

PROVINCE OF QUEBEC
BEFORE THE RÉGIE DE L'ÉNERGIE

Gaz Métro)
Cost Allocation and Rate Structure) **R-3867-2013, Phase 1**
)
)
_____)

DIRECT EXPERT TESTIMONY OF
PAUL CHERNICK
ON BEHALF OF
REGROUPEMENT DES ORGANISMES ENVIRONNEMENTAUX EN ÉNERGIE
AND
UNION DES CONSOMMATEURS

Resource Insight, Inc.

FEBRUARY 26, 2015

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1 **I. Identification**

2 **Q: Mr. Chernick, please state your name, occupation, and business address.**

3 A: I am Paul L. Chernick. I am the president of Resource Insight, Inc., 5 Water
4 St, Arlington, Massachusetts.

5 **Q: Summarize your professional education and experience.**

6 A: I received an SB degree from the Massachusetts Institute of Technology in
7 June 1974 from the Civil Engineering Department, and an SM degree from
8 the Massachusetts Institute of Technology in February 1978 in technology
9 and policy.

10 For more than 37 years, I have been engaged in the analysis of energy-
11 utility planning and ratemaking. I was a utility analyst for the Massachusetts
12 Attorney General for more than three years, and was involved in numerous
13 aspects of utility rate design, costing, load forecasting, and the evaluation of
14 power supply options. Since 1981, I have been a consultant in gas- and
15 electric-utility regulation and planning, first as a research associate at
16 Analysis and Inference, and after 1986 in my current position at Resource
17 Insight (which was known as PLC, Inc., until 1990). In these capacities, I
18 have advised a variety of clients on utility matters, including government-
19 sponsored and non-profit consumer advocates, regulatory agencies, environ-
20 mental organizations, energy-efficiency advocates, power-plant developers,
21 large energy consumers, and utilities.

22 My work has considered a wide range of topics in the regulation of
23 electric and gas utilities, including load forecasting, supply planning, conser-
24 vation program design, cost recovery for utility efficiency programs,
25 estimation of the benefits of energy-efficiency programs, the valuation of

1 environmental externalities from energy production and use, allocation of
2 costs of service between rate classes and jurisdictions, design of retail and
3 wholesale rates, and performance-based ratemaking and cost recovery in
4 restructured gas and electric industries. My professional qualifications are
5 further detailed in my resume, already filed as Document C-ROEE-0007.

6 **Q: Have you testified previously in utility proceedings?**

7 A: Yes. I have testified as an expert witness more than 275 times on utility
8 issues before various regulatory, legislative, and judicial bodies, including
9 utility regulators in five Canadian provinces (Nova Scotia, Ontario,
10 Manitoba, British Columbia, and Alberta), thirty-five states, and two U.S.
11 Federal agencies.

12 **Q: Have you testified previously regarding the allocation of utility costs?**

13 A: Yes. I have provided expert testimony in about 25 proceedings on utility cost
14 allocation, in four Canadian provinces (Nova Scotia, Manitoba, Ontario,
15 Alberta) and seven U.S. jurisdictions (Massachusetts, Utah, Maryland, New
16 York, Texas, DC, New Orleans), as listed in my resume.

17 **II. Introduction and Summary**

18 **Q: On whose behalf are you testifying?**

19 A: I have been engaged by the Regroupement des organismes environnementaux
20 en énergie (ROEE) and Union des consommateurs (UC), to provide my inde-
21 pendent expert testimony and opinion.

22 **Q: What is the purpose of your testimony?**

23 A: The purpose of my testimony in this phase is to assist the Régie de l'énergie
24 in assessing and understanding the issues raised by the cost allocation phase

1 of this hearing, to allocate costs appropriately among classes, and to develop
2 cost-causation concepts that may be important in the subsequent rate-design
3 proceeding. To that end, I respond to various aspects of the classification and
4 allocation of costs proposed by Gaz Métro in its application. Specifically, I
5 respond to the following issues and costs:

- 6 • the classification of mains costs between demand and access,
- 7 • the choice of the allocator for access-related mains costs (the number of
8 customers or the number of customer connections),
- 9 • the choice of the allocator for demand-related mains costs (specifically,
10 whether interruptible load should be assigned to mains costs),
- 11 • billing and meter-reading costs,
- 12 • gas supply expenses,
- 13 • energy-efficiency costs,
- 14 • the following overhead costs:
 - 15 ○ engineering and planning,
 - 16 ○ regulatory affairs, accounting and public affairs, and
 - 17 ○ the sales force, advertising, and promotion of natural gas.

18 Most cost-allocation studies deal with the allocation of costs among rate
19 classes. Due to the unusual definition of Gaz Métro's rate classes, its cost-of-
20 service study allocates costs among 19 rate classes and 9 annual consumption
21 levels within the D₁ rate class. For simplicity, I will refer to these categories
22 of customers as classes or rate groups.

23 **Q: What important principles should guide the development of a cost-**
24 **allocation methodology?**

25 A: While the fundamental considerations could be summarized in many ways,
26 the following list covers most of the important factors:

- 1 • The study should serve only as a guide to cost allocation, not as the sole
2 determinant. Any set of allocation decisions represents a set of judg-
3 ments, reflecting the following considerations:
- 4 ○ the conflicting objectives of cost allocation, such as the desire to
5 charge costs to the rate groups that caused them, and also to the
6 groups that use and benefit from the equipment and expenditures,
7 while also avoiding free riders;
- 8 ○ the limitations of data regarding cost drivers;
- 9 ○ the difficulty of linking many costs to data that would be available
10 by rate group;
- 11 ○ the lack of connection between the characteristics of existing
12 customers and the causes of some costs related to past or future
13 customers and conditions.
- 14 • Cost allocation should also not necessary lead mechanically to the
15 allocation of revenue among the rate groups. In setting the revenue
16 target for any group of customers in a particular rate proceeding, the
17 Régie may wish to consider issues of inter-class equity, gradualism,
18 economic and social effects, and the adequacy of class revenue require-
19 ments for providing appropriate price signals for efficiency and
20 environmental purposes. Those issues should be separated from the
21 allocation of costs.¹

¹In its decision D-2013-1064, paragraph 22, the Régie emphasized that it intends that the allocation of costs result in the most realistic allocation of costs between the different rate categories on the basis of cost causation, and required that any other consideration of a social, economic or environmental nature not be considered at this stage, but rather in the subsequent determination of rate structure and strategy.

