage of this new supply without reducing or eliminating its contractual commitments to its traditional commodity and transportation arrangements for supply from the natural gas exchange hub at Empress. Empress supplies natural gas from the Western Canada sedimentary basin that is transported by the TC Energy pipeline through Ontario to Quebec[27].

As the Régie observed in Avis A-2014-01, the development of this alternate supply led to revised agreements between TC Energy and distributors in Eastern Ontario and Quebec, as well as changes in the pricing of transportation services. These new arrangements were undertaken to minimize the costs that are ultimately passed through to natural gas consumers in Quebec. Pursuit of these changes resulted in disputes between TC Energy and Eastern Zone distributors, including Énergir, that were resolved on October 31, 2013 by the conclusion of the *TransCanada Pipelines Ltd Mainline Settlement Agreement* (The Agreement).[28]

The Agreement was filed with the NEB on December 20, 2013. The Régie reviewed the Agreement and concluded in decision D-2014-064 that it was in the public interest; hence, it was prudent for Énergir to proceed to implement changes to its gas supply arrangements in a manner consistent with the Agreement. It allowed distributors in the Eastern Zone to replace LH transportation contracts with SH transportation and to have access to shale gas from the Marcellus and Utica deposits through the Dawn trading hub. Wood Mackenzie estimated for the Régie that this change would allow these distributors

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26 Ibid., page 42.

27 In Canada, transportation rates charged to shippers are regulated by the National Energy Board (NEB).

28 Ibid., pages 48 – 51.

to achieve an average savings of $0.66/GJ on the cost of natural gas delivered in the Eastern Zone.[29]

The new gas supply arrangements have not altered gas supply's reliance on pipelines to deliver natural gas to the end user. Natural gas is still extracted from underground formations and transported in bulk to distant markets through large capacity high pressure transmission pipelines to distributors, such as Énergir. The distributors then deliver the natural gas to the end users through smaller diameter, low-pressure pipelines. While the basic infrastructure requirements have not changed, new supply points and new interconnections have been developed. Since the previously existing pipelines could not be relocated, new transmission lines have been built to connect the new source of gas supply to the existing distribution networks in Ontario and Quebec as well as the Eastern U.S. Where feasible, existing infrastructure has been utilized; hence, the Dawn hub, a region in Southwestern Ontario that has significant storage capacity and is interconnected with several Canadian and U.S. pipelines, has gained in importance.[30] It is ideally located as an interconnection point between both the older source of supply in North America and the new Marcellus supplies, with the many delivery points[31] of the distributors that serve end use customers in Eastern North America.[32]

A critically important aspect of the supply of natural gas for distributors, including Énergir, is the need for their gas supply and transportation arrangements to support the provision of reliable supply for their customers. In part, reliability is achieved by contracting sufficient natural gas volume and transportation capacity to ensure that deliveries of gas to the distribution system during the highest demand days are sufficient to maintain a balance between supply and demand to maintains the required operating pressure in the distribution pipes. It also requires distributors to construct sufficient capacity throughout the distribution systems to meet the total demand of customers even under the highest demand conditions (i.e., extremely cold winter months).

The changes in gas supply and transportation arrangements have resulted not only in a restructuring of Énergir's supply planning but also reconsideration of its fundamental approach to breaking down its total gas supply costs and allocating those cost to customer classes, at least conceptually. It is the implication of these changes for cost allocation that are the primary focus of the current Phase 2 proceeding.

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29 Ibid., page 51.

30 Ibid., pages 46-48.

31 A delivery point is the location of an interconnection between a transmission system and a distribution network such as Énergir's.

32 A more detailed discussion of the basics of the natural gas services and service providers that have, and continue to, operate in the natural gas market see section 3 of the Régie's report.

In this environment of unbundled services, it is particularly important to determine an appropriate approach to allocating Énergir's costs to the various bundled and unbundled services. The cost allocation process should be designed to ensure that all services bear the costs they cause so that all rates are equitable and that the costs borne by different categories of customers (i.e., customers that rely on Énergir for different combinations of services) are treated fairly. Furthermore, the intent is that the regulated prices for the unbundled services do not advantage or disadvantage unregulated suppliers of unbundled natural gas services, or customers that choose different combinations of regulated and unregulated services.

2.2 DIFFERENTIATING BETWEEN GAS SUPPLY TOOLS AND SERVICES

Natural gas distributors combine the supply tools that are available to them to create the services that their customers require. The standard supply tools that are available to Canadian natural gas distributors are:

- **Purchasing of natural gas:** Distributors have always been responsible for purchasing natural gas for at least some of their customers. As a result of the deregulation of price of natural gas and the unbundling of natural gas services[33] natural gas customers can purchase natural gas on their own behalf or from resellers/retailers. Distributors continue to purchase the supply of natural gas for customers that do not choose an alternate supplier. Hence, the distributor typically functions as the default supplier to ensure that all customers have access to natural gas at all times, subject to conditions of service that are approved by the relevant provincial regulator. Natural gas purchases take place at designated delivery points such as Empress, the primary trading hub in Alberta and Dawn, the primary trading hub in Eastern Canada.
- **Natural gas transportation:** Natural gas must be transported from the supply points (hubs) where natural gas is purchased to the designated delivery points of the distributor. At these delivery points the transportation facilities connect to the distribution facilities of the distributor. Distributors and other market participants utilize various upstream tools that are offered by the owners of the transportation facilities, including TC Energy and Union Gas. The various transportation services are differentiated by the applicable terms and conditions. In particular:

[33] On 31 October 1985, the Government of Canada and the gas producing provinces of British Columbia, Alberta, and Saskatchewan signed the Agreement on Natural Gas Markets and Prices (commonly referred to as the Halloween Agreement). This agreement replaced government-controlled natural gas pricing with market-determined prices, and separated sales of gas from sales of transmission services by establishing open access for shippers on natural gas pipelines.

- TC Energy's transportation services used by Énergir include:
  - Firm Transportation Long Haul (FTLH) service which shippers can use to move gas purchased at Empress to the various Énergir delivery points and to Énergir's contracted storage capacity at Dawn;
  - Firm Transportation Short Haul (FTSH) service which shippers can use to move gas purchased at Dawn or in Dawn storage to the various delivery points on Énergir's distribution system; and
  - Storage Transportation Service (STS) which is utilized by shippers to move gas in and out of Dawn storage from/to the TC Energy transportation facilities (i.e., transmission pressure pipelines).
- The principle Union Gas' transportation service that is utilized by Énergir is Union's M12 transmission which is used to transport natural gas to/from the Dawn hub[34] to Parkway and Kirkwall where Union's transportation facilities interconnect with other transmission pipelines and the delivery areas of other transportation and distribution utilities including TC Energy.

- **Natural Gas Storage:** Storage is used to accommodate over- and under-deliveries of natural gas purchased by a distributor (relative to the volume actual consumed) so that the load is balanced and the pressure in the distribution system is maintained at an operationally acceptable level. Énergir has limited storage capacity within its service area to balance deliveries and its load in its service area; hence, most of its storage requirements are met by contracting upstream storage capacity. The major storage facilities that Énergir can utilize are located at Dawn. Storage is utilized by Énergir in several ways, including:
  - **Seasonal Storage Tools in Dawn:** Seasonal storage is used to balance the high winter demand required to serve winter heating load and the low demand during the summer when natural gas is not required for heating. Storage allows the natural gas to be purchased and transported more economically at a fixed daily rate that is approximately the expected average daily consumption over the year. Excess summer deliveries are injected into storage; the stored gas is then withdrawn during high demand winter days when it is used for heating.
  - **Load balancing storage:** Storage is also used to balance deliveries to the Énergir system and the actual daily load, including variances in demand through the day. These short-term variances are best handled with storage

[34] The Dawn hub is major interconnection point where various major transmission pipelines now deliver gas that is sourced from the various North American natural gas production areas, including the Western Canada Sedimentary Basin and the Marcellus and Utica deposits in the Northeastern United States.

located within the service area, specifically the LSR plant and the two underground storage sites owned by Intragaz (Saint-Flavien and Pointe-du-Lac). The LSR factory is characterized as an advanced supply tool and is Énergir's last resort supply tool.

- A further gas supply tool, which can also be viewed as a service, is interruptible supply. Énergir can utilize interruptible service as an economic substitute for storage since load balancing can be accomplished in response to high demand either by increasing supply by withdrawing gas from storage or by reducing demand by interrupting customers as permitted under its interruptible contracts.
- Managing the various gas supply tools to minimize the total costs of meeting the requirements of customers, which cannot be forecast even on a day-ahead basis with precision also requires state-of-the-art gas management tools:

These gas supply tools are typically used to provide the following services:

- **Gas supply:** This is a bundled service that enables customers to access gas from Énergir on an as-needed basis on a convenient and reliable basis. Énergir utilizes the various tools identified above to manage deliveries of gas to its system that they need not consider the complexity of arranging deliveries to match their demand.
- **Load balancing:** Load balancing service is available to customers and retailers that arrange for deliveries of natural gas to the Énergir system on a basis that does not match their consumption (generally fixed daily deliveries). Load balancing service provides the support required to handle the daily over- and under-deliveries, relative to consumption, to maintain the required supply-demand balance on the Énergir system.
- **Unbundled tools:** Since some customers choose to handle part of their gas supply requirements independently, Énergir all provides the various tools to support the competitive market on an unbundled basis as additional services.

2.3 ÉNERGIR'S DISTRIBUTION NETWORK, CUSTOMERS AND SERVICES

This section provides contextual information about Énergir's distribution network, customers and services. Although the allocation of its distribution costs to Énergir's customer classes is not the subject of the current proceeding, a high-level appreciation of the distribution system is helpful in appreciating the drivers of Énergir's gas supply costs. All costs are incurred in order to meet the natural gas requirements of Énergir's customers at the lowest cost practical that is consistent with maintaining safe and reliable service. As such, the cost drivers for gas purchases, as well as upstream transportation and storage costs is ultimate Énergir's customers' requirements.

2.3.1 ÉNERGIR'S DISTRIBUTION NETWORK[35]

Énergir's distribution infrastructure is classified by function at the level of pressure at which the gas flows. The functions are:

- transmission (4,400 kPa and more and about 7.6% of the system);
- supply (1,000 kPa to 2,900 kPa and about 18.4% of the system); and
- distribution (0 kPa to 700 kPa and about 74% of the system).[36]

As noted above, Énergir groups its network into eight independent[37] regional networks: Montréal, Laurentides, Montérégie, Estrie, Mauricie, Saguenay, Québec and Abitibi. Seven of these networks include transmission infrastructure.

Énergir uses 23 criteria for its network design, grouped into four main categories: customer needs, validating network capacity, network design and cost analysis. Design criteria for the transmission network are partially different from those of the supply and distribution networks.

2.3.2 DEMAND PROFILE OF ÉNERGIR'S CUSTOMER CLASSES AND REGIONS

Énergir serves 208,879 customers consuming an annual volume of 5,996,294 10^3 m^3 [38]. This volume corresponds to average consumption per customer of about 28,707 m^3. Énergir's distribution network consisted of 10,375 kilometers[39] of pipe with an historic net book value included in rate base of $888 million[40]. The average density of the network (number of customers per kilometer of pipe) was approximately 21 customers/km.

Énergir's service territory is divided into eight regions: Montréal, Laurentides, Montérégie, Estrie, Saguenay, Mauricie, Québec and Abitibi. The Montréal region is the most populous with 166,600 customers which accounts for about 85% of Énergir's customer accounts. Énergir's evidence relied on for this report integrates the Laurentides and Montérégie regions with the Montréal region.

As Table 1 shows, Énergir's high volume customers (Rates D3, D4, and D5) account for 0.24% of all customers but about 55% of demand. About 94% of Énergir's customers

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35 As noted earlier, allocation of the costs association with Énergir's distribution network is not addressed by Énergir's evidence or this report.

36 The pressure ranges reflect the discrete pressures used in designing Énergir's infrastructure.

37 Surplus capacity in one regional network cannot be used to supply the network serving another region

38 File R-4018-2017, GM-N, Document 5, Document B-0098. These figures are for the 12 months period ending September 30, 2019.

39 Document B-0006, page 26.

40 Document B-0097, pages 14-15.

consume less than 36,500 m^3 per year. The smallest volume sub-class (Rate D1 0-3,650 m^3) includes 70% of all customers but only 4% of demand. These small volume customers are essentially all Énergir's residential and commercial (D1) customers.

Table 1: Number of Customers and Capacity Demanded [41]

Rate	Level	Number of customers		Capacity (AC)	
	m^3/yr			10^3m^3-day	
D_1	[0 - 3,650]	136,933	69.80%	1,883	4%
D_1	[3,650 - 10,950]	28,911	14.74%	1,908	4%
D_1	[10,950 - 36,500]	18,465	9.41%	3,689	8%
D_1	> 36,500	11,412	5.82%	14,482	30%
D_3		242	0.12%	383	1%
D_4		90	0.05%	20,129	41%
D_5		138	0.07%	6,535	13%

The portion of regional distribution capacity that is allocated to the rate classes varies considerably by region. The differences are shown in Table 2 on the next page.

As the table shows, in the Montréal region, customers in the D1 rate category, using more than 36,500 m^3/year, account for 41% of attributed capacity in the region while this sub-class accounts for as little as 9% of attributed capacity in other regions.

Customers in the D5 class in the region of Québec are attributed 40% of the region's capacity, while in Mauricie and Saguenay, the D4 and D5 classes account for more than 80% of the required capacity.

41 Decision D-2016-100, page 28 (English version).

Table 2: Regional Attributed Capacity per Rate Category[42]

Region	D_1 0 - 3,650	D_1 3,650 -10,950	D_1 10,950 - 36,500	D_1 > 36,500	D_3	D_4	D_5
Montréal	7%	6%	11%	41%	1%	22%	12%
Estrie	2%	5%	11%	36%	5%	17%	24%
Québec	2%	4%	10%	35%	2%	7%	40%
Mauricie	1%	1%	2%	9%	1%	75%	10%
Abitibi	3%	2%	3%	20%	0%	54%	17%
Saguenay	1%	2%	3%	11%	0%	78%	4%

Source: Document B-0047, section Intercepte zéro, Table 5a. Attribution of capacity using (AC) (MDD).

2.3.3 Primary Categories of Énergir's Customers by Type of Service

This section views Énergir's customer base from the perspective of the different ways in which they are served. This categorization of customers does not correspond to the classes of customers that are used for rate setting purposes. The categories relate to customers across several rate classes.

Customers whose entire needs are met by the distributor: The simplest approach that customers can choose for meeting their natural gas needs is to rely on Énergir to handle all aspects of purchasing, transporting and delivering gas to them on an as-needed basis. This is referred to as bundled service. Énergir manages the various tools described above balance deliveries from transportation hubs and storage with their customers' consumption. Under this arrangement, the cost of the commodity that Énergir purchases on behalf of its bundled customers is passed through without a mark-up.

Direct purchase customers that purchase gas from an entity other than Énergir (i.e., a marketer/reseller/retailer or producer) and whose transportation and load balancing services are provided by the distributor: Some customers choose to purchase their natural gas from a marketer or producer. These suppliers are not regulated and have greater flexibility than Énergir to offer different pricing mechanisms, such as a multi-year fixed price contract or at a price with predetermined escalators. These suppliers may deliver the gas for their customers to an Énergir delivery point at a fixed daily volume that does not match the customer's consumption, in which case Énergir provides the necessary load balancing at the regulated price.

42 Decision D-2016-100 , page 35 (English version).

Direct purchase customers who also provide their transportation and load balancing services: In some cases, the customer or supplier will directly contract for the transportation and storage tools needed to balance the deliveries to Énergir's system and the customer's consumption. This is most easily done when the customer has highly predictable demand, such as a large industrial customer with a process load that is consistent and no weather-dependent demand.

2.3.4 Unbundled Services Offered to Customers

Although natural gas distributors and their regulators once viewed natural gas service as being a single bundled service that included natural gas supply, transportation, storage and distribution as an indivisible package, most jurisdictions have evolved in recent decades to more flexible arrangements. Customers can choose the traditional bundled service, which is simple and convenient, or they can obtain some services from unregulated competitors, or the secondary market, and choose from a suite of unbundled utility services to meet the rest of their gas supply needs. Énergir's unbundled services include transportation, load balancing and competitive make-up gas which can be utilized by customers with interruptible service from Énergir.

2.3.4.1 Énergir's Gas Supply Service

Énergir's current gas supply arrangements that have been in place since unbundling was introduced two decades ago are being significantly changed to take advantage of recent developments in the North American natural gas sector. Given the new market structure and opportunities, it is appropriate to consider revisions to Énergir's cost allocation methodology to ensure that supply costs are allocated to customer classes in a manner that appropriately balances the objectives of precision and practicality in applying the fundamental principle of cost allocation - cost causality – in a manner that reflects the operational context that will prevail in the coming years.

The basics of Énergir's past gas supply arrangements were[43]:

- purchase gas in Alberta with daily deliveries at Empress that were generally equal to the forecast average daily consumption of Énergir's customers, with direct purchase gas being delivered at Empress on the same basis;

[43] This discussion of Énergir's operations is a high-level overview to provide the context for the reasoning underpinning Elenchus analysis of Énergir's cost allocation methodology and pricing of its services. It is not a comprehensive description of Énergir's operations.

- use TC Energy FTLH service to move gas from Empress to Énergir's system, with excess gas (generally on non-heating days) being injected into Union Gas storage at Dawn (or in-franchise storage);
- meet above-average customer demand (generally on heating days) by withdrawing stored gas to meet the shortfalls in the TC Energy daily deliveries; and
- deliver all externally supplied gas to one of Énergir's service area delivery points (either GMIT EDA or GMIT NDA) for delivery directly to customers through Énergir's distribution system.

The important change in Énergir's gas supply arrangements is that it is relocating its primary upstream delivery point from Empress to Dawn, near Union's storage. Dawn has become a natural gas hub that provides efficient access to diverse sources of natural gas as well as significant storage resources. Due to this change, Énergir is increasing its contracted FTSH capacity from Dawn and Parkway to its service area while reducing its contracted FTLH transportation from Empress.

2.3.4.2 TRANSPORTATION SERVICE

Énergir is able to include in its overall gas supply arrangements sufficient transportation capacity to also make transportation service available to customers that have made their own arrangements to purchase gas at a supply point such as Empress or Dawn but prefer to rely on Énergir's transportation arrangements to transport their gas from the supply point to Énergir's delivery point that serves the end use customer's location.[44]

For this purpose, Énergir makes available to its customers (including resellers) transportation service on an unbundled basis.

2.3.4.3 LOAD BALANCING SERVICE

Customers that have arranged to purchase their gas from a supplier other than Énergir, whether or not their supplier is providing the transportation service required to move the gas from the supply point to Énergir's delivery point, generally also require load balancing service since few customers have loads that exactly match the timing of the contracted purchases and deliveries to the appropriate Énergir delivery point. Load balancing relies on storage of other arrangements to permit the deliveries to Énergir's delivery point to match the customer's demand although the upstream purchases are delivered on a different basis (usually at 100% load factor, which implies a constant daily volume).

Énergir provides the necessary load balancing services at regulated rates.

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[44] All customers in Énergir's service territory rely exclusively on Énergir to move their gas from Énergir's delivery points to the customers' premises.