- 1 • While the cost-allocation methodology should be based on cost causation and related concerns, and not the social, economic or environmental effects of the revenue-requirements allocation, there are situations in which social, economic, or environmental considerations are the cause of investments or expenditures. For example, energy-efficiency and gas-promotion programs may be justified, in part, on meeting province-wide greenhouse-gas targets; those costs may thus be driven by the environmental-protection burden that various customer groups would incur without the programs. Similarly, some costs (e.g., energy-efficiency and other assistance for low-income customers) are driven not by the characteristics of other customers, but by social considerations. In these cases, determination of cost causation requires recognition of the social, economic and environmental drivers of the costs.
- 14 • Cost allocation should generally not be driven by rate-design concerns, nor should cost allocation drive rate design. Rate design should primarily reflect marginal costs and the effect of rate structure on customer behaviour, rather than embedded cost. Similarly, costs classified as customer-related for the purposes of cost allocation to customer rate groups may not actually be caused by the number of customers and may not be appropriately recovered through a fixed monthly customer charge.
- 21 • The principal objective of a cost-of-service study is to reflect cost causation, driven by the most realistic practical view of cost drivers. Simplified concepts of cost causation should not be allowed to distort allocation in identifiable ways.

- 1 • Cost causation should reflect why costs were incurred and not just how
2 the facilities are used currently.² The determination of cost causation
3 must be tied to a realistic understanding of the historical, engineering,
4 and economic factors that caused the cost. For example,
- 5 ○ Lines that were extended based on the volumes and revenues
6 expected from large customers should be charged primarily to
7 those customers' rate groups, not to small users who may have
8 been connected subsequently.
- 9 ○ The cost of cleaning up a former coal gasification site is attribute-
10 able to the volume of gas it produced, even if the site is now used
11 for meter repair or some other very different purpose.
- 12 ○ If bimonthly billing would be adequate for small customers, but
13 the utility chooses to bill all customers monthly for administrative
14 convenience, the small customers do not cause the extra monthly
15 billing costs.
- 16 • Equity can also sometimes be furthered by considering the extent to
17 which various groups of customers benefit from the activities causing
18 specific costs.³
- 19 • Cost causation should distinguish between complementary or alternative
20 investments, which substitute for one another, and incremental
21 investments, which add costs to the system.

²Gaz Métro notes that the Régie established in Docket R-3323-95 that allocation should be based on the “most direct causal relationship between costs and the customers that generated such costs” (Document B-0023 at 12).

³This point is related to the Régie’s prohibition of free riders (Document B-0023 at 12).

- 1 • Allocation should strive for geographic equity, treating rate groups
2 similarly, regardless of the historical accidents of the vintage and design
3 of the system across the service territories. This principle is the cost-
4 allocation corollary of postage-stamp rate design.
- 5 • The factors used in the cost-of-service study should be derived from
6 straightforward methods that can be revised in the future to reflect
7 changes in customer characteristics, loads, and changes in system
8 characteristics.

9 **Q: Have you identified any characteristics of Gaz Métro's service territory**
10 **that distinguish it from many other utilities, in a manner relevant to cost**
11 **allocation?**

12 A: Yes. Gaz Métro (along with the distribution companies it acquired) has
13 greatly extended its service territory since the 1980s, as shown in Gaz
14 Métro's response to my question 37 (Document B-0068). Thus, much of the
15 existing Gaz Métro distribution plant is related to extension of service to new
16 parts of the province, rather than to increasing density of load within an
17 established service territory. The latter would be more typical for many urban
18 and suburban electric utilities as well as gas utilities serving communities
19 that were largely built out and served by the 1980s

20 Some urban areas had widespread availability of manufactured gas prior
21 to connection to the natural-gas pipeline system. A cost-allocation approach
22 that might have some superficial appeal for allocating the area-spanning costs
23 of some other electric and gas utilities would be inappropriate for Gaz Métro.

24 **Q: What are your conclusions regarding Gaz Métro's proposals?**

25 A: My most important conclusion is that Gaz Métro's classification of the costs
26 of mains assigns far too large a share of the costs to the access category, and

1 hence to small customers, as I explain in Sections III.A and III.B. I support
2 Gaz Métro’s recommendations to allocate mains access costs on customer
3 connections, rather than customer number, and to include interruptible loads
4 in the mains demand allocator. I also recommend the following allocations:

- 5 • gas supply expenses on volume rather than demand;
- 6 • engineering and planning costs in proportion to the total investment in
7 mains and access roads;
- 8 • regulatory affairs, accounting, and public affairs in proportion to an equal
9 three-way weighting of total investments, mains investment, and peak
10 demand, pending further analysis;
- 11 • sales force, advertising, and promotion of natural gas on revenues.

12 Finally, I recommend additional analysis of the allocation of energy-
13 efficiency costs (to reflect the distribution of direct and indirect benefits
14 among rate groups, as well as the motivation for low-income program
15 expenditures) and billing and meter-reading costs (to reflect the higher costs
16 of hourly metering).

17 **III. Allocation of Mains Costs**

18 **A. *Classification of the Area-Spanning System***

19 **Q: How does Gaz Métro propose to allocate the costs of its distribution**
20 **mains?**

21 **A:** Gaz Métro proposes to allocate approximately 74% of the costs of distribu-
22 tion mains among rate groups in proportion to the number of service lines
23 serving each customer group, and the remaining 26% on the basis of demand
24 (Document B-0041, filed in translation as Document C-ROÉÉ-0031).

1 Including the supply mains (which I will discuss in Section III.D), Gaz Métro
2 proposes to allocate 63% on access (measured by service lines) and 37% on
3 demand Document B-0040, filed in translation as C-ROEE-0030, tab
4 CONDPRIN).

5 These values result from Gaz Métro's assumption that the cost of
6 building a 2-inch system of mains is driven by the number of customer
7 connections and that the additional costs of the actual system are due to the
8 expense of upgrading most lines from 2 inches to their actual size. As a
9 result, Gaz Métro proposes to allocate almost all of the diseconomies of
10 trenching to the small customers based on their number. This treatment
11 violates the Régie's mandate of a "fair and equitable sharing of savings and
12 diseconomies," as well as the requirement for using the "most direct causal
13 relationship between costs and the customers that generated such costs."
14 (Document B-0023 at 12)

15 **Q: Is the allocation of the costs of mains on the number of customers or**
16 **connections reasonable?**

17 A: No. Neither customer number nor the number of connections drives a signifi-
18 cant portion of mains costs. Increasing the number of customers along a
19 stretch of main (or potential customers along a stretch of road under which a
20 main might be laid) does not increase the cost of the main, or increase the
21 likelihood that the main would be built, unless the customers also result in
22 higher loads or higher revenue.

23 **Q: For a typical existing main, would reducing the number of customers**
24 **without reducing load have reduced the costs of installing those mains?**

25 A: Not in most cases. Removing customers, without reducing the demand in an
26 area, might eliminate a small length of main in a few cases, if the customers

1 happened to include those at the end of a line. Most of the time, removing
2 customers would have no effect on line investment.

3 Much of the cost of a distribution system is required to cover an area
4 and is not really sensitive to either load or customer number. The distribution
5 system is built to cover an area, because the total load expected to be served
6 will justify the expansion. The distribution cost of serving a geographical area
7 for a given load is roughly the same whether that load is from concentrated
8 commercial loads at various points along the mains or dispersed residential
9 customers.

10 In addition, the number of customers and connections per kilometer
11 varies with customer size. In an urban residential area, a main running one
12 block may serve over a dozen residential connections. The next block,
13 occupied by a service station, supermarket, or small school, would require
14 the same length of main to serve one customer. In an affluent suburban
15 residential area, with larger houses on larger lots, one block of pipe may
16 serve four or five customers. And larger schools, commercial complexes, and
17 factories may require the equivalent of two or three blocks to serve one
18 customer and run on to connect additional customers.

19 The minimum-system approach assumes that the minimum system
20 would consist of the same metres of pipe as the actual system. In reality, load
21 levels help determine the *length* of pipes, as well as their size. As load grows,
22 utilities add distribution mains to parallel or loop existing mains and increase
23 capacity to serve the load.⁴

⁴For example, Gaz Métro requested approval of 24 km of supply mains in Docket R-3763-2011 to ensure security of supply on the island of Montreal and the South Shore.

1 **Q: Is the cost of the area-spanning system essentially the sum of the cost of**
2 **building a system that would reach every D₁ customer using less than**
3 **36,500 cubic metres annually, plus the cost of a system to reach every D₁**
4 **customer using more than 36,500 cubic metres annually, plus another 18**
5 **systems that would reach every customer on each of the other tariffs?**

6 A: No. The same section of distribution main may be needed to serve both large
7 and small D₁ customers and several other rate classes as well. The basic costs
8 of laying a main (e.g., trenching, filling and resurfacing) generally provide
9 joint and inseparable services to multiple rate groups.

10 **Q: Is the minimum-system approach based on a realistic view of the most-**
11 **direct causal relationship between the costs of a utility distribution**
12 **system and the customers that generated such costs, as the Régie**
13 **required in Docket R-3323-95?**

14 A: No. Bonbright's *Principles of Public Utility Rates*, a standard reference for
15 utility ratemaking, is cited by the Black and Veatch report for Gaz Métro, and
16 also in Gaz Métro's own documents.⁵ Bonbright concludes (at 491–492),

17 the inclusion of the costs of a minimum-sized distribution system among
18 the customer-related costs seems...clearly indefensible. [Cost analysts
19 are] under impelling pressure to fudge their cost apportionments by
20 using the category of customer costs as a dumping ground....

21 Indeed, Gaz Métro proposes dumping most of the costs of the mains
22 into the customer (or more specifically, customer-connection) category.

⁵Bonbright, James. Albert Danielsen, and David Kamerschen. 1988. *Principles of Public Utility Rates*. Arlington, Va.: Public Utilities Reports. Cited in Review of Gaz Metro's Cost of Service and Rate Design, 17 October 2013, filed in this proceeding as Document B-0005, at 24, 25 and 38; Gaz Métro Cost of Service Allocation, filed as Document B-0023, at 9 and 10.

1 Bonbright is cited by the Black and Veatch report for Gaz Métro, and
2 also in Gaz Métro’s own documents.

3 The minimum-system approach is very old technique for classifying as
4 customer-related a large share of the cost of covering the service territory and
5 hence burdening small customers with these joint costs.

6 **Q: What alternative approaches exist for classifying the costs of the area-
7 spanning system?**

8 A: There are at least two approaches. One approach, which is used in many
9 jurisdictions, is to treat all the area-spanning costs as demand-related to
10 reflect the reality that the system is built out primarily to serve load, not
11 customer number.⁶

12 The second approach is to examine the manner in which the gas-distri-
13 bution system is actually planned, and classify costs appropriately. This latter
14 approach requires a more-realistic view of distribution planning than the
15 concept underlying the minimum-system approach, and hence represents the
16 Régie’s goal of identifying the most-direct causal relationship between costs
17 and the customers driving those costs.

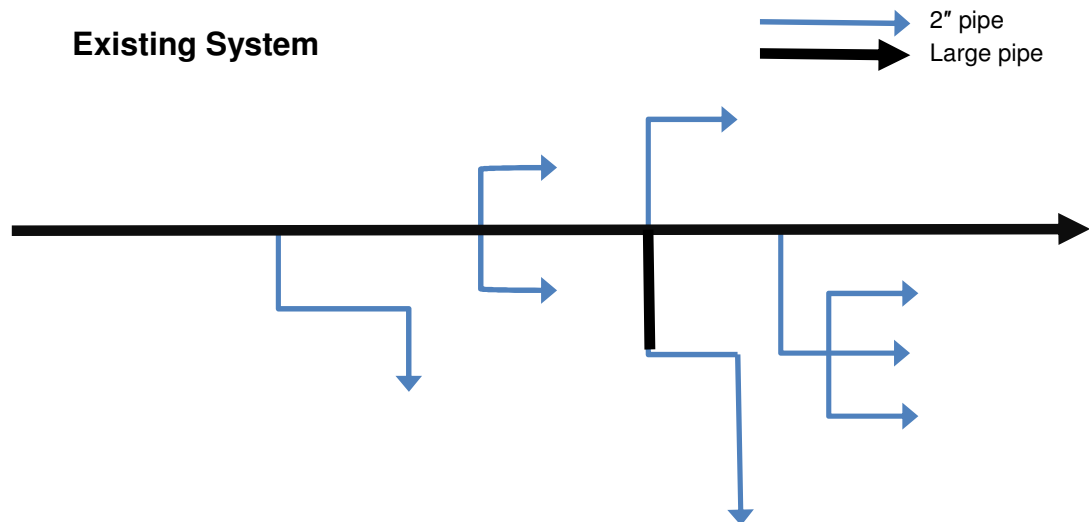
18 **Q: What concept of distribution-system planning underlies the minimum-
19 system approach?**