2.3.4.4 INTERRUPTIBLE SERVICE AND COMPETITIVE MAKE-UP GAS (GAC)

Énergir's customers have the option of contracting for an interruptible service of natural gas. Under this service Énergir is permitted to temporarily interrupt deliveries of gas subject to the contractual terms and conditions. Having the ability to interrupt supply enables Énergir to avoid costs since it is able to contract for less firm transportation capacity than would otherwise be required to meet peak demand. The interruptible supply is not included in the peak demand volume for gas supply planning purposes. This arrangement also avoids the need to contract for storage capacity to supplement deliveries under peak demand conditions. It may also permit Énergir to defer or avoid capacity increases in the portion of its distribution system serving an interruptible customer, provided that the constraint only occurs during peak demand conditions. This cost savings justifies discounting the price of supply to interruptible customers, as compared to the price for firm service, by an amount up to the present value of the costs that are avoided.

When a customer's supply is interrupted due for example to a shortfall in deliveries to Énergir under peak demand conditions or depleted storage due to higher than expected seasonal demand, it may be feasible for Énergir to arrange for an alternate supply of gas, for example through spot purchases at Dawn and acquisition of the required short-haul transportation capacity in the secondary market. Under these circumstances, Énergir is able to offer customers that have had their deliveries interrupted competitive make-up gas to avoid interruption (GAI, gaz d'appoint pour évite une interruption) at a price that recovers the costs incurred to acquire that gas and deliver it to the relevant Énergir delivery point.

2.3.5 UTILIZATION OF ÉNERGIR'S DISTRIBUTION SYSTEM BY INTERRUPTIBLE CUSTOMERS

Unlike supply requirements and the design criteria for Énergir's customers for continuous distribution service, the demand of interruptible customers is not included in the required capacity used in the design of its transmission function assets.[45] Énergir stated in Phase 1 of this proceeding that it characterizes interruptible customers as using the surplus capacity of its distribution network and related assets in non-peak periods. This approach is also applicable to Énergir's contracted upstream transmission capacity. It implies that there is no causal relationship between the annual volume of customers with interruptible service and the transmission capacity costs incurred by Énergir for gas transportation. Based on this conceptualization of interruptible service, it would not be consistent with the principle of cost causality to allocate a portion of the costs of upstream transmission

[45] This observation, although not explicitly stated by Énergir, reflects Elenchus understanding of Énergir's evidence, particularly Document B-0345. In particular, page 48 appears to contemplate the exclusion of costs incurred to meet total demand including interruptible.

capacity to the interruptible class. Nevertheless, since interruptible service customers use these assets whenever they are not interrupted, it would violate the principle of no free service not to require interruptible customers to make a contribution to the cost of these assets since they utilize them most of the time. Énergir currently uses the Capacity Attributed and Used (CAU) as the method to recognize the use of its transmission lines by interruptible customers in its cost allocation study for distribution costs. This treatment would be equally applicable to the interruptible if it is viewed as a customer class in the future, rather than changing the approach so that it is viewed as a service. The change in treatment of interruptible service implies that supply costs are not allocated to that service in the same manner as they are allocated to other customer classes.

In Phase 1, the Régie reconfirmed its acceptance of the no free service principle and determined that the use of the CAU for allocating the cost of transmission lines is an appropriate method for allocating a share of the costs of these assets to interruptible customers. Under this approach, the interruptible class is assigned a share of these network costs based on their volumes consumed.

The Régie held that:

> *the use of the CAU factor takes into account the combined realities of the network design criteria and the use of transmission lines by interruptible customers, to the extent that this method recognizes that these customers are not active at peak periods and allocates them only the cost of the capacity that they use. The continuous service customers, for their part, are allocated costs for the capacity that they reserve. This fundamental difference is reflected in the costs allocated to the different rate categories.*[46]

While the Régie approved the use of the CAU factor, it also ordered Énergir to present a detailed report on the calculation of the CAU factor, and the treatment of interruptible service customers and combined rate customers during the update of the Study[47].

For purposes of allocating its supply costs Énergir, is now proposing a different approach to the pricing of interruptible service with the new approach based on viewing interruptible service as a supply tool – that is, rather than being a service of lower value, it is viewed as an alternate method of providing for the total peak capacity requirements forecast in the supply plan.

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[46] Decision D-2016-100, Paragraph [460], page 115 English version ; Decision D-2016-100, Paragraph [460], page 121-122 French version

[47] Decision D-2016-100, Paragraph [463], page 115 English version; Decision D-2016-100, Paragraph [463], page 122 French version

2.4 ÉNERGIR'S APPROACH TO SUPPLY PLANNING

In April 2016, Énergir submitted its supply plan for the four-year period 2017-2020. Decision D-2016-156 which was issued on October 14, 2016 approved the plan. Some of the key elements in Énergir's 2017-2020 supply plan, which it has used in the current proceeding to calculate the expected impact of its proposals, are as follows.[48]

- The relocation of the supply structure from Empress to Dawn

  This change led Énergir to review its cost functionalization methods and propose revisions to the rate structures for supply, transportation, and load-balancing services. In particular, Énergir is proposing to introduce the operational flexibility function which was previously viewed as an integral component of load balancing. The relocation of supply involved an increase in the transportation agreement durations, thereby increasing the risks of stranded costs if demand declines.

- Migration of interruptible service customers to continuous service

  Énergir notes that the migration away from interruptible service intensified after the winter of 2013-2014 when Rate D5 customers experienced many more days of interruptions than in previous years. The migration of customers from interruptible service to continuous (firm) service has increased the transportation capacity that Énergir requires to serve its firm customers.

- Return of customers to Énergir's transportation service

  The customer counts and volumes Énergir reported in its supply plan show that in 2013 179 customers contracted their own transportation for a total of 1952 10^3m^3/day. This number fell to 13 customers for a total of 252 10^3m^3/day in 2015[49].

- The revision of interruptible conditions of service

  An amendment of the conditions of service for make-up gas to avoid an interruption (MUGI) was proposed in Énergir's 2014 Rate Case. Evidence presented in the 2015 rate case covered the creation of a new interruptible class and increasing vaporization capacity in the liquefaction, storage and regasification (LSR) plant. In response to that evidence, the Régie directed Énergir to revise its interruptible offering by proposing enhancements to interruptible service categories A and B, and by considering the introducing a "super interruptible" category for Rate D4 customers. These issues have been carried forward to the current proceeding.

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48 Documents B-0134, pages 5-6, and B-0345, pages 5-6

49 R-3867-2013, Document B-0345, , page 5.

- The contracting of additional transportation capacity

  Énergir proposed improvements to its forecasting method for peak day demand in the 2014 and 2015 rate cases. The proposed changes increased Énergir's forecast of demand. In order to meet the additional demand, Énergir planned to contract additional FTLH transportation capacity in the short term on the secondary market and/or from TC Energy, if available. In the medium and long term, Énergir planned to ask TC Energy to build new capacity. The requirement for additional FTHL capacity has been eliminated by Énergir's new gas supply arrangements that moves the location of purchased gas from Empress to Dawn.

  Énergir noted that the increase in transportation needs, combined with the extension of agreement durations, prompted the Régie in decision D-2014-201 to ask Énergir to assess alternative solutions to purchasing transportation capacity in order to meet the increase in ongoing demand.

Énergir also addressed four issues arising from changes to the gas supply market noted by the Régie:[50]

- Option consummateurs' (OC) proposals to eliminate free rider interruptible customers

  A proposed increase to the penalty for unauthorized withdrawals was approved by the Régie in decision D-2012-158. Option consummateurs, a customer interest group, argued the penalty was not high enough to discourage interruptible customer free-riders. OC suggested the free-riders continued to take deliveries despite interruption notices because the penalties were not sufficient to offset the lower interruptible rates, effectively acting as continuous customers but paying less than those customers. Énergir is proposing a significant penalty of $5/m^3 for prohibited withdrawals and now has a measure to physically interrupt customers.

- Minimizing the impact of interruptible customer migrations on other customers

  The migration of customers from interruptible service to continuous service can impact the service of existing continuous customers, primarily through increased capacity costs. Énergir's proposal is to reduce the instances of customer migrations impacting the other continuous customers. Énergir is proposing in its new offering that customers will not be permitted to move to interruptible service if its contracted supply tools are sufficient such that interruptions will not be necessary. Additionally, existing interruptible customers must give three years notice to return to continuous service unless Énergir determines it has adequate capacity to serve the customer continuous service in the short term.

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50 Documents B-0134 and B-0345

- Including 2% operational flexibility in the subscribed volume of interruptible customers

  A customer may have combined continuous and interruptible services in which it must limit, but not interrupt entirely, their consumption on interruption days. These customers are granted a 2% flexibility; hence, they are not penalized for small excesses in consumption. Énergir found that only a small share of combined customers use the flexibility so it is not reasonable to require all interruptible customers to pay for additional capacity. Énergir is proposing to eliminate the 2% flexibility and require combined customers to withdraw only their subscribed continuous volume.

- Functionalizing income for unauthorized withdrawals and tax ceiling caps among different services

  The Régie asked Énergir to review the functionalization of income related to penalties in decision D-2015-125. Penalties from caps and unauthorized withdrawals are intended to recover the distribution-related capacity costs not included in the customer's subscribed volume; hence, income from these penalties is functionalized in the distribution service. Énergir proposed to functionalize penalties on the same basis as load-balancing costs because it is the supply tools within that function that allow the costs incurred to be offset.

2.4.1 ÉNERGIR'S SUPPLY STRATEGY[51] AND PLANNING[52]

Énergir noted in its approved 2017-2020 supply plan that the proposed changes to its supply strategy would have several impacts on its supply plan.

Interruptible service

The proposed redesign of interruptible service would modify supply requirements[53]. However, as the redesign of the interruptible service was still under development, the impact on the supply for the years 2018 to 2020 was considered at the margin. In the 2016 Rate Case, when establishing capacity to bid on TCPL for commissioning on November 1, 2018, Énergir estimated that resetting the interruptible service would

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51 R-3970-2016, Document B-0176, Gaz Métro-2, Document 1 – Plan d'approvisionnement 2017-2020, Section 7

52 R-3970-2016, Document B-0176, Gaz Métro-2, Document 1 – Plan d'approvisionnement 2017-2020, Section 9

53 At the time of submission of the supply plan, the new interruptible service was under development. As an interim measure, the 2017-2020 supply plan contained an add-on assumption of 528 10^3m^3 / day of customer to the interruptible service.

represent a supply replacement of 528 10^3m^3 / day. This estimate does not appear to have been questioned by the Régie in decision D-2016-007.

Transportation

Énergir forecast that it would have excess capacity for the four years of the supply plan based on its contracted transportation capacity and its forecast requirements, which were:

- **2017**: sales of 1,919 10^3m^3 / day of transportation for the period from November 2016 to March 5, 2017 divided into:
  a. 731 10^3m^3 / day FTLH Empress - GMIT EDA;
  b. 1,188 10^3m^3 / day FTSH Dawn - GMIT EDA;
- **2018**: sales of 1,620 10^3m^3 / day of FTSH Dawn transportation capabilities - GMIT EDA for the period from November 2017 to March 2018;
- **2019:** 1,945 10^3m^3 / day FTSH Dawn Transmission Capability Sales - GMIT EDA for the period from November 2018 to March 2019;
- **2020:** sales of 2,006 10^3m^3 / day FTSH Dawn - GMIT EDA transportation capacity for the period November 2019 to March 2020.

Supply of direct purchase gas

Except for certain fixed-price direct purchase customers with supply agreements extending beyond November 1, 2016, direct purchase customers would be required to deliver their supply at Dawn as of November 1, 2016. This change corresponded to Énergir planned to shift most of its purchase volume to Dawn from Empress over the time horizon of the plan.

Load Balancing

In its 2017-2020 supply plan, Énergir assumed that it would retain its storage capacity based on the various ways in which storage is utilized (i.e., both for load balancing and operational flexibility which are now proposed to be treated as separate functions).

The load balancing needs are partially met by storage sites located in Énergir's territory. These sites are composed of the LSR plant and the two underground storage sites owned by Intragaz (Saint-Flavien and Pointe-du-Lac). The LSR factory is characterized as an advanced supply tool and is the last resort supply tool.

Due to the physical characteristics of the Saint-Flavien, it has a constrained withdrawal profile that requires its use to be established in advance. Use of gas stored at this site is planned over the winter period.

The characteristics of the Pointe-du-Lac storage site allow adjustments to the injection and withdrawal volumes during the day over the winter period, with a final appointment window 3 hours before the end of the gas day. In addition, this site can be cycled in the

presence of excess transportation capacity. That is, the gas can be withdrawn and re-injected thereafter, maintaining a high withdrawal rate and providing a total volume of gas over the winter period greater than the physical capacity of the site. It is the last tool used before interrupting customers served, in part or in whole, by interruptible service.

Load Balancing requirements are also met by utilizing the Union Gas underground storage facility in Dawn in southern Ontario. This storage site is a very flexible tool in terms of daily gas flow. It allows adjustments to the gas volume nominations during the gas day based on by its appointment windows. Thus, the withdrawal or injection capabilities of this site can be used to respond to fluctuations in customer demand throughout the year.

Énergir also addresses its load balancing requirements through spot purchases of gas at Dawn with the volumes being transported under TCPL's FTSH and / or STS transportation contracts, combined with M12 transmission capacities from Union Gas.

Finally, Énergir considered new equipment that could be used to interrupt the liquefaction for GM LNG in winter 2016-2017 once the new liquefaction capability was installed. During GM LNG liquefaction interruption days, Énergir will use the gas that would normally be liquefied for GM LNG customers to meet the demand of its distribution customers. In return, GM LNG may subsequently withdraw make-up gas equal to the diverted liquefaction volumes. In essence, this facility serves as an interruptible service
Énergir's Supply Planning Methodology

2.4.2 ÉNERGIR'S SUPPLY PLANNING METHODOLOGY

Énergir's approach to supply planning is the basis for its proposed approach to functionalizing its supply costs to services as the first step in its cost allocation methodology. Consequently, an overview of Énergir's approach to supply planning provides the best explanation of the rationale for its alternate conceptual framework and the corresponding functionalization method.

The purpose of supply planning is to develop and implement a strategy for minimizing the total cost of Énergir's gas supply that is to be recovered from its customers. Hence, at the most general level, Énergir's total supply cost can be viewed as the cost of meeting the gas supply needs of its customers efficiently.

Énergir meets the requirements of its customers by acquiring natural gas, transportation capacity, storage capacity and other incidental tools that are used to deliver gas to the Énergir distribution system so that the deliveries match the requirements of all customers. As a regulated utility, Énergir is expected to minimize the total cost of supply taking into account all prudently incurred obligations (e.g., accommodating direct purchase arrangements and adhering to all contractual terms and conditions such as storage injection and withdrawal limits, long term transportation contractual obligations, etc.).

In order to meet customer requirements at least costs, Énergir develops a supply plan that seeks to establish the optimal quantity and mix of supply tools, while accommodating the uncertainty inherent in projections of future requirements due to the uncertainty of future weather-related and other drivers of demand.

Énergir's supply planning process is described most comprehensively in Additional Evidence, Follow up on the August 23, 2017 letter of the Régie de l'énergie (A-0128) (GM-5, Doc 8). Related comments appear throughout Énergir's Phase 2 evidence. The following discussion is a summary of Elenchus' understanding of Énergir's supply planning process based on the evidence filed in this proceeding.

The supply plan that Énergir submits annually for the Régie's approval involves the following five elements.[54]

1. A four-year forecast of Énergir's customer annual volumetric requirements.
2. A consistent forecast of the expected peak demand (assuming normal winter weather) and the extreme winter peak demand.
3. An assessment of the adequacy of existing supply tools under contract to meet Énergir's normal winter peak and extreme winter requirements.
4. Specification of the required addition and/or disposal of supply tools to ensure that customer requirements are met at minimum cost.
5. Specification of the adjustments to the tools under contract that are needed to ensure that daily operational supply flexibility is available.

The details of Énergir's supply planning process can be summarized[55] in three steps as described below. These three steps address the five elements identified by Énergir and listed above, but they are structured to more directly correspond to the supply planning process that is detailed in Énergir's evidence.

Step #1: Forecast peak demand

Énergir primarily uses regression models to forecast the peak demand of all customer classes with temperature (degree-days) as the main explanatory variable. The historical trend in use per customer and the number of customers in each rate class is also included. This approach allows Énergir to forecast not only the expected peak demand (i.e., assuming "normal" temperature), but also the extreme winter peak demand (i.e., assuming extreme winter temperatures). Énergir's supply plan must accommodate both normal and extreme winter peak demands cost effectively.

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54 Documents B-0331, page 4 and B-0353, page4.

55 Énergir provides a more extensive overview of the supply planning process at Documents B-0331, page 3-8 and B-0353 , pages 3-8.

In addition to its use in supply planning, peak demand is an important allocation factor used in Énergir's cost allocation model.

Step #2: Determine tools required to meet the forecast peak demand

The tools required to enable Énergir to meet the peak demands of customers can be divided into two components:

- Pre-existing commitments which cannot be altered in the supply plan, and
- Discretionary tools which are the tools in addition to the pre-committed tools that will be required to meet the peak demand cost effectively.

For example, peak demand will be met with the least-cost mix of transportation capacity and storage, taking into account the withdrawal constraints on contracted storage capacity. There is a cost to contracting for higher withdrawal rights as there is for increased transportation capacity. The tools included in the supply plan must provide the capacity required for Énergir to meet the forecast extreme peak demand.

The optimization process may include the disposition of some pre-existing commitments if doing so has a beneficial net impact on the total supply cost.

Elenchus notes that conceptually Énergir should optimize its supply plan by minimizing the expected cost of the supply plan based on the total cost of its tools under various demand (i.e., temperature) conditions weighted by the probability of those demand conditions occurring.

In the context of cost allocation, Énergir notes that since storage and transportation are alternative tools for meeting peak demand, the causality of the two tools to the extent they are "caused by" the need to meet peak demand (i.e., for load balancing), they should be allocated in the same way.

Énergir states:

> *… the causality of the delivery costs (transport and balancing combined) is the relative demand of each customer considered in peak demand. This cost causality works, regardless of whether the tools purchased to meet peak demand are transport tools, storage tools, or a combination of both. However, this causality, expressed by the **P** factor, makes it hard to establish a transport service as defined during the rate unbundling (i.e. relatively neutral compared to the market price or the transporter's price). Additionally, this enables some customers to get free service even though if those customers had to pay for their supply directly, they would need to spend a certain amount.*[56]

[56] Documents B-0331, page 6-7 and B-0353, page6

Elenchus notes that this observation is a key consideration in supporting the change in Énergir's cost allocation methodology from one that focus on allocating the costs of tools to one that focuses on allocating the costs of the defined gas supply functions: volumetric supply, load balancing and operational flexibility.

Step #3: Adjust the tools to accommodate the operational flexibility requirements

To finalize Énergir's supply plan, it examines the extent to which the tools required to minimize the cost of meeting the peak of its customers can also accommodate the operational flexibility required to respond to the within-day variances that will inevitably occur, forcing it to increase or decrease the scheduled deliveries during the day to avoid unacceptable imbalances between deliveries and actual consumption by its customers.

Conceptually, the cost associated with the changes that are required for operational flexibility can be determined by subtracting the total cost of supply as determined in Step #2 from the total cost of supply as determined in Step #3.

3 ÉNERGIR'S APPROACH TO COST ALLOCATION

Énergir's evidence describes a change in its high-level approach to functionalizing, classifying and allocating its gas supply costs to customer classes. In particular, although the functions that Énergir uses (Gas Supply, Transportation, and Load Balancing) in its cost allocation model have not changed the way those functions are defined and therefore the costs that are functionalized to those functions have changed. The most significant change appears to be that the current model includes Storage (or "Inventories") within all three functions; whereas the proposed model includes all Storage costs in load Balancing. There are also several changes to the allocators being used.

Another notable change is that load balancing costs in the current model are classified to either peak or space; whereas, in the proposed model the costs are classified as space as Seasonal and Volume[57]. Also, operational flexibility is treated as a cost within load Balancing in the proposed model, but it represents only 1.4% of total load balancing costs.

Unfortunately, Elenchus has been unable to conduct a detailed analysis of Énergir's methodology since there had been no opportunity to seek clarification through further discovery (i.e., information requests or another process for pursuing further clarification). Furthermore, Énergir evidence does not include a reconciliation between the current and proposed models nor is there an explanation of how values that are determined from sources that are external to the models have been derived. Further information will have to be filed in order to make the methodological changes fully transparent.

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[57] The clarity, the term used in Énergir's models is "Pour Tous".

Given the challenges in deciphering the details of Énergir's proposed cost allocation methodology, this report focus on conceptual issues that relate to what Énergir says it has sought to accomplish in proposing to modify its cost allocation model. Elenchus is unable to confirm whether or not the proposed model actually reflects Énergir's stated intent. To do so would require an audit of the Excel models, including a review of related documentation and source information that is not yet on the record.

Nevertheless, in Elenchus' view, the important issue before the Régie in this proceeding with whether the approach described by Énergir in its evidence provides an appropriate basis for modifying its cost allocation model. Once the Régie has determined the conceptual framework and the high-level design parameters for the model, then it will be necessary to conduct a separate technical review of the model to ensure that the model correctly implements the intended methodology.

3.1 THE IMPLICATIONS OF MARKET TRANSFORMATION

As noted above, it appears to Elenchus that the fundamental change to Énergir's costs allocation methodology that it is proposing is the change to its functionalization method to make the conceptual framework more consistent with the Énergir's current operational context which has resulted from the transformation of the North American natural gas market. The proposed changes to the allocation of its costs are undertaken to be consistent with the change in the functionalization method. The allocation of working capital and income tax have also been changed from a revenue-based allocation to an allocation based on sales volume.

Énergir's proposed change to its functionalization method as explained in its evidence[58], as understood by Elenchus, can be summarized as follows.

Current functionalization method: The current method breaks down the tools that are included in Énergir's supply plan into two categories. The first category is made up of the tools (and their actual costs) used to accommodate the average demand that is forecast for the year. This is done by ordering all tools included in the supply plan and determining the cost of the tools that are used to deliver the average daily demand to Énergir's service territory. The balance of total gas supply cost is attributed to the second category: load balancing. In the current method load balancing includes both seasonal load balancing and operational flexibility, with no separation of those costs.[59]

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58 Documents B-0331, page 11-12 and B-0353, page 10-11

59 To simplify the discussion, this high-level explanation ignores the detail of both methods, i.e., the functionalization of supply service costs and the functionalization of the transportation and load balancing service costs. It also ignores the details of the treatment of the many related specific costs

Proposed functionalization method: Conceptually, Énergir is proposing to determine the cost of accommodating the forecast average daily demand of its customers by identifying the tools that it would utilize to meet that demand at minimum cost. It appears that the approach is intended to determine the tools within its actual supply plan that would be relied on if the total annual gas requirement of its customers was consumed at a 100% load factor. It is Elenchus understanding that as a result the determination of the costs that are functionalized as annual volume should reflect the lowest cost supply plan for that function alone, without being constrained to using the tools that are included in Énergir's actual supply plan. Hence, the tools are not ordered as in the current methodology.

In Énergir's words, "the portion equivalent to a LF of 100% based on all the tools that could be used to address such a demand profile. Such a process, rather than directly attributing tools, makes it possible to calculate a de-seasonalized cost that better reflects stable annual demand."[60]

While it is conceivable that the functionalized cost of the annual volume would end up being the same under the old and new methods, it can be expected that the proposed functionalization method will result in a lower cost for the annual volume.[61] In essence, since it will be the optimized mix of tools for meeting this requirement, any assignment of tools included in Énergir's actual supply plan that would deliver the required average daily volume could not result in a lower cost.

In the view of Elenchus, the most direct way to implement the alternate conceptual framework for cost allocation purposes would be to adopt a methodology based on determining the cost of hypothetical portfolios that build up to the actual gas supply plan. As a first, step the cost of Énergir's 100% LF supply would the cost of the hypothetical least cost supply plan that would deliver the required annual volume assuming there was no need for any load balancing or operational flexibility. While this would be a hypothetical supply plan, the total cost could be determined in essentially the same way as the actual optimized supply requirement is determined. It uses known actual contract costs, terms and conditions and utilizes tools to minimize cost for a specific supply scenario. The only

since it focuses on the conceptual change that underpins the implementation details that are identified in Énergir's evidence. For example, Énergir notes that "The multi-point purchase premium is also allocated entirely to transport. Additionally, certain transport tools are transferred, which leads to optimization income and a transfer of costs between transport and balancing. Some inventory costs and temporarily deferred expenses are also functionalized to transport."

60 Documents B-0331, page 12 and B-0353, page 11

61 As Énergir observes: "before the multi-point purchase bonus, out of annual transport tool costs of $272.3 million, $230.2 million is functionalized to transport. This amount is less than the functionalized cost for transport tools under the current method (including seasonal transport costs included in the transport service under the current method) which is $242.2 million ..." Documents B-0331, page 12 and B-0353, page 11

difference is that for the new approach effectively assumes a supply scenario that is the hypothetical 100% LF scenario.

Having determined the cost of the hypothetical 100% LF supply plan, a second hypothetical supply plan would be notionally derived that includes the need for seasonal load balancing but does not incorporate the need for daily operational flexibility. The incremental costs included in this plan would include the costs associated with the required storage capacity including the cost of the injections and withdrawals, compressor fuel, etc. Furthermore, since Énergir's actual seasonal requirements are not driven simply by two distinct periods of the year (an injection period when actual demand is below average and a withdrawal period when actual demand is above average), the hypothetical seasonal load balancing supply plan should reflect not only the forecast expected and extreme peak demands but also the normal day to day changes in demand due to weather and other factors (weekend and holiday demand may differ from weekday demand) that may cause multiple injection and withdrawal cycles. In other words, the cost of this hypothetical supply plan would reflect the supply plan that would be adopted if there were no need for operational flexibility – that is, if the within-day demand of customers could be forecast precisely on a day-ahead basis.

The total load balancing costs included in the supply plan could then be determined by subtracting the cost of the 100% LF supply plan from the cost of this second hypothetical supply plan that includes load balancing. It is the incremental costs that are caused by the need for load balancing (excluding operational flexibility) through the year.

Finally, the portion of the total supply cost that is functionalized as operational flexibility would be determined by subtracting the cost of the seasonal load balancing supply plan from the actual total supply cost. The incremental cost of the actual supply plan would be the portion of the total supply cost that is caused by Énergir's requirement for operational flexibility.

3.2 ÉNERGIR'S ALTERNATE CONCEPTUAL FRAMEWORK

Énergir's evidence indicates that in light of its current operational context, as described in section 2 above, the functions used for allocating costs to customer classes should be redefined so that they better reflect Énergir's current approach to gas supply planning. The redefined functions correspond specifically to (i) meeting the annual volumetric needs of customers, (i) meeting the load balancing needs of customers, and (iii) providing the necessary operational flexibility to handle the within-day uncertainty of customer consumption. Causality is more clearly aligned to the functions when they are defined in this way.

In my view, this change in approach can be best understood as a revision to the conceptual framework that is used as the starting point for cost allocation.

The primary driver for this change in approach is that the traditional gas supply tools have become much more substitutable than they were in the past. Prior to the relocation of the supply structure from Empress to Dawn, Énergir would purchase natural gas at Empress, transport it to its service area in Quebec and deliver it to their customers. Since attempting to match gas purchases to customer consumption did not minimize total costs, a third tool (storage) was used, with excess deliveries injected into storage (generally in the warmer than average days seasons and days) and then withdrawals of the stored gas to supply customers when demand exceeded the daily deliveries from Empress. While this description oversimplifies the way in which Énergir managed its gas supply for customers, the basic description is accurate. Énergir's gas supply planning just required it to determine the quantity of each tool (purchases, transportation and storage) that was needed to enable it to meet the needs of its customers. The primary gas supply planning decisions that were needed were essentially limited to the overall scale of the plan. There was limited substitutability among the available tools; hence, the "ordering" of tools was straightforward and stable over time in the current methodology.

As the discussion of the operational context in section 2.1 shows, the change that has occurred in Énergir's operational context is that it now can choose to purchase gas at Dawn instead of Empress in which case the required transportation is only from Dawn to Énergir's service area rather than from Empress. Since the distance that the gas must be transported is significantly reduced, the cost of transportation is also greatly reduced. However, given the way that the North American natural gas market operates, there is a price differential in the cost of gas purchases that offsets the reduced transportation costs. The implication of this observation is that it is reasonable to define the cost of Énergir's gas supply portfolio as being made up of the functional components, leaving open the tools used for those functions. The implication is that now Énergir's gas supply planning has to consider whether the higher purchase cost-lower transportation cost supply from Dawn will result in a lower total cost for customers as compared to lower purchase costs-higher transportation cost supply from Empress. At a conceptual level, it is the total delivered cost of gas that is relevant and needs to be allocated to customer classes; hence, it follows that the allocation of the purchase cost of gas, transportation and storage be handled in a consistent manner. In Elenchus view, the most direct and transparent way to ensure consistency would be to combine the costs associated with meeting Énergir's annual volumetric requirement for allocation purposes and separately determine and allocate the costs of load balancing and operational flexibility.

Although it is not explained this way in Énergir's evidence, I find it helpful to understand the evidence of Énergir in terms of a change in the conceptual framework for defining the gas supply functions from the traditional conceptual framework to an alternate conceptual framework. In my view, the essential difference is as follows.

The traditional conceptual framework used by Énergir in the past was aligned with the approach taken by other natural gas distributors in Canada and abroad. The essence of this approach is that all costs as functionalized to distinct gas supply: Supply (gas purchases), Transportation and Load Balancing (primarily associated with storage), as described in section 2.2. The cost of each of these functions is allocated to customer classes based on relevant costs drivers, including annual (or average daily) volume, peak demand, etc.

The alternate conceptual framework that reflects Énergir discussion of its proposed approach to cost allocation in this proceeding is to take a global view of costs that links very closely to the relevant cost drivers for cost allocation. Cost that are incurred, or caused by, the need to deliver the annual volume to Énergir's service area are allocated based on the average daily volume of each class. These costs would include gas purchase, transportation and other costs that would be incurred to meet the needs of Énergir's customers if they all consumed gas at 100% load factor. Under this approach, load balancing costs are the incremental costs to accommodate the deviation from 100% load factor in the demand of customers.

Both the traditional and the alternate conceptual frameworks are intended to allocate costs to customer classes in a manner that is consistent with the principles that have been endorsed by the Régie and used over the years to review and approve Énergir's current methodology. Hence, changing the conceptual framework is not intended to alter the guiding principles that have been accepted for purposes of Énergir's current cost allocation methodology that are summarized in section 1.3, above. Rather, the intent is to modify the conceptual framework in a way that implements those principles in a manner that is more consistent with Énergir's current operating environment.

3.3 IMPLEMENTATION OF THE ALTERNATE CONCEPTUAL FRAMEWORK

As noted above, the essence of the alternate conceptual framework is to separate all supply and transportation costs into three notional categories.

- The cost of supplying and transporting gas to customers if every customer consumed their annual gas requirement at a load factor of 100%. This category of costs can be allocated to customers and recovered based on their annual volume.
- The additional cost of supplying and transporting gas to customers that are caused by the variation from consumption that results in the load factor being less than 100%.
- The additional costs incurred to provide operational flexibility.

Based on Elenchus' understanding of the alternate conceptual framework that is being advanced by Énergir, it follows that the most direct approach to allocating Énergir's costs

to customer classes would be to develop the three tiers of gas supply portfolio, where the incremental costs of the portfolios would represent the cost of the three main functions.

Tier 1: The gas supply portfolio that would meet the forecast annual volumetric requirement of Énergir's customers at minimum cost (i.e., gas supply at 100% load factor).

Tier 2: The gas supply portfolio that would meet the forecast annual volumetric requirement of Énergir's customers with load balancing at minimum cost (i.e., without accommodating operational flexibility).

Tier 3: The actual gas supply portfolio that meet the forecast annual volumetric requirement and accommodates Énergir's load balancing needs as well as operational flexibility.

Each of these portfolios would consist of the gas purchases, transportation arrangements, storage and other tools that will minimize the cost of meeting the needs of customers under the assumed conditions. Pre-existing contractual commitments would be built into each portfolio. When considered on a forecast basis, there will be no stranded costs assuming the supply plans are prudent. Put differently, all costs are "caused by" the **forecast** requirements of customers.[62]

Conceptually, the three-tier approach to implementing Énergir's alternate conceptual framework would determine the load balancing costs in a straightforward manner. Tier 1, for example, would require Énergir to develop a hypothetical supply plan that represents the tools it would require to supply its customers with the forecast annual volumetric requirement under the assumption it would be delivered at 100% LF. Subject to the considerations noted below, the cost determination should be quite straightforward since the 100% LF supply could be fulfilled by planning to acquire supply that has the lowest total cost of gas plus transportation. Considerations that may be relevant in completing this exercise may include:

- Seasonal differences in the cost of gas purchases, including locational differences (i.e., Dawn versus Empress) which may imply that storage would be utilized to the extent that forecast seasonal price variances justify arbitrage across seasons (i.e., buy increased volumes when the price is low, then store the excess volume and deliver it to customers when the price is high);
- Énergir's requirement for deliveries to different supply points;

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62 There a many implementation details that will have to be addressed at a later stage in the process. For example, there will be some costs incurred that may have to be attributed to two or three-tier, such as the costs associated with Énergir's gas management tools. It may not be appropriate to include 100% of these costs in the first tier although they are required for it. It may be impractical to determine that cost differentials for the gas management tools required for each tool.

- The uncertainty in the actual annual volume required and the drivers of any variance from forecast (i.e., it may be appropriate to treat variances due to weather differences as a load balancing costs; whereas differences due to customer count or other non-weather-related factors as part of the annual volumetric cost);[63] and
- An examination of the treatment of pre-existing commitments (e.g., pre-existing commitments that relate to the ongoing need to meet the annual volumetric commitment should be recognized in the 100% LF supply plan - Énergir's commitment to maintain FTLH capacity with TCPL would appear to be relevant in this regard).

In Elenchus view, this more refined approach would adhere more strictly to the cost causality principle than the approach that Énergir is proposing to adopt.

Elenchus expects that since this hypothetical supply plan is not directly linked to Énergir's actual supply plan, it would have to be subjected to a separate process of discovery and testing so that the Régie could confirm that it would be prudent and would be the least cost method of providing the annual gas supply for customers. This additional regulatory effort would be required since the derived costs would be an important factor in allocating costs to customer classes.

3.3.1 Tier 1: Énergir's Annual Volumetric Requirement

Tier 1 is the least cost supply plan that would meet the forecast annual volumetric requirement (maximum) of customers. That is, the cost of gas purchase, transportation and other costs if the total annual volume was consumed at 100% LF. Put differently, it is the least cost supply plan that could be developed to accommodate the annual volumetric requirement assuming no load balancing or operational flexibility were required).

Since the cost of purchasing gas at different trading hubs (e.g., Empress and Dawn and possibly other hubs that may become practical alternatives in the future) differs by location and the cost of transportation from different trading hubs is also very different, it is logical to view the total cost for cost allocation purposes as the global cost of this function as opposed to the cost of gas purchases and transportation. The cost driver for natural gas delivered to Énergir's service area is the annual volumetric demand of each customer class, regardless of the mix of gas purchase, transportation and storage costs which will be very different for purchases at different trading hubs.

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[63] Under this approach, there will be no "stranded costs" to be determined based on actual requirements on a retrospective basis. The cost incurred to accommodate forecast demand that is higher than the actual requirement based on actual demand would be allocated based on the how they are caused – that is, based on the forecast considerations that caused the tools to be included in the supply plan.

Based on Énergir's evidence, it appears that its description of its proposed approach to determining the costs to be functionalized as annual volumetric costs is[64]:

1. present the supply costs globally, rather than by service since, in Énergir's view the cost of each tool cannot be divided meaningfully between the transportation and load balancing services in isolation from the global costs;
2. functionalize the costs of purchasing the gas supply directly to the supply service, adjusted for any differences from the price that Énergir would have paid to fulfil uniform demand;
3. calculate the transportation costs to be included in the annual volumetric cost based on the average purchase cost of the transportation tools (hence, seasonal tools, such as storage and transportation tools purchased for the winter, would be excluded from the calculation so that the resulting rate would represent the average annual customer demand); and
4. all costs that are not functionalized as annual volumetric consumption (i.e., costs that depend only on the seasonal consumption profile or would not be linked to any consumption profile) would be treated as load balancing costs that would have a two-component rate: one component related to the profile (allocated based on load factor) and the second related to the volume consumed (allocated based on consumption volume).

ELENCHUS OBSERVATION

Énergir's approach does not appears to have considered all variances in its supply cost through the year.[65] For example, variance in gas purchases cost through the year are not considered. Hence, in determining the annual volumetric cost, insufficient consideration may be given to the possibility that the costs of its annual volumetric supply could be reduced by purchasing gas in periods when the price is low and storing it to deliver the lower cost gas at time when the price is higher. This type of arbitrage may provide an opportunity to reduce the forecast cost of gas that is to be delivered to customers at 100% LF. The implication of this observation is that under the alternate conceptual approach implied by Énergir, every effort should be made to determine a cost of supply that reflects the most prudent gas supply strategy that would be available to Énergir in developing the hypothetical cost of meeting the gas supply needs of its customers assuming it is consumed at 100% LF.

The rationale in adopting this approach to optimizing the cost of Énergir's annual volumetric supply is that Énergir's methodology capture not only the impact on load

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64 This summary corresponds to the overview summary that appears in Énergir's Review Report, Documents B-0133 and B-0344.

65 Market vs. annualized supply price is discussed in section 2.2.3 of Documents B-0133 and B-0344.

balancing costs of due to variable seasonal demand (i.e., consumption at less than 100% LF) that may require increased volumes during high-priced seasons but also the fact that the average cost of purchasing gas at 100% LF may not minimize the total cost if seasonal price differences outweigh the cost of storage.

In Elenchus view, the approach that would be most transparent for determining the causal costs that should be allocated based on average daily volume would be to determine the cost of a hypothetical gas supply plan that would meet the maximum forecast demand of its customers on the assumption that it will be consumed at 100% LF.

3.3.2 Tier 2: Énergir's Load Balancing Requirement

Under the three tier approach, Tier 2, Énergir's Load Balancing Requirement, would be the incremental cost of the least cost supply plan sufficient to meet the forecast annual volumetric requirement (maximum), including gas purchase and transportation, taking into account forecast class load profiles (i.e., the load balancing requirement without operational flexibility).

As Énergir states:

> *The balancing service is a service whose costs are formed of all of the excess supply costs linked to serving seasonal demand. Those costs reflect the excess peak need at [over] a theoretical demand of 100% of LF.* [66]

In Énergir's current functionalization method, its seasonal load balancing costs are separated between two sub-functions: space and peak. The functionalized costs are allocated based on the space factor (FB05E which is the difference between the average winter demand and the average annual demand), the peak factor (FB05P which is the difference between peak demand and average winter demand) or a combination of both.

In the proposed allocation methodology, most load balancing costs are allocated based only on peak demand (FB05E which is redefined as the difference between peak demand and average annual demand). The load balancing costs allocated in this way do not include the costs that are functionalized as operational flexibility costs.