20 A: The minimum-system approach that Gaz Métro proposes to use for allocating
21 mains costs starts with the system as it currently exists. Figure 1 shows a

⁶A demand allocator for distribution feeders (sometimes weighted with throughput or other load-related factors) is used for electric utilities in about 30 U.S. states, Utah, Maryland, Massachusetts, Kentucky, Minnesota, Oregon, California, New York, Washington, Wyoming and Idaho. See Weston, Frederick. 2000. “Charging for Distribution Utility Services: Issues in Rate Design. Montpelier, Vt.: Regulatory Assistance Project.

1 simple example of a portion of the distribution system, with a large-diameter
2 main feeding large loads and a series of small (e.g., 2-inch or 60-millimetre)
3 mains leading from the large main to smaller customers.⁷

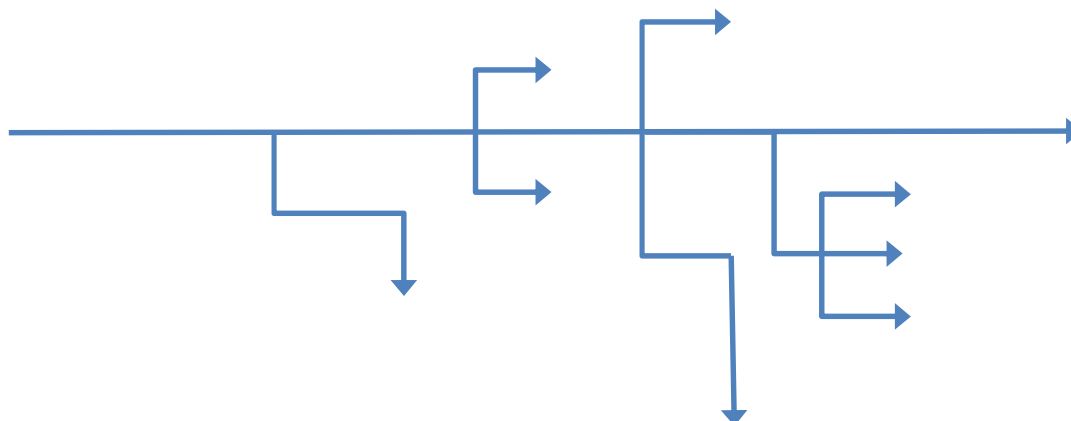
4 **Figure 1: Section of Gas Distribution System**



5
6 The minimum-system approach assumes that the planning of the system
7 started with small-diameter lines covering the same territory as the existing
8 system, as shown in Figure 2. In other words, the minimum system approxi-
9 mates the way the system would have been designed if all customers were
10 small, and if the utility would have installed the same length of mains to
11 serve that hypothetical system of small customers.

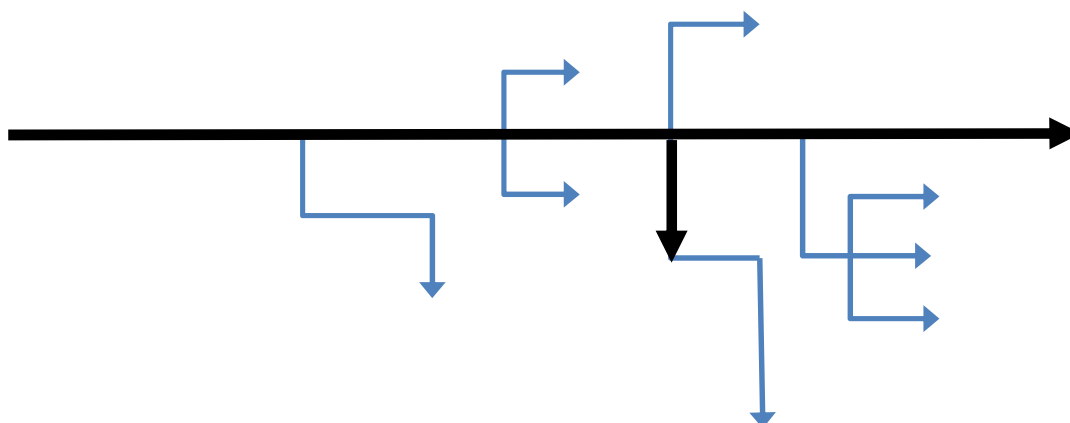
⁷For these examples, the exact definition of “small” and “large” are not critical. Gaz Métro has concluded that a system of 2-inch (or 60-millimetre) pipes would serve all the load of its customers using less than 36,500 m³ annually. Gaz Métro has some smaller pipes, which are apparently sufficient to serve small customers in some locations. It is possible that significant portions of a system composed only of customers using less than 36,500 m³ annually could use pipes smaller than 2 inches.

1 **Figure 2: Gaz Métro’s Step Two—Design For Small Customers**



2
3 The minimum system approach then assumes that some of the small
4 lines are replaced by larger diameter lines to serve the major customers, as
5 shown in Figure 3. Gaz Métro does not specify whether its minimum-system
6 model assumes that the system was originally built with small-diameter
7 mains, which were later replaced with larger ones as the major loads
8 contracted for gas service, or that the initial system design was upgraded to
9 serve the large loads prior to actual construction.

10 **Figure 3: Gaz Métro’s Step One—Upgrades the Minimum System for Higher**
11 **Demand**



12
13 In any case, the minimum-system approach assumes that the initial
14 design consisted entirely of small lines, and the larger mains are upgrades.