As Énergir states:

> *The proposed allocation therefore replaces factors FB05E (**H-A**), FB05P (**P-H**) with a new factor FB05E (**P-A**), adds a new factor FB01E based on annual balancing sales (volume) for costs not linked to the profile and replaces income factors FB07EP*

66 Documents B-0331, page 17 and B-0353, page 16

(peak-related income) and FB07EE (space-related income) with factors FB07ES (profile-related income) and FB07EPT (non-profile-related income).[67]

This approach is characterized by Énergir as being consistent with the average and excess demand method for unbundling the costs of transportation and load balancing, as approved in decision D-97-047. Elenchus accepts this characterization.

Further, as Énergir states as page 98 of GM-5, Doc 1:

Gaz Métro is asking the Régie to approve the proposed allocation method for each of these costs:

- *Seasonal costs related to the purchase and transportation of the supply: Based on the customers' LF*
- *Costs not related to the consumption profile: Based on the volume consumed*

Gaz Métro therefore proposes a new load balancing rate with two components:

- *Price component based on the LF*
- *Price component based on the volume consumed*

It then states that these load balancing costs relate to two drivers:

- The difference between the monthly volume and the annual average volume, and
- The difference between the monthly supply price and the annual average supply price.[68]

The proposed approach, which identifies the costs of the load balancing function as the difference between a comprehensive supply plan that includes load balancing (without operational flexibility) and a 100% LF supply plan, captures both of these drivers.

Énergir also notes that:

For the moment, the following costs have been identified as not being related to the consumption profile:

- *Stranded costs not related to temperature*
- *Costs related to maintaining the 85 TJ/day at Empress*
- *Costs related to operational flexibility*

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67 Documents B-0331, page 17 and B-0353, page 16

68 A more detailed discussion of this point appears at documents B-0133, page 101 and B-0344, page 98.

For all these costs, allocation based on volume consumed allows for preventing any notion of consumption profile.[69]

Furthermore, Énergir points out that the proposed conceptual changes to the functionalization of supply costs leads to several additional refinements including abolishing the inventory adjustment service and integrating the costs related to this service into the load balancing costs, since they are entirely related to holding inventory to balance the seasonal demand of customers.

OBSERVATIONS OF ELENCHUS

Elenchus notes that the proposed approach appears not to consider any difference in the cost causality of diversifiable and non-diversifiable aspects of the class load balancing (and operational flexibility, see below) requirements. This consideration is relevant if allocators are used that are based on multiple days as opposed to the single coincident peak day of the year.[70] Recognizing the extent to which class variances in demand from the annual average, which is analogous to the use of the beta factor for investment portfolios, may be worth considering. To the extent that variances are diversified, it is only the transaction costs for diversification that need to be recovered from customers. Diversification differs from storage and interruptible service in that it occurs naturally among classes with non-coincident demand variations. Using the customers' load factors as the allocator will not recognize this feature of load balancing and operational flexibility requirements fully. LF captures the issue only if it is calculated using average demand / coincident peak demand. A refinement to Énergir's proposed methodology could examine this issue as an option for refining the method in the future.

In the absence of more detailed discovery with respect the details of the derivation of the input values for Énergir's proposed model, Elenchus cannot determine whether the proposed methodology is strictly consistent with the three-tier approach described here. It is clear however, that if the load balancing costs were determined by directly determining the incremental cost of a load supply portfolio that meets the requirements of Énergir's customer, absent the need for operational flexibility, as compared to the 100% load factor supply plan cost (I.e., Tier 1 cost), the difference would be the incremental cost of providing for load balancing.

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69 Documents B-0133, page 101 and B-0344, page 98.

70 See the discussion of approaches to determining coincident peak in section 5 below.

3.3.3 TIER 3: ÉNERGIR'S OPERATIONAL FLEXIBILITY REQUIREMENT

The incremental cost of the actual supply plan (which must minimize the total forecast cost of meeting all requirements to be deemed prudent) as compared to the Tier 2 supply plan represents the cost incurred to meet the requirement for operational flexibility.

Daily operational flexibility service is an integral part of Énergir's gas supply management activities. The activities that have previously been defined as aspects of load balancing have been further broken down by Énergir into the following activities.

- Seasonal load-balancing which primarily utilizes long-term storage to reduce the amount of transportation capacity required to transport gas to Énergir's service area so that the seasonal differences in demand can be managed cost-effectively.
- Daily load-balancing facilitates adjustments to the daily deliveries of gas to the franchise area to meet the needs of customers as determined by the day-ahead forecast. Daily demand is met primarily with contracted transportation capacity from multiple gas delivery points including storage resources. When gas from storage is required to supplement other deliveries, the withdrawal rate may be a critical constraint. Interruptible service is also used to meet customer requirements on high-demand days.
- Operational flexibility relates specifically to the requirement to accommodate the fluctuations in demand during each gas day. These variances from the day-ahead forecast relate to both weather factors and the operational decisions of customers (e.g., an unexpected shutdown of an industrial operation due to equipment problems). Any imbalance between deliveries to the Énergir system and customer consumption will impact on pipeline pressures and, if the imbalance is large enough, could result in operational issues and/or penalty charges. Operational flexibility is required to manage these issues so as to minimize the total cost of Énergir's gas supply.

Énergir's operational flexibility is constrained by the permitted nomination windows for each type of storage and transportation. The nomination windows and related constraints are required to ensure that the various transportation and storage assets used by Énergir can effectively manage the balance of gas supply and demand in the distribution system. Although gas pipelines are more resilient to imbalances than the electricity grid (pipeline facilities are essentially skinny storage facilities that can accommodate some fluctuation in operating pressure), there are strict limits to the amount of flexibility achievable through pipeline pressure variances. Maintaining a close balance between supply and demand is critical for a gas pipeline although imbalances can generally be managed over hours rather than near-instantaneously as is required with the electricity grid.

Daily imbalances are tracked by TCPL and are reported to Énergir on a daily basis. Énergir is required to adjust as soon as possible to compensate for imbalances in order to avoid incurring penalties. Permitted imbalances are embedded in TCPL's Limited Balancing Agreement (LBA). As Énergir notes:

> *Penalties are billed as soon as the daily variance exceeds 2%, with an incremental increase in fees at 4%, 8%, and beyond 10%. Moreover, additional fees related to the cumulative variance greater than 4% and 6% are also applicable.*
>
> *As such, the first 2% variance in a given day is not subject to penalties.*[71]

LBA is essentially a penalty instrument to provide a strong incentive for TC Energy's customers, including Énergir, to closely balance their supply and demand. It is not a service that is part of Énergir's gas planning toolkit.[72]

Énergir suggests that the cost of operational flexibility related to transportation tools or supply purchase should not be allocated based on the customer's consumption profile for two reasons:

- The seasonal consumption profile of all customers is just in the winter, but the need for operational flexibility is year-round; and
- The need for operational flexibility is not related to the customers' LF.[73]

Énergir concludes: "Since the need for operational flexibility increases with the total volume to supply, the most direct causal link for operational flexibility is the volume consumed by the customers." [74]

Elenchus notes that conceptually it should be feasible for Énergir to analyze the amount of operational flexibility that has been required historically by each rate class by comparing the daily forecast demand of each class to the actual demand of each class. In practical terms, however, this exercise may be limited by the availability of the required data at this time. It is Elenchus understanding that the day ahead requirements of Énergir's customers is not forecasted or tracked on a customer class basis. In addition, not all customer consumption is metered and recorded on a daily basis; hence, actual daily consumption is not known accurately for all rate classes. Data on variances that may occur within specific nomination windows would be even more difficult to track.

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71 Documents B-0138, section 2.3, page 27 and B-0347, section 2.3, page 28

72 Énergir's evidence provides a detailed description of the nomination processes that affect operational flexibility at B-0138 and B-0347, pages 6-17. Énergir also addresses issues related to operational flexibility in two separate reports (Documents B-0138 and B-0347, and Documents B-0187 and B-0349) that follow up on two previous decisions: D-2015-181 and D-2016-126.

73 Documents B-0133, page 74 and B-0344, page 72

74 Documents B-0133, page 75 and B-0344, page 73

Based on Elenchus' understanding that it is not practical to determine the actual flexibility requirements of each rate class, it does appear reasonable to Elenchus to allocate Énergir's operational flexibility costs on a volumetric basis.

As for a more detailed analysis of operational flexibility, Elenchus notes that Énergir presented evidence on its evolving supply strategy in its 2013 Rate Case[75] that set out its plans to transition from sourcing its gas supplies from Empress to purchasing its gas at Dawn. As Énergir explains in section 2 of GM-5, Doc 4, existing contracts limit Énergir's right to reduce the Empress to GMIT EDA transportation capacity that it holds is limited until December 30, 2020. As a result, the mix of tools it can use to minimize cost will change in 2021 as it unwinds its existing commitments as the opportunity arises. This constraint needs to be recognized in determining each of the hypothetical supply plans (i.e., the Tier 1 100% LF plan and the Tier 2 load balancing plan) in order to ensure that they are based on costs that are consistent with Énergir's actual comprehensive supply plan (including operational flexibility). If the costs in the plans are not developed on a consistent basis, any residual cost difference will be attributed to operational flexibility, which is determined as a residual. This functionalization of operational flexibility costs would not be consistent with the cost causality principle.

Identification of Operational Flexibility Costs

Operational flexibility is not a service that can be purchased separately by Énergir from the transportation and storage suppliers with which it contracts. The cost is derived by estimating the premium that is paid for transportation and storage services that have greater flexibility than alternate transportation and storage services that may have lower cost but permit less flexibility.

Énergir estimates its total cost for operational flexibility calculated on this basis to be under $293,000 for each year from 2016-17 through 2018-19.[76] This total includes operational flexibility costs attributable to Union's M12, C1 and Storage services. Énergir's cost calculation includes no operational flexibility costs associated with TC Energy's FT1 and STS services or penalties. Hence, the estimated operational flexibility costs are about 0.1% of Énergir's total transportation and load balancing costs. However, Énergir notes several caveats on its calculation leading to the conclusion that:

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[75] File R-3809-2012, Document B-0062, Section 7

[76] Documents B-0184, page 37 and B-0347, page 37. Furthermore, the costs related to the storage capacity presented in table 13 of exhibit B-0138, Gaz Métro-5, Document 4, the operational flexibility cost would be $2.1 million.

> *the operational flexibility costs could represent at least 1% of the total [transportation and storage] costs or more if LBA fees were incurred during the fiscal year, or if Gaz Métro were to contract more flexible services from Union Gas (F24T and F24S).*[77]

The proposed treatment of this cost is addressed by Énergir in Gaz Métro-5, Document 6. In that document, Énergir's provides its proposal for the new operational flexibility function in response to the following directive in decision D-2016-126.

> *Operational flexibility*
>
> *[70] The Régie also orders the Distributor to determine a new function to which operational flexibility costs will be allocated. Once it has isolated the costs associated with this function, the Distributor shall determine the link between the evidence submitted in this file and the evidence submitted as part of files R-3720-2010 and R-3752-2011. As part of this exercise, the Distributor shall identify the storage volumes required for operational flexibility needs, as well as the associated costs.*

Consistent with the role for operational flexibility within its supply plan, Énergir is proposing to functionalize the costs as load balancing but allocating operational flexibility costs separately from costs related to serving peak demand.

> *However, since the cost causation for operational flexibility differs from that of the tools needed to serve the peak demand, Gaz Métro recommends processing operational flexibility costs separately as part of the load-balancing rate.* [78]

Énergir's basic premise is that since operational flexibility is defined as the ability to adjust deliveries during a day in response to the differences between forecast demand and actual consumption during the day, the relevant costs are the costs associated with maintaining and utilizing within-day flexibility. This flexibility depends on the availability of nomination windows throughout the day for deliveries of gas to Énergir's franchise area.

At the present time, deliveries that can be adjusted during the day include:

- TCPL FTI (Firm Transportation Injection) which can be used to divert gas flowing from Empress to Parkway (hence to Union thereby reducing deliveries from Empress to GMIT (i.e., Énergir's franchise area);
- TCPL's FTSH and FTSN and Union STS to accommodate withdrawals or injections;
- Union M12 and C1 transportation, which can be utilized to the extent that injections and withdrawals from Union storage can be adjusted; and
- Deliveries from in-franchise storage and comparable services.

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77 Documents B-0184, page 38 and B-0347, page 38

78 Documents B-0187, page 38 and B-0349, page 38

Hence, Énergir is proposing to "split the storage volume into optimization needs and operational needs, based on the actual use of the site"[79] using the following method:

> *As part of the 2011 Rate Case, Gaz Métro identified the average withdrawal over the winter as a basic need (synonym of "optimization need") and the maximum variation in withdrawals as an operational need. Taking a similar approach, the total storage volume currently contracted with Union Gas can be split into operational needs and optimization needs, the latter being determined based on the withdrawals actually forecast for the winter, which directly involves the injection need during the summer.*[80]

ELENCHUS COMMENT:

Énergir uses the average daily withdrawals that would be required to withdraw 100% of seasonal storage over the 90-day period December to February as the seasonal withdrawal capacity needed (with the balance of withdrawal capacity permitted by Union deemed to be operational flexibility). It appears to Elenchus that this approach may overstate the withdrawal capacity needed for seasonal storage since there will be winter withdrawals before December and after February. A possible alternate approach would be to estimate total withdrawals over the 90 days divided by 90 to derive the average daily withdrawals, or to derive the average requirement over a more complete winter period (e.g., all days with heading degree days in excess of a defined minimum). Furthermore, a volumetric approach may be a logical approach to allocating withdrawal capacity costs.

In addition, Elenchus notes that Énergir's allocation of withdrawals rights is used also to allocate storage costs to the two services since there is a fixed ratio between the storage/ withdrawal rights and the storage volume rights. It is unclear, however, whether the driver (cost causality) for storage costs is storage capacity or the injection/withdrawal rates. The injection ratio is 0.75%, which means that this can be spread over 133.3 days. More operational data than that which has been included in the evidence filed by Énergir to date is required to resolve the question of whether it is more appropriate to treat storage capacity storage/withdrawal rights as the cost driver for cost allocation purposes.

This approach relies on what is essentially an average and excess approach to allocating total storage volume between load balancing and operational flexibility.

In Elenchus view, these complexities would be addressed in a simple, transparent and conceptually accurate way by implementing Énergir's alternate conceptual framework using the three-tier approach. The incremental cost of Énergir's actual supply plan as compared to the portfolio Tier 2 supply plan would be a direct and accurate calculation of the actual forecast cost of accommodating operational uncertainty.

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[79] Documents B-0187, ligne 2-3, page 6 and B-0349, line 2-3, page 6

[80] Documents B-0187, ligne 2-3, page 6 and B-0349, line 2-3, page 6

3.3.4 Implications of Forecast Uncertainty for the Supply Functions

In Elenchus view, since a fundamental principle of cost allocation is that costs should be allocated to customer classes on the basis of cost causality and furthermore that the supply plan is based on the central planning principle that the plan must be designed to accommodate the high demand level of forecast demand, it follows that costs should be allocated based on the forecast of demand that underpins the supply plan. It follows that cost allocation should use allocators (e.g., average demand and peak demand) that corresponds to the forecast requirements. The supply plan is not based on actual customer demand, which is unknown at the time that the supply plan is adopted and Énergir puts in place the necessary contractual commitments to ensure that it can meet the requirements of customers under all anticipated levels of demand.

Implementation of the three-tier concept for determining Tier 1, Tier 2 and Tier 3 cost would therefore be based on the costs of the corresponding hypothetical portfolios based on the high demand forecast – that is the demand forecast that is the basis for Énergir's actual supply plan.[81]

Actual demand inevitably will vary from the high forecast, but that will not alter the reality that it was the forecast at the time of the supply plan that caused Énergir to incur the costs that must be allocated to the customer classes.

Énergir appears to take the view that when actual requirements are less than the forecast requirements, the costs associated with volumes or demand that are not actually required should be viewed as stranded costs. A cost reconciliation is done that is based on actual requirements with the costs that were incurred that, with the benefit of hindsight, were not required be allocated as stranded costs. Taking the alternate view that all costs incurred based on the forecast are prudent and required based on the supply plan, which accommodates uncertainty, rather than allocating costs that are deemed to be stranded, it would be more appropriate to identify costs that are recovered when actual demand is lower than maximum demand and allocate the recovered costs to customer classes. For example, costs may be recovered if Énergir is able to sell on the secondary market storage space of transportation capacity that is not required due to low customer demand. Similarly, to the extent that the supply plan includes uncommitted, spot purchases of gas, transportation or storage, there would be avoided costs that could be allocated based on the drivers for originally including them in the supply plan. This consideration could be extended to gas inventories that remain in storage at year end and are used in a subsequent year.

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[81] This high demand forecast would be based on a consistent approach to determining the coincident system peak. See the discussion of this point in section 5 below.

3.3.5 QUANTIFYING THE COST OF ÉNERGIR'S HYPOTHETICAL GAS SUPPLY TIERS

In order to implement the three-tier approach to determining the cost of the three gas supply functions identified by Énergir that under the alternate conceptual framework, Énergir would be required to present three supply plans. In addition to it actual supply plan, it would also be required to determine (i) the supply resources that would still be required if no operational flexibility were required, and (ii) the supply resources that would be required assuming all customers consumed their annual requirement at 100% load factor. It should be feasible to specify the first of these hypothetical supply portfolios by modifying the actual supply plan as appropriate to accommodate load balancing, but assuming that day ahead nomination could be specified with certainty. The 100% load factor supply portfolio would correspond to the relatively straightforward supply plan assuming Énergir was providing 100% load factor gas at minimum cost.

3.4 ÉNERGIR'S CURRENT COST ALLOCATION METHODOLOGY

In the past, for cost allocation purposes, Énergir has viewed its total supply plan as utilizing a set of gas supply "tools", each of which has its costs allocated to customer classes. The basic tools are:

- purchases of natural gas for system customer and compressor fuel;
- transportation capacity; and
- storage.

Each tool may involve several separate contracts and/or spot purchases with various suppliers. For example, many different transportation tools are available to Énergir that can be used to transport the gas to its delivered points. Decisions on the transportation tools that will minimize total supply costs are linked to its gas purchase plans. In addition, the available tools include very different sets of options. For example, storage options include both Union storage that requires transportation to Énergir's service area and LNG storage that is directly connected to Énergir's distribution system with no transportation requirement.

Elenchus notes that Énergir's current approach is consistent with the prevailing approach to cost allocation that is used by most other Canadian natural gas utilities. A jurisdictional review of cost allocation methodologies used in jurisdictions across Canada is included with this report as Appendix A.

The shortcoming of this approach is that it does not take into account the current reality that the tools that are utilized depend on the overall gas supply plan. Without examining the drivers for the costs of individual tools from the perspective of the overall plan, it is difficult, if not impossible to identify the extent to which the costs are caused by each class

– the cost causality principle is therefore difficult to adhere to. The causality principle can be applied more clearly when the functions that are allocated to customer classes are the services that they use directly rather than the tools that they use indirectly. It is the concept of cost causality as it is embedded in Énergir's gas supply plan that provides the rationale for Énergir's proposed approach to allocating its supply costs to its customer classes.

3.5 ÉNERGIR'S PROPOSED METHODOLOGY

As noted above, the fundamental change that is being proposed by Énergir relates to the conceptual approach that it takes to allocating its supply costs to customers. Consequently, in this report Elenchus focuses on the issues at a conceptual level. It is the conceptual framework of Énergir's approach that provides the rationale for the specific changes in its cost allocation methodology that are being proposed.