1 The cost of trenching is assigned to the small lines, since they came first in
2 development of the system.

3 **Q: Does the minimum-system model of distribution-system expansion reflect**
4 **the actual causes of mains-related costs?**

5 A: No. In general, gas distribution companies do not start by laying out a distri-
6 bution system that would provide a small amount of gas to every building in
7 an area, and then upgrade the small lines where needed to serve large loads.
8 Instead, the distributor will typically identify large customers whose con-
9 sumption and revenues will justify the largely fixed costs of trenching and
10 installing the large-diameter backbone mains, and then serve small customers
11 directly from the large mains or from smaller-diameter spurs. Those small
12 customers can be added when the large-diameter main is installed or later (at
13 a slightly higher cost). Thus, the basic assumption of the minimum-system
14 approach, that the utility would have installed the same length of mains to
15 serve a system of entirely small customers, is inconsistent with actual
16 practice.

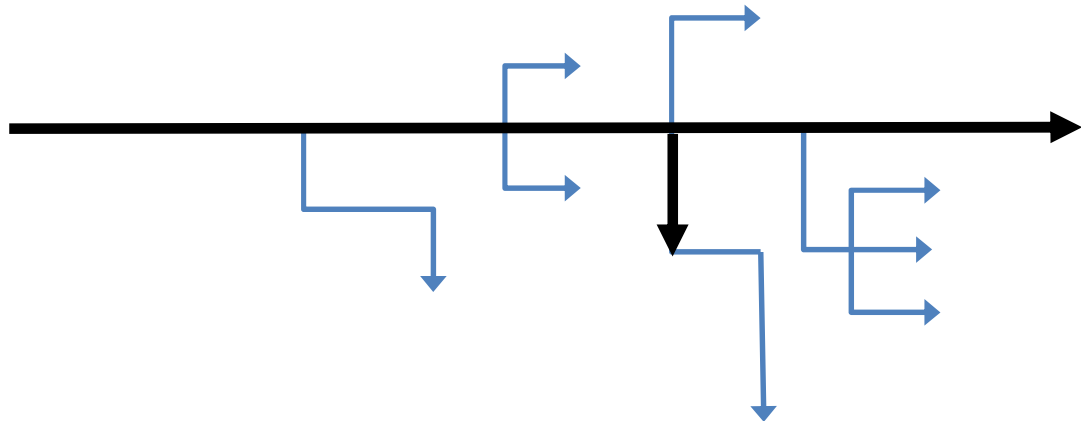
17 Figure 4 shows the initial step in planning for expansion of the gas
18 distribution system, designing the large mains to serve the major customers.

19 **Figure 4: Real-World Step One—Planning Mains for Large Loads**



20
21 Figure 5 shows the addition of mains to serve groups of small
22 customers, once the large pipes have been planned or build for the large
23 loads.

1 **Figure 5: Adding Smaller Pipe for Smaller Customers**



2

3 **Q: What is the implication of a real-world approach to classification of**
4 **distribution mains?**

5 A: In the real world, the small customers can be considered responsible only for
6 the small-diameter mains (up to about 2 inches or 60 millimetres), plus the
7 costs of the portion of the larger mains that is attributable to the additional
8 load requirements of the small customers, above the load of the large
9 customers who justify the large mains and the geographic expansion of the
10 system. Since the large mains represent about 61% of the length of the
11 distribution mains, and about 67% of the combined length of distribution and
12 supply mains, the treatment of these large mains is very important in the
13 allocation.

14 **Q: How much does the cost allocated to access change with a method that**
15 **realistically treats the small customers as incremental to the large-**
16 **customer loads?**

17 A: In Table 1, I calculate the access cost of distribution mains, as the sum of the
18 costs of mains up to 60 mm diameter, plus a share of the costs of the larger
19 mains. The length and cost data are from Gaz Métro Document B-0036. For

1 each main size, I compute the relative flow, using the diameter-related
2 portion of the Spitzglass formula:⁸

3
$$[d^5 \div (1 + 3.6 \div d + 0.03 \times d)]^{1/2}$$

4 For each type and diameter of pipe, Table 1 identifies the access-related
5 portion of the lines larger than 60 mm as the ratio of the capacity of the 60
6 mm pipe to the capacity of the specific larger pipe.⁹ The access-related cost is
7 to the total cost of that category of pipe, times the access-related fraction.

8 The access-related portion of the cost in Table 1 is just 42%, compared
9 to 74% in Gaz Métro's approach.

⁸In Gaz Métro's responses to my question 10, Black and Veatch refers to this formula as the "Spritzgas" formula. The relative flow rates in that response are similar to those in Table 1.

⁹In addition, some of the incremental costs of the steel lines over the cost of plastic lines may be demand-related, to allow higher pressures. In my analysis, I have implicitly assumed that the existing mix of steel and plastic would be required for a system serving any mix of customers. In doing so, I have probably overstated the access-related portion of the system.