Énergir's proposed alternate approach is to view the total supply cost on an integrated basis and then break it down into the three functions that are required to supply customers with the gas they require throughout the year at the lowest cost practical. These functions each may utilize the available tools. The functions are:

- annual volumetric supply (i.e., delivery at 100% load factor);
- seasonal load balancing (to address the winter peak demand); and
- operational flexibility (to manage daily demand variances from the day-ahead forecast).

Under the proposed approach, the total supply cost is allocated to customer classes based on their requirement for these three functions. Conceptually, it would be possible for a customer class to consume gas at 100% load factor. If that were the case, the class would require only the annual volumetric supply function and would therefore be allocated none of the costs associated with seasonal load balancing or operational flexibility.

In explaining the reasoning behind the proposed methodology, Énergir refers to the "guiding principles adopted for functionalization and cost allocation" that were presented in the context of the proposal of Sharon L. Chown in file R-3323-95[82] to use the average demand and excess allocation method. This method was approved by the Régie in decision D-97-047. As Énergir states:

> *The method of average demand and excess selected during service unbundling … evokes this same dynamic and leads to the conclusion that* ***the supply costs must***

[82] Evidence of Ms. Sharon L. Chown filed on behalf of Approvisionnement Montréal, Santé et Service Sociaux (AMSS).

> ***be separated between transportation and load balancing services based on a LF equivalent to 100%.***[83]

The implication of this approach for the current filing is that Énergir's transportation costs and rates should be set based on the transportation capacity required to transport its annual gas requirement at 100% load factor. This is the **average cost component**. All additional supply costs are then allocated to load balancing and operational flexibility based on the view that these additional costs are caused by the variability in the seasonal and intra-day consumption of virtually all customers. This is the **excess cost component**.

The proposed method takes into account the differences between used and unused tools depending on the temperature factors that drive average annual use.

> *The current functionalization method, in contrast to the proposed method, does not take into account the interdependence between the usage costs and the surplus costs. The tools are functionalized for each service at the time of the rate case and the functionalization is not reviewed at year end to ensure that the costs allocated to the transportation service still represent a LF of 100%. Therefore, with the current method, during a cold winter, an overpayment will result owing to the higher consumption, because no cost will have been allocated for the surplus usage relative to a normal winter. Since this overpayment will be returned in the future transportation rates and thereby reduce the future cost of usage, this equates to giving a rebate to all customers regardless of whether they consume more during the winter or not. On the other hand, it is the customers whose consumption varies depending on the winter who vary the total consumption in a cold winter (at a constant peak). For there to be a fair distribution of the economies of scale, their additional contribution in usage costs should be deducted from the surplus costs and not shared with the customers whose consumption does not vary during the winter.*[84]

Énergir refines its analysis by taking into account three categories of tools that it uses to optimize its supply plan:

- *Cost optimization using seasonal tools;*
- *Cost optimization vs. the requirements of an extreme winter; and*
- *Use of the tools during a peak day.*

> *…during the peak day provided for in the supply plan, all customers who consume more than their annual average will proportionally use part of all of the tools utilized*

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83 Document B-0133, page 22

84 Documents B-0185, page 15-16 and B-0348, page 14-15

> *to supply the amount exceeding this annual average, regardless of their consumption profile the other days of the winter.*
>
> ***The cost of all of the tools exceeding the average demand must therefore be divided among all of the customers who consume more in winter than their annual average. These excess tools cannot be divided by customer category because they are required globally by all of the customers whose peak demand exceeds the average demand.***[85]

Elenchus also notes that Énergir has stated the goal of unbundling, concluding that:

> *For transport, this means that the allocation must take into account the desired goal of unbundling: enabling a transport rate that is similar to the market rate.*[86]

In the view of Elenchus, this approach leaves a potential unresolved issue that could arise if, in any year, Énergir has available to it contracted tools that are above or below market price. In that event, which function should have the price differential reflected in its cost?

Although Énergir's intended treatment is not evident to Elenchus, Elenchus presumes that the available tools used to derive the least cost plan for meeting the annual volumetric requirement at 100% load factor would be based on the actual tools available to Énergir, priced at the actual price available to it. Hence, where there are existing commitments, the tools could be priced either above or below the current (secondary) market price.

Similarly, the cost of meeting the seasonal load balancing (without operational flexibility) needs of customers would be based on the actual tools that are available to Énergir at their actual cost, which could be either above or below the current market price. The costs embedded in the cost allocation methodology should be actual, not hypothetical, costs even when determining the cost of a hypothetical supply plan.

Énergir expands its comments supporting its approach in Rate Reform – Phase 2: Additional Evidence, Follow-up on Decision D-2016-126[87] (Rate Reform Report). In sections 2.1 through 2.4 it provides its response to the Régie's request in D-2016-126:

> *[64] The Distributor should also explain in detail how the allocation methods it proposes make it possible to establish a relationship of causality between customers' needs and the tools chosen in the Plan.*

The analysis presented by Énergir rests on:

> *…the major principles chosen at the time of unbundling …:*

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85 Documents B-0185, page 21-22 et B-0348, page 20

86 Documents B-0353, page 9, lines 11-13 and B-0331, page 10, lines 4-6

87 Documents B-0348 and B-0185.

- *The costs related to the annual demand correspond to the costs of transportation and supply necessary to service this demand if it were uniform (LF of 100%). The demand can thus be represented in the form of average daily demand;*
- *All excess costs to meet an average daily demand are stranded costs necessary to meet the peak. These costs are those associated with load-balancing.*[88]

In Elenchus' view, the proposed approach is consistent with the central principle of cost allocation (cost should be allocated based on cost causality) since the costs associated with each function are allocated to each class based on the extent to which the class drives the level of cost incurred to fulfill each function. While Énergir's proposed approach differs from its current approach which allocates the cost of each tool utilized by Énergir on the basis of cost causality, both approaches can reasonably be characterized as being consistent with the principle of cost causality.

In assessing the reasonableness of the proposed change in approach, the questions identified at the beginning of this section need to be addressed.

The rationale for the approach being proposed by Énergir is that each tool can serve multiple purposes and as a result they are, to some extent, substitutable. For example, the winter peak can be met by acquiring transportation capacity that exceeds that capacity required to delivery the average daily volume, or by acquiring downstream storage to reduce the need for peak transportation capacity. In practice, supply planning seeks to minimize overall costs by seeking the least cost mix of these tools. From this perspective, the individual tools cannot be functionalized in isolation from the total supply costs; it is only the overall cost of supply (i.e., services) that can be definitively functionalized.

Énergir's approach is an innovative deviation from the standard practice of Canadian natural gas utilities.[89] In Elenchus' view it is a logical approach to handling the allocation of supply costs and is particularly appropriate at this time as Énergir is implementing a very different approach to managing its gas supply: purchasing gas at Dawn rather than Empress and contracting for transportation primarily from Dawn rather than Empress. This change emphasizes the substitutability between the location of gas purchases and requirement for transportation. At the same time, legacy constraints that cannot be removed until existing contracts can be replaced have to be included in supply planning. The goal is to reduce total costs by restructuring the balance between the cost of gas and the cost of transportation required to transport the gas that is purchased without violating existing commitments.

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88 Documents B-0185, page 6-7 et B-0348, page 6

89 See Appendix A: Review of Other Canadian Jurisdictions.

The new approach to supply planning has also led Énergir to propose other changes that maintain greater consistency with this conceptual framework for allocating supply costs such as its proposal to treat interruptible service as a supply tool (a substitute for storage) rather than as a service option with lower value than continuous service to which costs are allocated.

Elenchus notes that the underlying principles that Énergir is relying on for setting new rates for the supply, transportation and load balancing services are the same as those that were presented in Énergir's 2012 Rate Case; the important change is in the approach used to define functions in the cost allocation model. The guiding principles outlined by Énergir[90] were accepted by the Régie in Decision D-2011-182[91]. The guiding principles are detailed in section 1.3. In particular, the principle of fairness is achieved by ensuring that costs are appropriately allocated to the classes that cause those costs and then setting rates so that no classes is unduly subsidizing another class. Directly allocating costs as much as possible removes unnecessary complexity and helps achieve the principle of simplicity.

Although Énergir's filed evidence does not explicitly state that it has adhered to the principles that were endorsed by the Régie in Decision D-2011-182, in the view of Elenchus, there are no inconsistencies between those principles and Énergir's proposals.[92] Elenchus further observes that there is no apparent reason that the evolution of Énergir's operational context (i.e., shifting the primary source of supply from Empress to Dawn and restructuring its transportation and storage arrangements to accommodate this change) would have any impact on the cost allocation principles. In addition, modifying the cost allocation methodology to functionalize costs on the basis of services rather than tools does not change the principles that are appropriate to use as guidance for cost allocation. The principles previously approved by the Régie are as relevant at this time as they were at the time of decision D-2011-182.

The evidence that Énergir's has filed in Phase 2 includes the quantitative impacts of its proposals based on supply costs[93] that were approved by the Régie in proceeding R-3837-2013. This report focuses on Énergir's proposed methodology and does not include an audit of Énergir's proposed cost allocation model to verify the calculated impacts.

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90 R-3752-2011, Document B-0354

91 R-3752-2011 Phase 2, Decision D-2011-182

92 As noted elsewhere in this report, while the changes to the conceptual framework that Énergir relies on is consistent with the established cost allocation principles, Elenchus is not able to confirm that the implementation details are consistent with those principles without additional supporting detail being provided on the record of this proceeding.

93 Document B-0017

3.5.1 IMPLICATIONS FOR THE TREATMENT OF INTERRUPTIBLE SERVICE

Integral to Énergir's proposed change in its conceptual approach to defining gas supply functions, is its proposed change to the treatment of interruptible service. In Elenchus' view, the proposed approach to allocating costs and setting rates for interruptible service is more consistent with Énergir's current approach to gas supply planning than its traditional handling of interruptible service. Énergir's proposed approach implicitly views interruptible service as a tool that is to be used in minimizing its total supply cost rather than viewing it as an optional service as it has in the past. To implement this change in approach, Énergir is proposing to take the following approach to evaluating the avoided costs related to interruptible demand.

- First, for purposes of cost allocation, interruptible demand will initially be included as part of continuous demand. That is, total demand is the sum of demand for continuous service and demand for interruptible service. This approach is important since interruptible demand is a necessary component of Énergir's annual volumetric gas requirement.
- Interruptible service will be treated as a load balancing resource in that it is utilized in the same manner as storage to meet total peak period demand when transportation capacity is insufficient to meet total demand.
- Consequently, the value (and price) of interruptible service will be based on the costs that are avoided as a result of having interruptible service as a tool that can be utilized as an option in minimizing the total cost of supply.

In Elenchus' view, it would be equally valid to view the costs related to interruptible demand as the incremental costs that are incurred to meet interruptible demand. The avoided cost approach proposed by Énergir uses, as a staring point, the costs that would be incurred if the interruptible consumption were continuous. This conceptual approach appears to Elenchus to be treating Interruptible demand as a service rather than a tool, which is contrary to the proposal to view interruptible demand as a tool.

In Elenchus view, it would be more consistent to view the interruptible tool like all other tools – that is, by determining the cost of acquiring the tool. The cost of acquiring the tool, like the cost of any other tool, is the incremental cost of adding it to Énergir's supply portfolio. The incremental cost is the difference between the total actual costs to meet firm plus interruptible demand and the total actual costs that would be incurred if only the actual firm demand is met. In essence, a hypothetical supply plan could be developed based on the assumption that there is no interruptible service and the interruptible demand is not converted into continuous demand. The difference between the two supply plans would be the incremental costs that is "caused by" interruptible service. It would include the incremental annual volumetric costs, the incremental load balancing costs (seasonal costs not caused by peak day demand) and the incremental operational flexibility costs that are caused by the inclusion of the demand for interruptible service.

The approach that is most appropriate depends on the role that interruptible service plays in Énergir's supply planning.

- Are customers substituting interruptible for firm demand to benefit from the lower price, (i.e., volume is independent of availability of interruptible), or
- Do customers consume gas rather than other forms of energy (or less total energy) since the additional energy is available at the lower interruptible price?

It may not be practical to determine the extent to which interruptible service creates incremental demand versus the extent to which it displaces continuous service. For purposes of choosing the preferred approach to determining the causal costs of interruptible service, the choice of approach might be made based on which is most consistent with the overall conceptual approach that is being proposed by Énergir. In Elenchus' view, if interruptible service is viewed as a tool rather than a supply option, the most consistent approach to determining its cost would be to view demand for interruptible service as incremental to continuous demand. In essence, this approach views interruptible as a resource that is contracted. The amount contracted should be based on the amount that is called for by the supply plan, not on the basis of customer preferences. The resource is therefore not "caused" by customer requirements.

More context for the issues related to interruptible is provided below in section 4.1.

4 OTHER ISSUES RAISED IN ÉNERGIR'S EVIDENCE

4.1 ISSUES RELATED TO INTERRUPTIBLE SERVICE

Énergir provides a brief historical overview of its approach to interruptible service in section 1.2 of the document entitled *Re-Engineering of Interruptible Service* ("Interruptible Review" which notes that interruptible has served both as a tool for optimizing supply costs and stimulate market growth. The latter purpose resulted in the proliferation of categories of interruptible service with different terms and conditions related to the maximum number of interruption days. Énergir's right to interrupt service to these customers enables it to reduce both distribution and load balancing costs; hence, interruptible customers enjoy lower rates for both distribution and load balancing service.

Currently, key features of interruptible distribution service are:

- No fixed portion in the distribution rate;
- A discounted variable rate based on two factors: (i) a contracting commitment for a period from 12 months to five years, and (ii) a commitment to a minimum annual volume; and

- Penalties for withdrawals for consumption despite an interruption notice.[94]

Interruptible customers also are charged a lower rate for load balancing service based on the maximum number of days planned for the rate year and the actual number of days of interruption.

Based on Énergir's Interruptible Review it appears that interruptible customers often did not have access to alternate energy sources and instead relied on service conditions for make-up gas to avoid an interruption ("MUGI").[95] The number of interruptible customers has declined over the past 15 years since it has become less attractive. Énergir notes:

> *During the years 2013-2014 and 2014-2015, interruptible service customers experienced more days of interruption, with some hitting their maximum number. Furthermore, MUGI was less easy to access, and was acquired at a greater cost than in earlier years. Due to the relatively high price of alternative energy, customers sometimes chose to consume through unauthorized withdrawals despite receiving an interruption notice.* [96]

In essence, it appears that the attractiveness of interruptible service in the past was based on the customers expectation that the actual number of days would be noticeably less than the maximum number of days in the conditions of service that were used in deriving the discount in the interruptible rate. This would have been particularly true for customers without access to an alternate energy source.

Énergir is proposing changes to its interruptible service through which it "hopes to retain on interruptible service those customers who are able to use another source of energy or suspend their operations during the interruption."[97]

Énergir's proposals for modifying interruptible service are linked to its current view that the sole purpose of interruptible service should be as a tool to optimize its supply costs. The additional business goals will be met in other ways. In addressing this change in focus, Énergir is seeking to recognize their need for interruptible distribution service to address the issue of regional saturation of distribution capacity as well as to minimise supply and load balancing costs. Hence, as Énergir states, it

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94 Énergir is not able to physically interrupt customers; it relies on compliance, backed by penalty charges, when a customer is directed to cease utilizing gas under the interruptible service.

95 In other jurisdictions, interruptible customers may be required to have access to alternate energy supplies, or otherwise demonstrate that they can and will curtail their withdrawals of gas when notice to interrupt is received. See the jurisdictions survey Appendix A. Interruptible customers utilizing MUGI enable Énergir to reduce its requirement for upstream transportation since make-up gas is accessed at spot prices in the downstream market.

96 Documents B-0134, page 12 and B-0345, page 12.

97 Documents B-0134, page 12 and B-0345, page 13.

is proposing an interruptible offering intended for the following three goals:

i. *offering an alternative to purchasing tools in peak periods for continuous service customers;*

ii. *offering a way to use up transportation surpluses at the best possible price all year long;*

iii. *recognizing the costs of the interruptible option only in the load-balancing service.*[98]

At the core of Énergir's beneficial use of interruptible service is the need to ensure that the lost revenue due to the Interruptible Offering (the discount offered to interruptible customers which is in essence the cost of the tool) does not exceed the saving in gas supply, transportation and load balancing costs that is achieved by using the interruptible service to shave the system demand peak (i.e., the benefit of the tool). Interruptible service is simply one of the tools available to Énergir as it optimizes its costs.

Énergir uses the marginal cost of the other tools that can be used to manage its peak demand as the basis for determining the optimal mix of tools to utilize. This approach could involve explicitly quantifying the increase in the cost of each tool as more is utilized. Énergir's methodology as described in section 3 of the Interruptible Report, however, appears to assume that the marginal cost of the transportation and interruptible service do not vary within the volume range that is available to it. While the various transportation tools that are available have regulated rates that are fixed regardless of quantity, the amount of interruptible service that will be taken up in the market is likely to be dependent on the price, and other terms, of that service.

Determining the response and cost of interruptible service is complex, in part because the response may be a combination of the substitution of interruptible for firm service and increase reliance on gas, particularly in cases where the customer has access to alternate energy sources that are true substitutes for gas.

Énergir's analysis indicates that while the alternative to interruptions has been FTLH, it anticipates that as it transitions the supply structure to Dawn, the benchmark alternative will become Dawn – Parkway – GMIT, whose cost ($10.53/m³) is lower than the corresponding cost of gas from Empress ($30.27/m³).

4.1.1 ÉNERGIR PROPOSAL

Énergir is proposing to continue to offer interruptible customers a discounted load balancing rate but to discontinue discounting the distribution rate.

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98 Documents B-0134, page 15 and B-0345, page 14.

The rationale for discounting the load balancing rate for interruptible service is essentially the same as in the past although it is conceptualized differently: interruptible service is a tool that allows Énergir to contract for less seasonal transportation capacity, thereby reducing its total cost. Provided that the discount on interruptible service is less than the gas supply saving to Energir, non-interruptible customers will benefit from the resulting optimization as well as the interruptible customers that benefit from a lower rate. This approach is consistent with the commonly accepted approach to establishing rates for interruptible service.

Énergir's rationale for discontinuing the current discount for interruptible customers' distribution rate is set out in the Interruptible Report, section 4.1. As Énergir points out, the price signal provided by the discount on the distribution rate is linked to consumption rather than the number of days they are interrupted. The discount is therefore not linked to the causal benefits of interruption; hence, the proposed change is consistent with the causality principle that underlies Énergir's approach to cost allocation.

The central consideration in Énergir's approach to setting the rate for interruptible service is the determination of the value of interruptible service. As Énergir states:

> *It must be high enough to attract customers to the interruptible offering, but must also make it possible to reduce the total supply costs …*
>
> *Thus, in order to ensure a decline in supply costs, the credits offered must be calibrated from the comparison tools. In this evidence, the alternative that will be considered at interruptible volumes is purchasing FTSH transportation capacities (Dawn-Parkway-Eda segment). The financial compensation offered to participating customers therefore may not exceed Gaz Métro's opportunity cost, or in this case, the cost of FTSH capacity.* [99]

Énergir's methodology explicitly recognizes that there is no value to interruptible service if the right to interrupt a customer applies to a customer that is not consuming gas in any case at the point in time that an interruption is needed to make gas available for continuous customers. As a result, the right to interrupt steadily consuming customers has assured value, whereas, the right to interrupt variable-consumption customers has a probability of consumption to be interrupted to take into consideration.

> *In order to take all of these factors in account, Gaz Métro proposes to calculate the compensated interruptible volume based on the formula:*
>
> $DVI_i = VPI_i - MCV_i$
>
> *where* DVI_i *= Daily interruptible volume of customer i*

[99] Documents B-0134, page 23 and B-0345, page 22.

VPI_i = Average volume of the interruption period of customer i

MCV_i = Maximum continuous service volume of customer i. [100]

The value of *VPI_i* will have to be estimated by Énergir.

Five options were explored with Major Industrial Sales customers. Three seasonal options and two additional peak options. This analysis raises several questions that do not appear to be resolved in the evidence filed to date.

- Assuming the goal is to establish a level of rebate that maximizes the benefit for system costs, are there other options that should be considered that might increase the benefit that can be realized for continuous customers? There is no evidence Énergir has sought to calibrate the discount for interruptible service so as to optimize the use of this tool as is done for other tools, such as storage.
- How should penalties be determined? Should the penalties be based on the cost of alternate supply that would be required plus a mark-up? If so, could there ever be a circumstance in which alternate supply is not available at any price (or would that only occur in a force majeure situation? However the penalty is determined, will it be high enough to ensure compliance?
- Could an incentive mechanism be designed based on revealed preferences? That is, could a regime be designed that involves a contract demand and an incentive to declare true interruptible volume. This approach could be effective if technology is implemented that enables Énergir to control interruptions centrally, thereby eliminating the ability of customers not to comply with an interruption order. This could be combine with a process of making interruptible available to customers through an auction process.

While addressing these questions would facilitate a more refined approach to cost allocation and rate design for Énergir's interruptible service, a revision to the method used to allocate costs to interruptible customers follows logically from the proposed approach to functionalizing supply costs.

At present, allocation of the load-balancing costs to the interruptible service is done by modifying the A, H and P parameters based on the number of days of interruption. This inferior allocation is a result of the fact that the interruptible service is currently viewed as a lower quality service. To the extent that it would from now on be seen as a supply "tool," allocation of the costs to interruptible service must be based on the actual consumption profile and thus unmodified parameters.[101]

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[100] Documents B-0134, page 24 and B-0345, page 23.

[101] Documents B-0185, page 46, lines 13-15, and B-0348, page page 43, lines 7-9.

ELENCHUS COMMENT:

Énergir's explanation of its approach appropriately views interruptible service as a supply alternative that is used for load balancing. It is an alternative to acquiring additional capacity to meet peak period demands. It is therefore a supply option that can utilized as a cost-effective load balancing option.[102] In the view of Elenchus, the approach can be viewed as being analogous to incurring costs for demand side management programs that focus on shifting peak demand as distinct from reducing demand generally.

In its evidence filed to date, Énergir's explanation of its approach to cost allocation and rate design for interruptible is incomplete. Several unanswered questions are noted above. Assuming the analytic details can be resolved satisfactorily, it would be appropriate and consistent with the alternate conceptual framework to treat interruptible as a tool to be used to minimize load balancing and operational flexibility costs.

It will also be necessary to ensure that the rate design and terms and conditions for customers utilizing interruptible service are implemented and maintained to strictly adhere to the concept that interruptible is a load balancing and operational flexibility tool and not an instrument for providing a cost saving to some customers. Put simply, each element of the rate design and all terms and conditions should enhance the benefits of interruptible for continuous service customers by reducing Énergir's total gas supply costs.

In addition, under the proposed approach the cost of interruptible demand is based on the avoided costs that can be attributed to Énergir's optimal use of interruptible service in the plan. In Elenchus view, a reasonable alternative approach that appears to be more consistent with Énergir's proposed methodology would be to view the interruptible tool like all other tools – that is, determine the cost of acquiring the tool as required for the optimal plan. The cost of acquiring the tool, like the cost of any other tool, is the incremental cost of adding it to Énergir's supply portfolio.

A hypothetical supply plan could be developed based on the assumption that there is no interruptible service. The difference between the two supply plans would be the cost of the interruptible tool.

4.2 ISSUES RELATED TO DIRECT PURCHASE CUSTOMERS

As Énergir states in its Review Report:

> *Customers who purchase their own supply cause different costs, based on whether or not they deliver based on a uniform profile.*

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[102] Elenchus notes that it is not necessary to view interruptible service as only a supply tool. However, taking this view has implications for defining the details of cost allocation and rate design that are consistent with viewing interruptible as a gas supply tool.

> *When the customer delivers based on its exact consumption profile, ("deliver and burn"), it does not cause excess supply costs for the distributor even if its consumption is seasonal.*
>
> *However, when the customer delivers based on a uniform delivery profile, it causes the same seasonal costs as customers in the distributor's supply service.* [103]

GM-5, Doc 7, *Impact Analysis of Deliveries by Direct Purchase Customers, Follow-up on the decision D-2016-126* contains the most extensive discussion of direct purchase issues in the evidence filed by Énergir in Phases 2 of the current proceeding. Énergir states at page 3 that this document was prepared specifically to address paragraph 72 of decision D-2016-126.

> *"Other topics*
>
> *[72] As such, the Régie directs the Distributor to submit additional evidence on the following topics:*
>
> - *[…]*
> - *importance of uniform deliveries in the supply plan:*
>   - *delivery profiles for direct purchase customers;*
>   - *purchasing profiles for system gas;*
>   - *usefulness of requiring uniform deliveries by direct purchase customers;*
>   - *impact of uniform deliveries on supply plan tools and the allocation of their costs;*

With the relocation of Énergir's supply from Empress to Dawn, DP customers are required to deliver their gas either directly to Énergir's distribution system or Dawn.[104] DP gas delivered to Dawn becomes indistinguishable from other gas delivered to Dawn since storage can be used in combination with Énergir's contracted transportation from Dawn to load balancing deliveries to Énergir's service area and the customers' consumption. Hence, the deliveries from Dawn of DP gas are necessarily integrated into Énergir's overall supply in determining the mix of tools that will financially optimize the plan.[105]

DP customers are required to utilize Énergir's load balancing and operational flexibility services. They must make uniform deliveries throughout the year, with the required daily

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[103] Documents B-0133, page 63 and B-0344, page 65

[104] Some customers still deliver their gas to Énergir at Empress under legacy contract arrangements; however, deliveries will be transitioned to Dawn so as to be consistent with Énergir's plan to move its transportation commitments entirely to Dawn in 2021.

[105] Énergir notes at page 5 that "Customers with a fixed-price supply agreement are also deemed to belong to this category because they follow the same administrative rules for natural gas deliveries as DP-customers, e.g., nomination and volume imbalance rules."

delivery being the daily contract volume (DCV) which is equal the estimated consumption volume during the contract period divided by the number of days in the contract period (generally a year).[106] Énergir's *Conditions of Service and Tariff* specifies the process for updating the DCV to address variances between the actual and forecast consumption.

In the view of Elenchus, the simplest way to view the treatment of DP within Énergir's supply planning process is to view the DP supplies as a set of firm contracts with committed volumes to be delivered to Énergir's various delivery points (Empress, Dawn, GMIT EDA and GMIT NDA). Given those deliveries along with all other firm and spot purchases by Énergir, storage and transportation are planned so as to meet total customer demand at minimum cost, subject to its other commitments and constraints.

It follows that all customers, whether SG or DP should pay the same price for transportation, load balancing and operational flexibility. Although differences in load profile may result in differences in total cost, it would probably not be practical at this time to track these differences within each rate class given the limitations on data availability and the movement of customers between DP and SG.

Section 2 of Énergir's Direct Purchase Report[107] examines the option of imposing non-uniform delivery on DP customers. This option would, in essence, unbundle load balancing and operational flexibility services for DP customers and require each customer either to manage load balancing (including operational flexibility) on its own or contract with Énergir or another party to manage these services on its behalf.

Énergir concludes this discussion as follows:

> *Beyond reducing the storage capacities, which could potentially lead to a non-uniform delivery method, there are still a certain number of major obstacles, both internally and with DP-customers and their suppliers. Therefore, if the Régie deems it necessary for Gaz Métro to perform more in-depth analyses, the latter will need to hold more extensive consultations with the customers involved to identify the problems and possible solutions. In tandem with this consultation, a more extensive analysis is required of the impacts on supply management, along with an assessment of the scope of changes needed to the internal systems as well as the associated timeline and costs.* [108]

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106 T-customers deliver their gas directly to Énergir's distribution system and are permitted to choose to vary their daily deliveries to match their daily consumption. Énergir states that "Very few customers choose [this] method, since it requires highly specialized expertise in transportation capacity management as well as the management of the natural gas purchases of each customer."

107 Documents B-0350 and B-0188

108 Documents B-0188, page 24 and B-0350, page 23

ELENCHUS COMMENT:

In the view of Elenchus, requiring customers to match their gas deliveries to their consumption would be impractical and inefficient. Very few customers could manage their own gas supply; hence, they would have to contract with third parties not only to supply gas but also to manage the transportation, storage and load balancing on their behalf.

One practical option would be for virtually all customers to contract with Énergir to provide these services, which would end up operating in essentially the same manner as it does now. That is, Énergir would continue to operate the system on an integrated basis.

In the alternative, a new industry of gas supply managers could emerge that would balance the aggregate deliveries of gas to Énergir for their customers with volumes delivered exactly balancing the consumption of their customers. This would produce an inferior result for at least two reasons.

First, diversity benefits would be reduced. Each gas supply manager would manage independently; hence, the diversity opportunities that would arise between gas supply managers could not be exploited without complex secondary transactions. In total, the managers would need to purchase more transportation and storage resources to maintain the balance of deliveries and consumption for their customers since there would be times the imbalances experienced by one gas supply manager would offset the imbalances of another gas supply manager if they were managed on an integrated basis.

Second, responsibility and accountability would be diffused. The more separate managers there are the greater the risk of imbalances. Any operational failures on the part of one manager could compromise the integrity of the overall system, increasing costs to maintain operational integrity. Under the current integrated gas supply management system, a single regulated supply manager, Énergir, is responsible for the integrity of the system and can be held accountable for any operational failures.

Elenchus therefore concurs with the apparent position of Énergir that the option of imposing non-uniform delivery on DP customers should not be adopted.

4.3 ISSUES RELATED TO TRANSPORTATION

Énergir's transportation arrangements are a key factor in developing the supply plan as it relates to each of the three functions being proposed in the current application: annual volumetric supply, load balancing and operational flexibility. This section examines several specific transportation issues that are raised in Énergir's Phase 2 evidence.

4.3.1 AVERAGE VS. PEAK TRANSPORTATION REQUIREMENTS

The volumetric requirements of customers are not stable throughout the day, week or year due to several factors, including the following.

- Gas requirements related to process loads will vary due to changes in the customer's operations which may be limited to some hours of the day (e.g., a daytime shift) or days of the week (e.g., weekend and/or vacation shutdowns). Most operations also have planned and unplanned outages for maintenance.
- Gas requirements related to heating loads are seasonal and vary from month-to-month and day-to-day due to temperature, sun, wind and other weather factors. The primary factor for seasonal demand is the number of cooling degree-days.

As a consequence, in the absence of a supply plan that enables gas to be delivered as required in ways that do not require storage, Énergir's transportation capacity would have to be designed and operated to meet the needs of its customers on the highest volume day (the "design day") on a reliable basis. The design day reflects extreme weather conditions that will result in the highest projected demand. In all other circumstances, the transportation infrastructure or contracted capacity would be underutilized in the absence of downstream storage that can be used to inject supplemental gas into the distribution system or interruptible customers that can be called upon to reduce the total customer demand. Consequently, an important consideration in minimizing the total cost of service is to determine the least-cost mix of transportation, storage and interruptible demand.

At the other extreme, the minimum amount of transportation capacity that must be contracted by Énergir is equal to the average rate of consumption by Énergir's customers. This capacity would be sufficient only if alternate tools are sufficient to fully accommodate all variances from the average level of consumption.

The substitutability of transportation capacity, storage and interruptible demand is a factor that needs to be considered in determining how transportation and storage costs are allocated and how interruptible service should be priced and factored into the cost allocation model.

It its Review Report[109], Énergir identified three causes of unused transportation capacity that gives rise to increased costs of transportation service, or if mitigated, to costs for storage (including deliverability requirements), interruptible services or seasonal transportation:

- Seasonality (load factor);
- Decrease in consumption by a stable customer for which tools have already been purchased; and
- Difference between real demand and projected demand.

[109] Documents B-0133, page 43 and B-0344, page 41

These drivers underpin Énergir's proposed approach to functionalizing its total supply costs on a global basis rather than separately functionalizing each of the tools that it utilizes in its least-cost supply plan.

ELENCHUS COMMENT:

Elenchus notes that Énergir considers costs related to gas purchases, transportation and storage that turn out to be in excess of actual requirements as determined on a retrospective base as stranded costs. Elenchus does not agree that this concept of stranded assets is appropriate for purposes of cost allocation. All gas supply costs that are actually incurred result from commitments that are made on a forward-looking basis as part of the optimal gas supply plan. In Elenchus view, it is the forecast of demand, taking into account all aspects of uncertainty that "causes" these costs to be incurred. Unless the gas supply plan is not optimal on a forward-looking basis, there can be no stranded costs from the perspective of costs that were not necessary and causally related to the demand forecast.

For this reason, all costs including average and peak requirements used as allocators should correspond to the forecast demand profiles that formed the basis of Énergir's gas supply plan.

4.3.2 MAINTAINING 85 TJ/DAY CAPACITY IN FTLH

Énergir has a contractual obligation to maintain 85,000 GJ/day (2,243 10^3m^3/day) of FTLH until December 31, 2020.[110] This commitment predates the recent evolution of gas supply options that are available to Énergir during the remaining term of the contract. This commitment may result in higher costs than would be incurred in the absence of the contract. The incremental cost of this contractual commitment is being recovered from customers based on a methodology that was approved by the Régie in Decision D-2014-064.

The method used by Énergir to calculate the incremental costs resulting from the contract is set out at page 91 of the Review Report.

> *In the 2015 Rate Case, Gaz Métro presented a methodology for calculating the cost related to maintenance. [Fn: R-3879-2014, B-0421, Gaz Métro-16, Document 1, Section 2.2.] It was based on the difference between:*
>
> *i) The global per-unit cost of delivering natural gas from Empress to the Gaz Métro territory (considering the price of FTLH Empress – GMIT transportation and the price of the supply at Empress), and*

[110] Documents B-0133, page 92 and B-0344, page 90

> *ii) The global per-unit cost of delivering natural gas from Dawn to the Gaz Métro territory (considering the price of M12 Dawn – Parkway transportation combined with FTSH Parkway – GMIT and the price of the supply at Dawn)*
>
> *relative to the 85 TJ/day capacity.*[111]

The approved method of recovering this maintenance cost is to allocate it to all customers based on transportation volumes. Énergir proposes in the Review Report to change the allocation method by treating it as a load balancing cost.

> *Gaz Métro suggests keeping this methodology to evaluate the cost of maintenance, but allocating it to load balancing, rather than transportation, as proposed in the 2015 Rate Case. The maintenance costs would then be combined with the other costs not related to the consumption profile and charged to all customers (see section 7.3.2).* [112]

Énergir further specifies that:

> *In the determination of the average transportation cost, the 85 TJ/day FTLH capacity would be considered as the transportation cost of M12 Dawn – Parkway combined with FTSH Parkway – GMIT. Note that where the cost at Empress (evaluated in i) is lower than the cost at Dawn (evaluated in ii), no maintenance cost would be transferred to load balancing and the 85 TJ/day capacity would be considered at the FTLH price when evaluating the average transportation cost.* [113]

Hence, this approach includes in maintenance cost the amount by which the cost at Empress exceeds the cost at Dawn-Parkway without offsetting it with any savings that may be realized at times when the cost at Empress is below the cost at Dawn. The rationale for not using the net differential over the year is not explained in the evidence that has been filed to date.

ELENCHUS COMMENT:

Since the rationale is not clear based on the evidence filed to date, Elenchus is unable to express a view on the approach that Énergir is taking to allocating these costs until Énergir provides further information related to its proposed approach.

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111 Documents B-0133, page 94 and B-0344, page 91

112 Documents B-0133, page 94 and B-0344, page 91

113 Documents B-0133, page 94-95 and B-0344, page 91

4.3.3 FUNCTIONALIZATION OF THE CHAMPION PIPELINE

Énergir notes that

> *The costs of the Champion pipelines have, since Gaz Métro's acquisition of Gaz provincial du Nord du Québec in 1985, always been functionalized to the transportation service.*
>
> *…As for the other transmission pipelines belonging to Gaz Métro, their costs are functionalized to the distribution service.*
>
> *Since the rate unbundling, the costs of the Champion pipelines functionalized to the transportation service are recovered from the Northern Zone customers while the costs of the transmission pipelines functionalized to the distribution service are recovered from all customers, including those in the Northern Zone.*
>
> *The functionalization of the Champion costs to transportation and their pricing for Northern Zone customers only thus generates a differential between the bill of a Northern Zone customer and that of an identical Southern Zone customer. For the 2017 Rate Case, the difference between the prices of each of the zones is 2.062 ¢/m³.* [114]

In Elenchus view, resolution of this issue rests on the Régie's view of which of the following two commonly accepted principles should predominate in this case.

- The **postage stamp approach** to setting rates adheres to the view that all customers should pay the same rate regardless of location. From this perspective intra-class equity is achieved by allocating costs to classes with no regional sub-classification since all customers in a class are viewed as being the same although some may fortuitously be located in less costly to serve locations than others.
- The **regional causal cost** view takes a different approach, by identify distinct regions that have different costs of service. Under this view, customers in different regions with different costs should pay different rates that reflect the differences in the cost to serve those regions.

Elenchus is not aware of any analytic rule that is broadly accepted in providing guidance as to which approach is more equitable in specific circumstances. It is purely a matter of regulatory judgment. Conveniently, as Énergir notes:

> *Various analyses have been produced to propose a suitable solution for merging the zones and for functionalizing the costs.* [115]

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[114] Documents B-0185, page 50 and B-0348, page 47

[115] Documents B-0185, page 52 and B-0348, page 49.

Énergir's discussion of the options leads to its conclusion that:

> *For these reasons, Gaz Métro proposes functionalizing the costs of Champion's pipelines and Gaz Métro's transmission pipelines to the same service[64] and allocating and pricing their costs the same way.* [116]
>
> *Gaz Métro reiterates the importance of having a single zone for the transportation service.* [117]

It is Elenchus understanding that Énergir's position is based on its view that when Champion is functionalized as transmission, customers that contract for GMIT-NDA will not pay for transmission although they will still use Champion. To avoid this inequity, the costs of the Champion pipeline should be functionalized as distribution in the unbundled world. This approach resolves the question of which of the two principles stated above should prevail on the basis of a purely pragmatic consideration of the equity of the end result. This result appears to Elenchus to be reasonable based on the information and analysis included in Énergir's evidence.

The pragmatic resolution advanced by Énergir is as follows.

> *3.4 GAZ MÉTRO PROPOSAL*
>
> *The analyses have enabled the following observations:*
>
> - *The costs of the Champion pipelines and Gaz Métro's transmission pipelines should be functionalized to the same service. They should also be allocated and priced the same way;*
> - *All of the customers in a given rate category using Gaz Métro's service should benefit from the same rate conditions, regardless of their location;*
> - *The importance of not having free service requires the addition of an extra rate when an exclusive service is functionalized to transportation; and*
> - *The rates should enable a clear price signal so customers can choose the most advantageous services for them.* [118]

Énergir explains:

> *Finally, it is proposed in exhibit B-0185, Gaz Métro-5, Document 5, section 3.4, to functionalize the costs associated with Champion pipelines to distribution and allocate those costs in the same way as the transmission lines. No allocation factor has therefore been associated with the costs of the Champion pipelines in the*

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116 Documents B-0185, page 54 and B-0348, page 49.