1

Table 1: Distribution Mains Classification, Large Lines First, Average Costs

Type	Diameter (mm)	Length (m)	Cost (2012\$)	Cost/m (2012\$)	Relative Capacity (60mm = 1)	Access-Related Share	Access-Related Cost
<i>Plastique</i>	26.7	362	\$56,317	\$156	0.1	1.00	\$56,317
<i>Plastique</i>	42.2	281,133	\$44,206,158	\$157	0.4	1.00	\$44,206,158
<i>Plastique</i>	60.3	2,237,170	\$382,430,716	\$171	1.0	1.00	\$382,430,716
<i>Plastique</i>	88.9	196,174	\$35,465,496	\$181	2.9	0.34	\$12,202,441
<i>Plastique</i>	114.3	2,431,771	\$500,702,692	\$206	5.7	0.17	\$87,527,862
<i>Plastique</i>	168.3	953,548	\$218,293,188	\$229	15.9	0.06	\$13,762,816
<i>Plastique</i>	219.1	64,475	\$15,145,998	\$235	31.3	0.03	\$484,380
<i>Acier</i>	21.3	0	\$0		0.1	1.00	\$0
<i>Acier</i>	26.7	5,031	\$1,530,574	\$304	0.1	1.00	\$1,530,574
<i>Acier</i>	33.4	28,106	\$8,703,182	\$310	0.2	1.00	\$8,703,182
<i>Acier</i>	42.2	26,326	\$8,338,659	\$317	0.4	1.00	\$8,338,659
<i>Acier</i>	48.3	97,293	\$31,296,588	\$322	0.5	1.00	\$31,296,588
<i>Acier</i>	60.3	317,847	\$105,319,106	\$331	1.0	1.00	\$105,319,106
<i>Acier</i>	88.9	201,668	\$64,819,948	\$321	2.9	0.34	\$22,302,285
<i>Acier</i>	114.3	348,989	\$129,219,640	\$370	5.7	0.17	\$22,588,892
<i>Acier</i>	168.3	310,381	\$127,894,695	\$412	15.9	0.06	\$8,063,427
<i>Acier</i>	219.1	129,675	\$70,880,203	\$547	31.3	0.03	\$2,266,801
<i>Acier</i>	273.1	6,865	\$3,453,088	\$503	54.5	0.02	\$63,308
<i>Acier</i>	323.9	28,777	\$14,619,940	\$508	83.4	0.01	\$175,368
<i>Acier</i>	406.4	11,270	\$6,799,716	\$603	145.3	0.01	\$46,807
<i>Acier</i>	508	0	\$0		248.4	0.004	\$0
<i>Acier</i>	610	0	\$0		382.8	0.003	\$0
<i>Acier</i>	762	0	\$0		642.5	0.002	\$0
<i>Total</i>		7,676,861	\$1,769,175,903	\$273		0.425	\$751,365,687

2 **Q: Does Table 1 represent your best estimate of the access-related portion of**
 3 **the distribution mains?**

4 **A:** No. I believe that Table 1 overstates the access-related portion of the costs,
 5 for at least the following four reasons:

- 6 • Most of the system would never have been built solely to provide access
 7 for small customers.
- 8 • Table 1 does not adjust for the length of main between the connections
 9 for customers of different sizes.

- 1 • The cost that Table 1 attributes to access is the average cost of capacity
2 through the pipe, times the ratio of 60-mm pipe capacity to the capacity
3 of the larger pipe, rather than the incremental cost of that pipe size over
4 the next smaller size.
- 5 • Some of the incremental costs of the steel lines over the cost of plastic
6 lines may be demand-related, to allow higher pressures. Table 1 impli-
7 cantly assumes that the existing mix of steel and plastic would be required
8 for a system serving any mix of customers.

9 **Q: Have you been able to correct that third source of overstatement of the**
10 **access-related cost?**

11 A: Yes. In Table 2, I summarize the results of a computation similar to that
12 summarized in Table 1, but attributing to the access-related system only the
13 portion of the incremental capacity in the line that would be carried by the
14 60-mm pipe. For example, for the 168-mm plastic pipe, the incremental cost
15 over the next smaller (114-mm) pipe is \$17.40/m, which provides incre-
16 mental capacity 10 times the capacity of a 60 mm pipe. Adding the load of
17 the small customers who could be served with the 60 mm pipe would impose
18 an average cost of just \$1.74/m.¹⁰ For the 953,548 m of 168-mm plastic pipe,
19 the incremental cost of \$1.74/m would imply a cost of \$1,636,594 being due
20 to the small-customer load.

21 With this correction, the access-related cost is 35% of the distribution
22 costs.

¹⁰Put differently, there is roughly a 10% chance that adding the small-customer load would have required the upgrade of the 114 mm pipe to the 168 mm.

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Table 2: Distribution Mains Classification, Large Lines First, Incremental Costs

Type	Diameter (mm)	Length (m)	Cost (2012\$)	Cost/m (2012\$)	Relative Capacity (60mm = 1)	Incremental		Access-Related Cost
						Cost per meter	Capacity as multiple of 60mm	
Plastique	26.7	362	\$56,317	\$156	0.1			\$56,317
Plastique	42.2	281,133	\$44,206,158	\$157	0.4			\$44,206,158
Plastique	60.3	2,237,170	\$382,430,716	\$171	1.0			\$382,430,716
Plastique	88.9	196,174	\$35,465,496	\$181	2.9	\$9.84	1.9	\$1,012,717
Plastique	114.3	2,431,771	\$500,702,692	\$206	5.7	\$25.11	2.8	\$21,702,937
Plastique	168.3	953,548	\$218,293,188	\$229	15.9	\$23.03	10.1	\$2,165,274
Plastique	219.1	64,475	\$15,145,998	\$235	31.3	\$5.99	15.4	\$25,050
Acier	21.3	0	\$0		0.1			\$0
Acier	26.7	5,031	\$1,530,574	\$304	0.1			\$1,530,574
Acier	33.4	28,106	\$8,703,182	\$310	0.2			\$8,703,182
Acier	42.2	26,326	\$8,338,659	\$317	0.4			\$8,338,659
Acier	48.3	97,293	\$31,296,588	\$322	0.5			\$31,296,588
Acier	60.3	317,847	\$105,319,106	\$331	1.0			\$105,319,106
Acier	88.9	201,668	\$64,819,948	\$321	2.9	-\$9.93	1.9	\$0
Acier	114.3	348,989	\$129,219,640	\$370	5.7	\$48.85	2.8	\$6,058,110
Acier	168.3	310,381	\$127,894,695	\$412	15.9	\$41.79	10.1	\$1,279,066
Acier	219.1	129,675	\$70,880,203	\$547	31.3	\$134.54	15.4	\$1,132,342
Acier	273.1	6,865	\$3,453,088	\$503	54.5	-\$43.60	23.3	\$0
Acier	323.9	28,777	\$14,619,940	\$508	83.4	\$5.04	28.8	\$5,031
Acier	406.4	11,270	\$6,799,716	\$603	145.3	\$95.31	61.9	\$17,352
Acier	508	0	\$0		248.4		103.1	\$0
Acier	610	0	\$0		382.8		134.5	\$0
Acier	762	0	\$0		642.5		259.7	\$0
Total		7,676,861	\$1,769,175,903	\$273				\$615,279,179

3 **Q: Have you repeated this computation for the combined cost of distri-**
4 **bution and supply mains?**

5 A: Yes. Table 3 repeats the average-cost computation for this larger group of
6 mains, using the average costs of the large mains, as in Table 1. Using this
7 approach, I estimate that 31% of the cost of the distribution and supply mains
8 is allocable to access, compared to the 63% estimated by Gaz Métro from its
9 unrealistic minimum-system approach.