117 Documents B-0185, page 55 and B-0348, page 49.

118 Documents B-0185, page 59 and B-0348, page 56.

proposed allocation method, although factor FB01TN is used in the current method. For comparison purposes, the cost was added to the transport costs anyway. [119]

ELENCHUS COMMENT:

The implication of this proposal is that the costs of the Champion pipelines would not be included in transportation costs but would instead be addressed in the context of Énergir's distribution cost allocation. Elenchus concurs with this conclusion.

4.4 ISSUES RELATED TO STORAGE

The treatment of storage cost is addressed in Énergir's Review Report, section 2.2.6, pp. 65-67. The essence of Énergir's comments appears in the following excerpts.

To avoid having to buy more supply during the winter, the distributor may store natural gas. Already, to optimize transportation costs, storage in franchise is contracted. In addition, the distributor may purchase storage outside the franchise to reduce its natural gas purchases in winter and replace them with summer purchases. [120]

…

If the storage is already required for transportation tool optimization needs (storage in franchise), then this tool can also be used to balance supply. [121] *(p. 66)*

…

since storage is used to replace seasonal purchases, these costs are still attributable to all customers with a seasonal purchase profile, whether they are in the distributor's supply service or they purchase their own supply. [122] *(p. 67)*

ELENCHUS COMMENT:

Elenchus accepts that comments of Énergir quoted above.

4.5 DETAILED COMPARISON OF ÉNERGIR'S METHODOLOGIES

A notable difference between Énergir's current and proposed methodologies is the treatment of inventories. In the current model, rate base related to Inventories is functionalized to all three tools: Gas Supply, Transportation and Load Balancing. In contrast, in the proposed model, Inventories are functionalized entirely to Load Balancing,

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119 Documents B-0331, page 16 and B-0353, page 15.

120 Documents B-0133, page 67 and B-0344, page 65.

121 Documents B-0133, page 68 and B-0344, page 67.

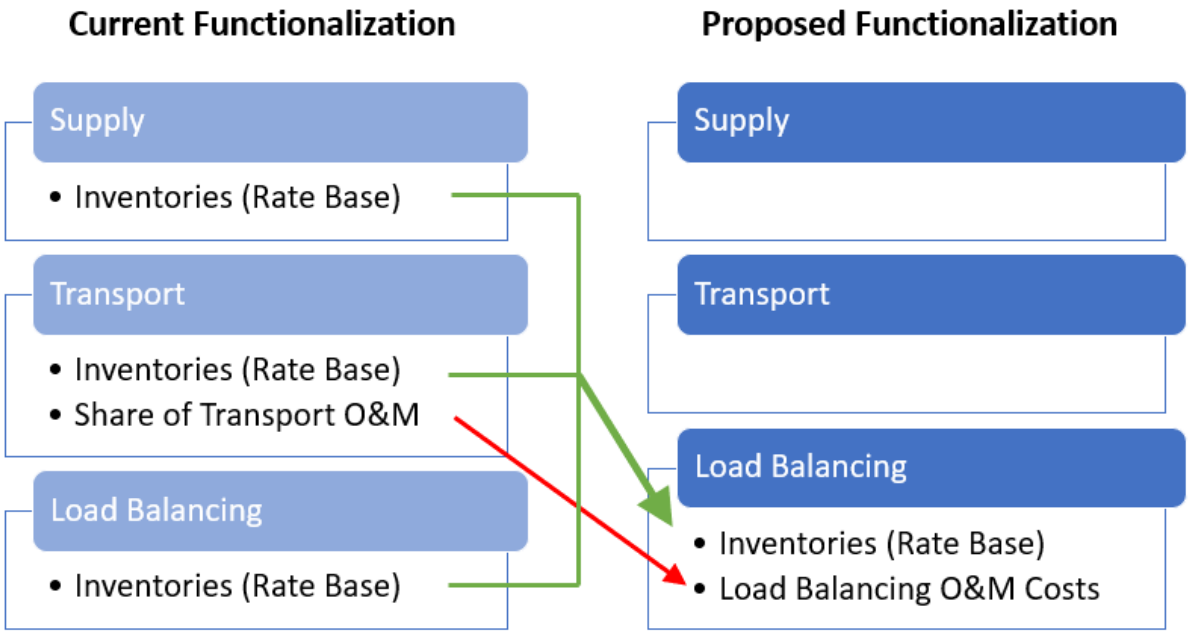
122 Documents B-0133, page 69 and B-0344, page 68.

which is the function with the lowest share of inventories by the current approach. Inventories are currently allocated by four separate allocators based on volumes: gas supply, transportation, load balancing peak and load balancing space. All inventories are proposed to be allocated by a Load Balancing Profile that allocates a negative share to interruptible (Tarif D410). The current methodology has a negative allocation for load balancing space but it is more than offset by inventories allocated by load balancing peak.

The removal of inventories from Supply, and related return on rate base and taxes, is the only proposed change to the amounts within the Supply function. Non-amortized assets are currently allocated by peak but are proposed to be allocated by volume. There are minor changes to the allocation of costs within that function.

Removing inventories from Transportation is the only proposed changed to Transportation rate base. Some operations costs are proposed to be refunctionalized to Load Balancing, reducing the total costs functionalized as Transportation. The allocation of costs within the Transportation function are mostly unchanged.[123]

Assets and costs within the Load Balancing function are currently classified as either space or peak. Under the proposed methodology the costs will be classified as Seasonal or "For All". There is a single Load Balancing profile allocator that applies to nearly all assets and costs within the function, regardless of classification. The two exceptions, stranded costs unrelated to temperature and operational flexibility costs, are proposed to be allocated by volumes. The chart below illustrates the changes in functionalized costs.



[123] The Champion Pipeline was allocated to only the North Zone. It is now listed as "unallocated", still within the transport function.

The table below shows the allocators used for specific costs that make up the gas supply, transportation and load balancing tools.

Type	Item	Current	Proposed	Notes
Gas Supply				
RB	Inventories			Moved (FB05F)
RB	Cash & Material Lead-Lag	FB07F	FB01F	
RB	Tax Lead-Lag	REVNETF	FB01F	
RB	Non-Amortized Costs	FB05F	FB01F	
Rev	Inventory Revenue	FB07INVF	FB07F	Lower amount (-)
Cost	Income Tax	REVNETF	FB01F	Lower amount
Cost	Return on RB			Lower amount
Transportation				
RB	Cash & Material Lead-Lag	FB07T	FB01T	
RB	Tax Lead-Lag	REVNETT	FB01T	
RB	Inventories			Moved (FB05T)
RB	Non-Amortized Costs	FB05T	FB01T	
Rev	Transport Revenues			Lower amount
Rev	Inventory Maintenance	FB05T	$0	
Rev	GAC	$0	“N/A”	
Cost	GAC	$0	“N/A”	GAC amounts are the same
Cost	Champion Pipeline	FB01T-N		Moved/removed
Cost	Fixed costs			Lower amount
Cost	Gas compression			Much higher
Cost	Income Tax	REVNETT	FB01T	Much lower
Load Balancing				
RB	Immobilization	FB05E- (P/E)	FB05E	Subgroups – same allocator
RB	Lead/Lag studies	FB07E (P/E) REVNETE (P/E)	FB05E	Subgroups – same allocator
RB	Inventories	FB05 (E/P)	FB05E	Much higher – other inventories reallocated here
RB	Non-amortized costs	FB05 (E/P)	FB05E	Higher amount
Costs	All costs	FB05 (E/P)	FB05E/FB01E	Higher

The impact if these changes are as follows.

Gas Supply

- Lower return and RB due to lower inventories

Transportation

- Lower costs
- All costs allocated in same way except tax on income
- Income is much lower, same allocator but rate base is changed
- Champion pipeline “unallocated” but the amount may be included elsewhere

Load Balancing

- Many subcategories had different allocators. Now all allocated by FB05E
- Change from: Space & Peak to Seasonal & All

5 APPROACHES TO DETERMINING COINCIDENT PEAK

Extreme winter peaks would most significantly impact costs within the load balancing function. Therefore, adopting a definition of coincident peak based on extreme winter demand rather than high, average or actual would impact the allocation of load balancing costs by allocating higher costs to weather-sensitive classes. Hence, allocating costs based on the load forecast used to develop Énergir’s gas supply plan, with no *ex post* adjustment for actual demand, will result in more costs being allocated to weather-sensitive classes than would be allocated using a less extreme definition of the coincident peak for cost allocation purposes.

Elenchus has stated in this report that the coincident peak allocator that would most directly reflect costs causality would be one that corresponds to the demand forecast used to develop Énergir’s gas supply plan. Elenchus notes, however, that is generally not considered reasonable to allocate costs based on an atypical, or extreme, scenario.

If the normal winter peak, or the actual demand in a normal year, is used to allocate load balancing costs, the extreme winter-related load balancing costs will be allocated to all classes based on the normal winter peak, whether or not the class is responsible for those additional costs. Though higher load balancing costs resulting from extreme weather are not incurred in a typical year, in the medium to long term it is reasonable to expect extreme weather to occasionally occur.

In considering the fairness implications of using a weather-normal forecast or actual demand to allocate load balancing costs, it is relevant to consider whether the deviations in cost relative to weather are directionally symmetrical. If the reduced load balancing costs arising from a warmer winter are similar to the increased load balancing costs caused by extreme winters, a typical winter peak allocator would be appropriate. Costs may fluctuate from year to year but over time the deviations would balance out. Additionally, if warmer winters materially reduce load balancing costs using an extreme winter peak may increase the range of deviations. Adjusting the methodology to account

for extreme peaks would only be appropriate if the incremental costs associated with extreme winters are materially greater than the avoided costs in a mild winter.

ELENCHUS COMMENT:

Methods used for determining the system peak values used for purposes of cost allocation differ across jurisdictions because the conceptual approach adopted by different utilities and regulators differ. There is no single correct approach or best practice. Enbridge Gas, for example, uses a probabilistic 1 in 5 recurrence interval approach to determine the coincident peak, or Design Day, used in its cost allocation methodology.[124] The 1 in 5 recurrence interval means the coincident peak is determined at a level that can be expected to be exceed once every 5 years, or 20% of the time. A survey of North American gas distributors produced in support of Enbridge's methodology found that the methodology used by gas distributors to determine their coincident peak varies considerably.[125] FortisBC Energy uses a similar methodology with a 1 in 20 recurrence interval.[126] Centra Gas derives the coincident peak using the average peak day of the previous 3 years, adjusted to the weather-normalized throughput forecast.[127] Coincident peaks in the electricity sector are typically based on weather-normal average, or median, peaks.

Arguably, when a utility designs its system and arranges it gas supply to accommodate a defined "worst case" scenario, however defined, the corresponding peak demand, sometimes referred to as the design day demand, can be viewed as the cost driver for capacity costs. However, it would be rather simplistic to assume that all load balancing costs (i.e., all costs other than total annual volumetric costs and operational flexibility costs) are caused by the relative peak day demand of the customer classes. For example, storage requirements may be driven primarily be the difference between the average demand over the winter season (when gas is being withdrawn from storage) and the summer season (when gas is being injected).

To be more realistic, storage requirements will also be affected by the volatility of demand throughout the year. The opportunities to inject gas during warm days in the winter and shoulder seasons, for example, will also affect the requirement for storage capacity.

A less extreme definition may also be justified when costs are indirectly allocated on the basis of coincident peak demand. For example, administrative and general costs may be

[124] EB-2011-0354, Exhibit D1, Tab 2, Schedule 3

[125] EB-2011-0354, Exhibit D2, Tab 4, Schedule 2

[126] FortisBC Energy Inc. 2016 Rate Design Application, Volume 1, Section 6, page 22

[127] Pre-Hearing Update to Centra's 2019/20 General Rate Application, page 21

allocated on the basis of other allocated costs, in which case an allocation based on design day demands may be viewed as inequitable.

Adopting a less extreme approach to defining coincident peak demand for cost allocation than the extreme winter peak demand may be viewed as equitable. For example, it would be consistent with Énergir's alternate conceptual framework to produce a range of supply plan costs for different weather forecasts. The different supply plan costs could be weighted by the probability of each to determine the costs and allocations used in the cost allocation model. This would be the conceptually interesting approach since it would reflect the expected cost based of the gas supply plans that would be developed for the range of actual weather conditions; however, implementing this approach would be onerous.

A more feasible approach would be to use an allocator that blends the normal winter peak demand allocator with an extreme winter peak demand allocator. If the extreme weather demand costs are not used in the cost allocation methodology, the additional load balancing costs required to accommodate the possibility of extreme weather will be allocated to all classes, and not to the classes most responsible for those costs. A blended demand allocator allows for a probabilistic approach that would allocate a higher share of load balancing costs to the classes responsible for increased costs when the extreme peaks occur.

6 SUMMARY AND CONCLUSIONS

Énergir's proposals for adopting a new approach to allocating its gas supply costs to its customer classes have resulted from the transformation of the tools that it uses to meet the gas supply needs of its customers. This involved the following changes:

- the relocation of the supply structure from Empress to Dawn;
- migration of interruptible service customers to continuous service;
- return of customers to Énergir's transportation service;
- the revision of interruptible conditions of service; and
- the contracting of additional transportation capacity.

These changes to Énergir's approach to supply planning have resulting in Énergir viewing its supply planning on a more global basis with the traditional gas supply tools being treated as substitutable. In turn, Énergir is proposing to alter its approach to cost allocation.

Énergir's is proposing to replace its current functionalization methodology which is based on the gas supply tools it uses with the alternate conceptual framework that notionally functionalizes its costs directly to the services that it provides to customers:

- annual volumetric supply (i.e., delivery at 100% load factor);
- seasonal load balancing (to address the winter peak demand); and
- operational flexibility (to manage daily demand variances from the day-ahead forecast).

Although Énergir appears to be advancing an alternate conceptual framework, it is not clear to Elenchus that Énergir has modified its cost allocation methodology in a manner that implements the alternate conceptual framework that is implicit in its evidence. In Elenchus view, the alternate conceptual framework makes sense and could be implemented explicitly.

In Elenchus view, acceptance of the proposed approach and ultimately a cost allocation based on the alternate conceptual framework should be based on three questions.

1. Recognizing Énergir's current operating context, is functionalizing its supply costs based on service conceptually superior to functionalizing cost based on tools?
2. If the proposed conceptual framework is preferred, has the proposed model implemented this approach in a way that is consistent with the guiding principles for cost allocation that have been endorsed by the Régie?
3. Is the proposed cost allocation methodology as implemented in Énergir's models, as filed, the most appropriate way to implement the conceptual framework?

With respect to the first question, this report concludes that the alternate conceptual approach that is implicit in Énergir's evidence has clear conceptual advantages.

With respect to the second question, Elenchus has been unable to confirm that the methodology that has been implemented by Énergir in its evidence is consistent with the guiding principles for cost allocation that have been endorsed by the Régie. It appears to be consistent in general; however, the models as currently implemented do not provide sufficient detail to confirm this observation. It appears to Elenchus that the methods used to derive input values for the models have been changed and the supporting information pertaining to these input values are not on the record at this time.

With respect to the third questions, Elenchus has identified what may be a more transparent, more easily understood, and possibly more equitable approach to implementing the alternate conceptual framework that is implicit in Énergir's evidence.

In Elenchus' view, Énergir's proposed cost allocation methodology is conceptually consistent with Énergir's approach to gas supply planning. It is also consistent with the central principal of cost allocation (cost should be allocated based on cost causality) since the costs associated with each function are allocated to each class based on the extent to which the class drives the level of cost incurred to fulfill each function.

Énergir's proposed approach is an innovative deviation from the standard practice of Canadian natural gas utilities. The essential difference between the current (traditional) and alternate conceptual frameworks can be summarized as follows.

The traditional conceptual framework functionalizes costs to distinct gas supply functions that correspond to the basic gas supply tools: Supply (gas purchases), Transportation and Load Balancing (primarily associated with storage). The cost of each of these functions is allocated to customer classes based on relevant costs drivers, including annual (or average daily) volume, peak demand, etc.

The alternate conceptual framework adopts the view that cost that are incurred, or caused by, the need to deliver the annual volume to Énergir's service area are allocated based on the average daily volume of each class. These costs would include gas purchase, transportation and other costs that would be incurred to meet the needs of Énergir's customers if they all consumed gas at 100% load factor. Under this approach, load balancing costs are the incremental costs to accommodate the deviation from 100% load factor in the demand of customers. Operational uncertainty is a new function introduced by Énergir for cost allocation purposes that represent the additional costs incurred to address the need to be able to respond to within-day variances from the day-ahead forecast of demand.

In the view of Elenchus, the most direct way to implement the alternate conceptual framework for cost allocation purposes would be to adopt a methodology based on determine the cost of hypothetical portfolios that build up to the actual gas supply plan. As a first step the cost of Énergir's 100% LF supply would the cost of the hypothetical least cost supply plan that would deliver the required annual volume assuming there was no need for any load balancing or operational flexibility.

A second hypothetical supply plan would then be derived that includes the need for seasonal load balancing but does not incorporate the need for daily operational flexibility. The incremental costs included in this plan would include the costs associated with the required storage capacity including the cost of the injections and withdrawals, compressor fuel, etc. Furthermore, since Énergir's actual seasonal requirements are not driven simply by two distinct periods of the year (an injection period when actual demand is below average and a withdrawal period when actual demand is above average), the hypothetical seasonal load balancing supply plan could be further refined by breaking the load balancing function into further sub-functions such as seasonal load balancing, monthly load balancing and peak day load balancing.

The total load balancing costs included in the supply plan could then be determined by subtracting the cost of the 100% LF supply plan from the cost of this second hypothetical supply plan that includes load balancing, and possible from the cost of each sub-function in steps of increasing cost.

Finally, the portion of the total supply cost that is functionalized as operational flexibility would be determined by subtracting the cost of the seasonal load balancing supply plan from the actual total supply cost. The incremental cost of the actual supply plan would be the portion of the total supply cost that is caused by Énergir's requirement for operational flexibility.

To implement this approach, Énergir would have to prepare three gas supply plans that correspond to the tiers of the functions described in the alternate conceptual framework.

Tier 1: The gas supply portfolio that would meet the forecast annual volumetric requirement of Énergir's customers at minimum cost (i.e., gas supply at 100% load factor).

Tier 2: The gas supply portfolio that would meet the forecast annual volumetric requirement of Énergir's customers with load balancing at minimum cost (i.e., without accommodating operational flexibility).

Tier 3: The actual gas supply portfolio that meet the forecast annual volumetric requirement and accommodates Énergir's load balancing needs as well as operational flexibility.

Elenchus observes however that there would be advantages to adopting a more refined approach to allocating load balancing costs to customer classes. At a minimum, it should be explicitly recognized that there are subfunctions of load balancing that have differing cost drivers. The two most significant load balancing sub-functions are:

- Seasonal load-balancing which primarily utilizes long-term storage to reduce the amount of transportation capacity required to transport gas to Énergir's service area so that the seasonal differences in demand can be managed cost-effectively.
- Daily load-balancing facilitates adjustments to the daily deliveries of gas to the franchise area to meet the needs of customers as determined by the day-ahead forecast. Daily demand is met primarily with contracted transportation capacity from multiple gas delivery points including storage resources. When gas from storage is required to supplement other deliveries, the withdrawal rate may be a critical constraint. Interruptible service is also used to meet customer requirements on high-demand days.

Analysis of Énergir's gas supply plan may identify additional load balancing subfunctions that may merit having their own costs determined and allocators assigned.

Énergir's evidence includes proposals for modifying interruptible service that are linked to its current view that the sole purpose of interruptible service should be as a tool to optimize its supply costs. Establishing interruptible rates, as well as all terms and conditions of service, on this basis seems reasonable to Elenchus. Assuming interruptible is offered in a manner that is totally consistent with its treatment as a tool there would be

no costs allocated to interruptible customers. Instead, the lost revenue due to the provision of this service at a discount would be defined as the cost of the tool and allocated to the other customer based on the cost drivers, similar to Énergir's other tools that are part of the load balancing and operational flexibility functions.

Énergir proposes that the cost of this interruptible tool be based on the avoided costs that can be attributed to Énergir's optimal use of interruptible service in the plan. In Elenchus view, a reasonable approach that would be more consistent with Énergir's alternate conceptual framework would be to view interruptible like all other tools – that is, determine the cost of acquiring the tool as required for the optimal gas supply plan. The cost of acquiring the tool, like the cost of any other tool, is the incremental cost of adding it to Énergir's supply portfolio. A hypothetical supply plan could be developed based on the assumption that there is no interruptible service. The difference between the two supply plans would be the cost of the interruptible tool.

A further observation of Elenchus is that conceptually it should be feasible for Énergir to analyze the amount of operational flexibility that has been required historically by each rate class. This could be done by comparing the daily forecast demand of each class to its actual demand. In practical terms, however, this exercise may be limited by the availability of the required data at this time.

On the issue of direct purchase services, in the view of Elenchus, the simplest way to view the treatment of direct purchase (DP) within Énergir's supply planning process is to view the DP supplies as a set of firm contracts with committed volumes to be delivered to Énergir's various delivery points. It follows that all customers, whether system gas (SG) or DP should pay the same price for transportation, load balancing and operational flexibility.

Énergir's evidence also raises specific issues related to the allocation of Champion costs. In Elenchus view, resolution of this issue rests on the Régie's view of which of the following two commonly accepted principles - the postage stamp approach or the regional causal cost should prevail. It is Elenchus understanding that Énergir's position is based on its view that when Champion is functionalized as transmission, customers that contract for GMIT-NDA will not pay for transmission although they will still use Champion. To avoid this inequity, the costs of the Champion pipeline can be functionalized as distribution in the unbundled world. This approach resolves the question of which of the two principles stated above should prevail on the basis of a purely pragmatic consideration of the equity of the end result. This result appears to Elenchus to be reasonable based on the information and analysis included in Énergir's evidence.

APPENDIX A: REVIEW OF OTHER CANADIAN JURISDICTIONS

SUMMARY

This appendix describes the cost allocation methodologies of Canadian natural gas utilities and, in particular, the allocation of gas supply, transportation and load balancing costs allocated to interruptible customers. Utilities that do not offer interruptible service are not included in this review.

The cost allocation methodologies of natural gas distributors across Canada are largely consistent with the methodology currently used by Énergir. Each utility uses a methodology that functionalizes, classifies and allocates gas supply, transportation, load balancing and storage costs to its classes. The methodologies all classify these costs in some proportion to peak demand, recognizing that transportation and load balancing costs are caused mostly by capacity required to meet peak demands, and to average demand, to ensure costs are allocated to all classes that use the supply tools.

The result of the cost allocation studies is the primary basis for setting interruptible rates with the exception of FortisBC. FortisBC takes an outcome-based approach, prioritizing the share of customers that take interruptible service, instead of a cost-causality approach.

The methodologies to determine the share of costs classified to peak and average demand, and the allocation of those costs to the customer classes, often differ by utility. However, the allocations of peak capacity-related costs are typically based on a version of the peak and average method used by Énergir.

The concept of operational flexibility is not used by any of the utilities surveyed. One utility, Union Gas, has a conceptually similar system integrity classification that includes daily variations between forecast and actual deliveries. System integrity includes other functions that would typically be included with load balancing and costs are allocated to all classes without recognizing the potential system benefit of interruptible supply.

FORTISBC

FortisBC Energy Inc. (FortisBC) is a natural gas distributor in British Columbia. The distributor is owned by FortisBC Holdings Inc., which also owns an electricity distributor and alternate energy services. FortisBC has approximately one million natural gas customers[128] in three service areas with different rates in each area: Mainland & Vancouver Island, Revelstoke, and Fort Nelson. FortisBC's interruptible ratesetting is unique in Canada as rates are not set according to their allocated costs. Rates are

[128] FortisBC Corporate Report 2017.

explicitly set to encourage customers to take interruptible service by discounting continuous service rates.

FortisBC has two primary interruptible rate classes: Rate 7 Interruptible Service and Rate 27 RS Transportation (Interruptible). Additionally, Rate 4 Seasonal customers have firm service in the summer and interruptible service over the winter and Rate 22 Large Volume Transportation is predominantly interruptible, though customers can negotiate firm service volumes and rates.[129] Interruptions are infrequent in FortisBC's service territory. Over the past 20 years there have been only 19.5 interruption days in which all interruptible customers' supply was curtailed, though partial curtailment for customers in capacity constrained regions occur more frequently.[130]

The interruptible classes are included in the cost allocation model even though the results are not the basis for setting rates for the Rate 4, Rate 7, and Rate 27 classes. The utility does not consider these classes to drive system capacity additions because they are all curtailable during system peaks, which occur in the winter. Consequently, they are not allocated any demand-related costs. Distribution costs above the hypothetical minimum system, as well as all storage and transmission costs are classified as demand-related. This means a considerable share of total costs, including costs of functions used by interruptible customers, are not allocated to those customers.

Rate 7 and Rate 27 are set to be approximately 18% lower than firm service rates of comparable firm service to provide a sufficient incentive to maintain current interruptible customers and attract new interruptible customers.[131] FortisBC considers this method to be acceptable because it is having the intended effect of maintaining interruptible customers without any unanticipated migration between interruptible and firm service. Rate 4 (Seasonal) is set equal to firm rates during the summer and equal to 1.5 times the Rate 7 Delivery Charge during the winter. The delivery charge is grossed-up to discourage interruptible customers from migrating to the seasonal rate.

The allocated revenues of these classes are materially higher than their allocated costs. Rates 7 and 27, which are combined in the cost allocation model, has a revenue to cost ratio of 1.40 and Rate 4 has a revenue to cost ratio of 1.47.[132] FortisBC's interruptible ratesetting methodology is ultimately not cost-based. Customers in these rate classes are paying more than their, likely understated, fully allocated costs so it is ultimately unclear

[129] FortisBC Energy Inc. 2016 Rate Design Application, Volume 1, Section 6, page 35

[130] FortisBC Energy Inc. 2016 Rate Design Application, Volume 1, Section 9, page 29..

[131] FortisBC Energy Inc. 2016 Rate Design Application, Volume 1, Section 9, page 24.

[132] FortisBC Energy Inc. 2016 Rate Design Application, Volume 1, Section 6, page 36.

whether revenues from these classes are sufficient to cover their costs. This methodology has been accepted by the British Columbia Utilities Commission (BCUC) since 2001.[133]

CENTRA GAS MANITOBA

Centra Gas Manitoba Inc. (Centra) is a wholly-owned subsidiary of Manitoba Hydro. Centra is the only natural gas distributor for the province of Manitoba, serving 280,000 customers. Centra has a single Interruptible class and does not differentiate rates by region. To be eligible for interruptible service the customer must consume at minimum 680,000 m^3 per year.

Centra uses a peak and average method to allocate costs classified as capacity costs. The rationale for this method is that this allocator recognizes the peak day but also allocates costs to all classes that use the system. The allocator used to spread capacity costs uses coincident peak demand and average demand, weighted by the system load factor. The weight for average demand is the system load factor, which is average daily demand as a share of the coincident peak, and peak demand is weighted by the remaining share. The interruptible class is not allocated any of the peak demand portion.[134] Upstream pipeline, storage and transmission functions are allocated by the peak and average method.

Supply to interruptible customers can be interrupted by Centra after giving notice to the customer.[135] During an interruption period, interruptible customers may be offered Alternate Supply Service. Alternate Supply Service is offered when Centra has the physical capacity to meet interruptible customers but must procure additional gas supply. Alternate Supply Service is typically offered a day ahead or on interruption days and interruptible customers are responsible for the full cost of the alternate supply if they decide to receive the service. The ability for Centra to provide alternate supply suggests gas supply and storage is the utility's principle constraint as transportation is not at capacity during interruption days.

Centra divides its gas supply into two segments: primary gas supply, which is its normal supply from western Canada, and supplemental gas supply, which is gas purchased to meet demand when it is higher than normal. Centra considers the costs associated with the two gas supply segments to be sufficiently different that that it separates some of its rate classes into two rate classes to allocate primary and supplementary gas related costs differently.[136] For example, the cost allocation model considers both an Interruptible class and a Supplemental Interruptible class. This method allows the allocation of supply costs,

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[133] BCUC Decision and Order G-135-18, FortisBC Energy Inc. 2016 Rate Design Application.

[134] Centra Gas 2013/14 General Rate Application, Interrogatory PUB/Centra 115.

[135] Centra Gas 2019/20 General Rate Application, Tab 5, page 7.

[136] Centra Gas 2019/20 General Rate Application, Tab 5, page 12.

and related overhead, to be more appropriately allocated to the classes that cause supply costs at different times. Procuring and managing gas supplies are cited as the main costs that differ between primary and supplemental gas.

The interruptible class' rates are similar to comparable firm service classes but the monthly charge and demand charges are significantly lower.

ONTARIO

Ontario's two largest natural gas distributors, Union Gas and Enbridge, amalgamated in 2017. The OEB's decision[137] of the amalgamation application directed the combined utility to file a comprehensive cost allocation proposal in its next rebasing application for 2024 rates. Until that time, rates will be set according to existing methodologies of each distributor.

Union Gas

Union Gas is a natural gas distribution, storage and transmission company serving 1.5 million customers in Ontario.[138] Union Gas's service territory is divided into three rate zones: South, North West, and North East. Union's cost allocation methodology considers two rate zones: the North zone and Southern zone. Each zone has different rate classes and certain costs are allocated differently in each zone. Different allocation methodologies are used because the supply sources and transportation tools differ by zone. The North zone serves communities from Manitoba in Northwest Ontario to Cornwall in Eastern Ontario, predominantly along the TCPL Mainline which is the source of supply for that zone. The North zone has one interruptible rate class, Rate 25 Large Volume Interruptible Service. The South zone serves communities in Southwest Ontario with natural gas from various sources, including gas supply at Dawn. The South zone has two interruptible classes: Rate M5A Interruptible Commercial/Industrial Contract and Rate M7 Special Large Volume Contract.

Union Gas's allocation methodologies were determined in the OEB's Natural Gas Storage Allocation Policies Decision.[139] Union uses a detailed cost allocation model with dozens of functionalization, classification, and allocation factors to allocate costs by zone and rate class. Accounts are first functionalized to purchase production, two storage subfunctions, five transmission subfunctions or distribution.

Storage costs are classified to deliverability, commodity, space, or system integrity. Union operates 178 PJ of natural gas storage, nearly all of which is located at the Dawn Storage and Trading Hub that is also used by Énergir. Approximately 100 PJ of storage is allotted

[137] EB-2017-0306 and EB-2017-0307 Decision and Order, page 41.

[138] EB-2017-0306 and EB-2017-0307 Decision and Order, page 3.

[139] EB-2007-0724/0725 - NGEIR Integration.

to serve Union's in-franchise customers, which is determined based on forecast customer demand.[140] A small share of Union's storage space is allotted for system integrity, which is used to manage system upsets, imbalances and daily forecast variances.[141]

Classifying system integrity separately from other storage allows Union to use different allocations for daily and seasonal load balancing. This separation is similar in concept to Énergir's proposed functionalization of operational flexibility and load balancing, however, system integrity includes more functions and Union takes a different approach to allocating these costs. Space required for forecast weather variances makes up approximately 27% of system integrity inventory with the remainder used to regulate pressures, manage variances of unaccounted for gas volumes, and supply backstopping.[142] These functions are considered to serve all customers, including interruptible customers, and the determination of space required for system integrity includes interruptible volumes.

System integrity costs are allocated using a peak and average method in the North Zone and by customer system integrity requirements in the South zone.[143] System integrity costs are therefore allocated to interruptible customers in the South zone but not the North zone. Other storage demand costs are allocated by the peak and average method in the North zone and an "Aggregate Excess" method in the South zone. The Aggregate Excess method is similar to the peak and average method but uses average winter demand instead of average annual demand.[144] The storage costs are predominantly allocated on this basis but a small share of these costs is classified as commodity in the South zone, which is allocated by delivery volumes. As a result, some storage costs are allocated to the interruptible class in the South zone while none are allocated to the interruptible class in the North zone.

There are different allocation methods used to allocation transportation demand costs by transmission line and rate zone. Generally, the peak and average, aggregate excess, and peak day demands are used. A minimum plant method is used to classify distribution costs between customer-related and plant beyond the minimum system is considered demand-related. Distribution demand costs are allocated by peak demand in the South zone and by peak and average demand in the North zone.[145]

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140 EB-2017-0087, Exhibit A, Tab 3, page 25.

141 EB-2011-0210, Exhibit G1, Tab 1, page 4.

142 EB-2011-0210, Exhibit D1, Tab 9, page 3.

143 EB-2011-0210, Exhibit G3, Tab 1, Schedule 1, page 13.

144 EB-2013-0109, Exhibit C, Tab 3, pages 4-5 .

145 EB-2011-0210, Exhibit G3, Tab 1, Schedule 1, page 16.

Enbridge

Enbridge Gas Distribution Inc. (Enbridge) is a natural gas distribution, storage and transmission company in Ontario serving 2.1 million customers.[146] Enbridge has three interruptible rate classes: Rate 145 Interruptible Service (Small Commercial/Industrial), Rate 170 Large Interruptible Service, and Rate 300 Firm or Interruptible Distribution Service. Enbridge has only one rate zone.

Enbridge functionalizes the cost of transportation between storage sites and its service territory as storage. Enbridge's storage is principally from its affiliate Tecumseh Gas and from Union Gas. Storage costs are classified as storage space and storage deliverability. The share of storage costs equal to the average daily storage withdrawals as classified as storage space and the remainder is classified as storage deliverability. Similar to Union's "Aggregate Excess" method, deliverability is allocated based on demand in excess of average winter demand. Storage space is allocated to classes by the average winter demand in excess of average annual demand.[147]

The interruptible classes do not contribute to the peak so they are not allocated deliverability costs. The small and large interruptible customer classes consume more in the winter months so they are allocated a small portion, relative to annual delivers, of storage space costs.

GAZIFÈRE

Gazifère is a natural gas distributor in Southwest Quebec serving 40,400 customers. It is an affiliate of Enbridge Gas Distribution of Ontario and a subsidiary of Enbridge Inc. Gazifère's cost allocation model and methodology are similar to that used by Enbridge in Ontario. Gazifère has a one interruptible class, Rate 9 Interruptible Service, and one rate zone.

The utility takes service from Enbridge Gas Distribution's Rate 200 for gas supply costs, utilizing their affiliate's storage, seasonal supplies and peaking service to meet its customers supply and demand.[148] The majority of Gazifère's revenue requirement associated with payments to Enbridge, which is functionalized as Gas Supply. Gas Supply is sub-functionalized to transportation, storage, load balancing, and gas supply according to Enbridge's Rate 200 gas supply costing structure.[149]

Load balancing costs are classified to transmission, and subsequently subclassified to seasonal, peak, and upstream transportation. Upstream transportation is the

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146 EB-2017-0306 and EB-2017-0307 Decision and Order, page 3.

147 EB-2012-0459, Exhibit G2, Tab 1, Schedule 1.

148 R-4003-2017, Document B-0274, GI-40, Document 2, page 7.

149 R-4003-2017, Document B-0274, GI-40, Document 2, page 4.

transportation of gas to Enbridge's system and is allocated to classes by volume. The remaining load balancing costs are classified to peak and seasonal according to the prorated allocation of the costs in Enbridge's Rate 200.[150] Peak load balancing costs are allocated by peak deliveries and seasonal load balancing costs are allocated by the average winter consumption in excess of average annual consumption. The interruptible class does not receive service at the peak so it is not allocated any peak costs but is allocated a share of seasonal load balancing costs.[151]

Storage costs are subclassified 60% to deliverability and 40% to space. Costs classified as deliverability are allocated based on peak demand in excess of average winter demand. Space is allocated in the same way as seasonal load balancing costs; average winter consumption in excess of average annual consumption.[152]

Interruptible customers are permitted to receive Curtailment Delivered Supply Service. Under this service, an interruptible customer may still receive natural gas service if it arranges its own gas supply and transportation to Enbridge's system.[153] The availability of this service suggests the constraints to Gazifère's delivery on peak days are related to gas supply and not transportation and delivery capacity. Gazifère's conditions of service do not specify a requirement that the customer has access to an alternate fuel source.

150 R-4003-2017, Document B-0274, GI-40, Document 2, Page 14.

151 R-3969-2016, Document B-0184, GI-31, Document 2.11.

152 R-4003-2017, Document B-0274, GI-40, Document 2, Page 18 (Appendix B).

153 Gazifere Conditions of Service and Tariff, April 1, 2018 approved in D-2017-044, D-2017-103 and D-2017-133.

6.1 APPENDIX B: ÉNERGIR DOCUMENTS REVIEWED BY ELENCHUS

Énergir Doc. #	Régie Doc #	Title
Gaz Métro-5, Doc 1	B-0133 B-0344	Révision des services de fourniture, de transport et d'équilibrage Review of supply, transportation and load balancing services Elenchus Report Reference: "Review Report"
Gaz Métro-5, Doc 2	B-0134 B-0345	Refonte du service interruptible Re-engineering of interruptible service Elenchus Report Reference: "Review Report"
Gaz Métro-5, Doc 3	B-0136 B-0346	Suivis et compléments de la révision des services de fourniture, transport et équilibrage Follow-ups and complementary information to the supply, transportation, and load-balancing services review Elenchus Report Reference: "Follow-ups Report"
Gaz Métro-5, Doc 4	B-0184 B-0347	Flexibilité opérationnelle – Suivi de la decision D-2015-181 Operational flexibility – Follow-up on decision D-2015-181
Gaz Métro-5, Doc 5	B-0185 B-0348	Refonte tarifaire phase 2 : complément de preuve – Suivi de décision D-2016-126 Rate reform – Phase 2 : Additional evidence – Follow-up on decision D-2016-126
Gaz Métro-5, Doc 6	B-0187 B-0349	Flexibilité opérationnelle - Suivi de la décision D-2016-126 Operational flexibilité – Follow-up on decision D-2016-126
Gaz Métro-5, Doc 7	B-0188 B-0350	Analyse de l'impact des livraisons des clients en achat direct - Suivi de la décision d-2016-126 Impact analysis of deliveries by direct purchase customers – Follow-up on the decision D-2016-126
Gaz Métro-5, Doc 8	B-0331 B-0353	Complément de preuve - Suivi de la lettre du 23 août 2017 de la Régie de l'énergie (A-0128) Additional evidence – Follow-up on the August 23, 2017 letter of the Régie de l'énergie (A-0128)

Excel Models

Énergir Doc. #	Régie Doc #	Title
GM-5, Doc 5, Annex 1	B-0189	Contrats d'approvisionnement (transport et entreposage)
GM-5, Doc 5, Annex 2	B-0190	Méthode de fonctionnalisation proposée (cause tarifaire 2017)
GM-5, Doc 5, Annex 3	B-0191	Répartition des besoins des clients
GM-5, Doc 5, Annex 4	B-0192	Étude d'allocation des coûts – Méthodes actuelles
GM-5, Doc 5, Annex 5	B-0193	Étude d'allocation des coûts – Méthodes proposées