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Table 3: Distribution and Supply Mains Classification, Large Lines First, Average Costs

Type	Diameter (mm)	Length (m)	Cost (2012\$)	Cost/m (2012\$)	Relative Capacity (60mm = 1)	Access-Related Share	Access-Related Cost
<i>Plastique</i>	26.7	362	\$56,317	\$156	0.1	1.00	\$56,317
<i>Plastique</i>	42.2	281,133	\$44,206,158	\$157	0.4	1.00	\$44,206,158
<i>Plastique</i>	60.3	2,237,170	\$382,430,716	\$171	1.0	1.00	\$382,430,716
<i>Plastique</i>	88.9	196,174	\$35,465,496	\$181	2.9	0.34	\$12,202,441
<i>Plastique</i>	114.3	2,431,771	\$500,702,692	\$206	5.7	0.17	\$87,527,862
<i>Plastique</i>	168.3	953,548	\$218,293,188	\$229	15.9	0.06	\$13,762,816
<i>Plastique</i>	219.1	64,475	\$15,145,998	\$235	31.3	0.03	\$484,380
<i>Acier</i>	21.3	11	\$3,359	\$300	0.1	1.00	\$3,359
<i>Acier</i>	26.7	5,092	\$1,549,249	\$304	0.1	1.00	\$1,549,249
<i>Acier</i>	33.4	28,110	\$8,704,359	\$310	0.2	1.00	\$8,704,359
<i>Acier</i>	42.2	26,426	\$8,370,397	\$317	0.4	1.00	\$8,370,397
<i>Acier</i>	48.3	99,494	\$32,004,501	\$322	0.5	1.00	\$32,004,501
<i>Acier</i>	60.3	324,183	\$107,418,685	\$331	1.0	1.00	\$107,418,685
<i>Acier</i>	88.9	221,227	\$71,106,354	\$321	2.9	0.34	\$24,465,218
<i>Acier</i>	114.3	589,539	\$218,287,547	\$370	5.7	0.17	\$38,158,857
<i>Acier</i>	168.3	820,416	\$338,058,093	\$412	15.9	0.06	\$21,313,681
<i>Acier</i>	219.1	371,762	\$203,205,253	\$547	31.3	0.03	\$6,498,654
<i>Acier</i>	273.1	213,394	\$107,337,259	\$503	54.5	0.02	\$1,967,882
<i>Acier</i>	323.9	131,773	\$66,945,763	\$508	83.4	0.01	\$803,021
<i>Acier</i>	406.4	179,133	\$108,080,630	\$603	145.3	0.01	\$743,990
<i>Acier</i>	508	51,180	\$35,440,510	\$692	248.4	0.004	\$142,690
<i>Acier</i>	610	18,280	\$14,162,073	\$775	382.8	0.003	\$36,992
<i>Acier</i>	762	8,104	\$7,272,452	\$897	642.5	0.002	\$11,319
<i>Total</i>		9,252,757	\$2,524,247,049	\$273		0.314	\$792,863,546

3 Similarly, Table 4 shows the results of applying the incremental real-
4 world approach to the combined distribution and supply mains, as I did for
5 distribution mains alone in Table 2. This more sophisticated approach
6 reduces to 25% the portion of distribution and supply mains allocated to
7 access.

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Table 4: Distribution and Supply Mains Classification, Large Lines First, Incremental Costs

Type	Diameter (mm)	Length (m)	Cost (2012\$)	Cost/m (2012\$)	Relative Capacity (60mm = 1)	Incremental		Access-Related Cost
						Cost per meter	Capacity as multiple of 60mm	
<i>Plastique</i>	26.7	362	\$56,317	\$156	0.1			\$56,317
<i>Plastique</i>	42.2	281,133	\$44,206,158	\$157	0.4			\$44,206,158
<i>Plastique</i>	60.3	2,237,170	\$382,430,716	\$171	1.0			\$382,430,716
<i>Plastique</i>	88.9	196,174	\$35,465,496	\$181	2.9	\$9.84	1.9	\$1,012,717
<i>Plastique</i>	114.3	2,431,771	\$500,702,692	\$206	5.7	\$25.11	2.8	\$21,702,937
<i>Plastique</i>	168.3	953,548	\$218,293,188	\$229	15.9	\$23.03	10.1	\$2,165,274
<i>Plastique</i>	219.1	64,475	\$15,145,998	\$235	31.3	\$5.99	15.4	\$25,050
<i>Acier</i>	21.3	11	\$3,359	\$300	0.1			\$3,359
<i>Acier</i>	26.7	5,092	\$1,549,249	\$304	0.1			\$1,549,249
<i>Acier</i>	33.4	28,110	\$8,704,359	\$310	0.2			\$8,704,359
<i>Acier</i>	42.2	26,426	\$8,370,397	\$317	0.4			\$8,370,397
<i>Acier</i>	48.3	99,494	\$32,004,501	\$322	0.5			\$32,004,501
<i>Acier</i>	60.3	324,183	\$107,418,685	\$331	1.0			\$107,418,685
<i>Acier</i>	88.9	221,227	\$71,106,354	\$321	2.9	-\$9.93	1.9	\$0
<i>Acier</i>	114.3	589,539	\$218,287,547	\$370	5.7	\$48.85	2.8	\$10,233,816
<i>Acier</i>	168.3	820,416	\$338,058,093	\$412	15.9	\$41.79	10.1	\$3,380,896
<i>Acier</i>	219.1	371,762	\$203,205,253	\$547	31.3	\$134.54	15.4	\$3,246,292
<i>Acier</i>	273.1	213,394	\$107,337,259	\$503	54.5	-\$43.60	23.3	\$0
<i>Acier</i>	323.9	131,773	\$66,945,763	\$508	83.4	\$5.04	28.8	\$23,038
<i>Acier</i>	406.4	179,133	\$108,080,630	\$603	145.3	\$95.31	61.9	\$275,814
<i>Acier</i>	508	51,180	\$35,440,510	\$692	248.4	\$89.12	103.1	\$44,239
<i>Acier</i>	610	18,280	\$14,162,073	\$775	382.8	\$82.27	134.5	\$11,185
<i>Acier</i>	762	8,104	\$7,272,452	\$897	642.5	\$122.61	259.7	\$3,827
<i>Total</i>		9,252,757	\$2,524,247,049	\$273				\$626,868,824

3 **B. Access Allocator for Mains**

4 **Q: How does Gaz Métro propose to allocate the portion of costs that it**
 5 **identifies as being driven by requirements for customer access, that is,**
 6 **the area-spanning system?**

7 **A:** Gaz Métro proposes to use the number of attachments to its mains (or
 8 branches from its mains), which other utilities refer to as “service lines” or
 9 “service drops,” rather than the number of customers. This treatment reflects
 10 the fact that a single attachment may serve several customers, without
 11 requiring an extension of the main to reach each of them.

1 **Q: Is this treatment superior to the use of customer number to allocate the**
2 **access-related mains cost?**

3 A: Yes. As I describe in Section III.A, the area-spanning system is not driven by
4 the number of customers, but by the amount of load that will be served and
5 the economics of the line extension. To the extent that the area-spanning
6 system is to be allocated on some measure independent of usage, that
7 measure should at least recognize that the cost of reaching several customers
8 in a multi-customer building is no greater than the cost of reaching one
9 customer on the same site.

10 Serving many customers in one multi-family building is no more
11 expensive than serving one commercial customer of the same size, other than
12 metering.

13 **Q: Does this treatment of mains costs have implications for rate design?**

14 A: Yes. Adding or subtracting one of the smallest residential customers, in
15 multi-family housing, will generally have no effect on the cost of the area-
16 spanning system. The same is probably also true for most of the smallest
17 commercial customers, such as in multi-tenant office buildings. Hence, the
18 fixed monthly customer for small customers should exclude any costs of
19 mains.

20 **Q: Do you have any suggestions for further improving the allocator for the**
21 **access-related mains costs?**

22 A: Yes. To the extent that the cost of the area-spanning system is driven by the
23 need to run mains past (or at least to) each customer, the allocation of that
24 cost should reflect the amount of main required to get past each customer to
25 serve the next connection.

1 In addition, Gaz Métro is willing to extend a main further to serve a
2 large customer than a small customer. Gaz Métro decides whether to extend a
3 main based on expected consumption volumes, revenues and the resulting
4 internal rate of return (Document B-0068, DDR 34). For the same
5 construction conditions, Gaz Métro will fund a much longer extension to add
6 a large commercial, institutional or industrial customer than it would to add a
7 single residential customer.

8 Gaz Métro should further improve the access allocator by reflecting the
9 average distance between customers (excluding small customers to whom
10 Gaz Métro would have been extended service in the absence of larger loads
11 beyond).

12 **C. Demand Allocator for Mains**

13 **Q: How does Gaz Métro propose to allocate the demand-related portion of**
14 **mains?**

15 A: Gaz Métro has proposed to change the treatment of interruptible demand in
16 the allocation of distribution and supply mains. Currently, the firm-service
17 classes are allocated demand-related distribution main costs on the basis of
18 their contribution to demand at design peak conditions, while the interrupt-
19 ible classes are allocated those costs in proportion to their average daily
20 usage during the year.¹¹ Supply and transmission mains are allocated on
21 design peak, ignoring interruptible load.

¹¹Gaz Métro's current CAU allocator actually multiplies the firm customers' contributions to design peak by 365 and uses the interruptible customers' annual consumption; that allocation is equivalent to combining the firm design peaks and the interruptible average daily load.

1 Gaz Métro is proposing to change the treatment of the interruptible load
2 for distribution mains to the interruptible non-coincident peaks, and to
3 allocate the demand-related portion of the supply mains in the same manner
4 as distribution mains.

5 In any case, the small customers, whose loads can be met entirely by the
6 60-mm system, are allocated no additional demand-related mains costs.

7 **Q: Are Gaz Métro's proposed changes in the mains demand allocator**
8 **appropriate?**

9 A: Yes. Using the non-coincident peaks for the interruptible classes puts the firm
10 and interruptible loads on a more consistent basis, with each class being
11 allocated costs in proportion to a measure of peak demand. Under the
12 existing system, the interruptible classes are charged for average load, rather
13 than any measure of the maximum load they put on the system. Since firm
14 and interruptible load for large customers are treated in the same manner in
15 evaluating expansion of the distribution and supply system, the allocators
16 should be as consistent as possible.

17 **Q: Do you have any suggestions for improving Gaz Métro's approach to**
18 **allocation of demand-related costs of distribution and supply mains?**

19 A: Yes. While Gaz Métro recognizes that the 60-mm system, allocated through
20 the access portion of the CONDPRIN allocator, covers all the demand of D₁
21 customers up to 36,500 m³/annum, and does not allocate any additional
22 demand-related costs to those customers, Gaz Métro does not recognize that
23 the access-allocated system would cover a significant portion of the demand
24 of slightly larger customers. Gaz Métro reports that the 18,465 D₁ customers
25 in the range of 10,950–36,500 m³/annum have a maximum daily quantity
26 (DQM) of 3,688,522 m³, or about 200 m³ per customer (Document B-0041).

1 If the 60 mm system can accommodate 200 m³ DQM per customer, it would
2 cover the following shares of other customer groups:¹²

- 3 • about a third of the demand of the D₁ customers using 36,500–109,500
4 m³/annum and the tariff 303 customers,
- 5 • about 10% of the demand of the D₁ customers using 109,500–365,000
6 m³/annum and the tariff 304 customers,
- 7 • about 7% of the demand of the tariff 305 customers.

8 The DQMs for these rate groups should be adjusted downward in the
9 development of the supply and distribution allocator.

10 **D. Classification of Supply Mains**

11 **Q: How does Gaz Métro propose to classify the costs of the supply mains?**

12 A: Gaz Métro proposes to change the classification from 100% demand-related
13 to the minimum-system approach Gaz Métro has proposed for distribution
14 mains. Using this approach, Gaz Métro proposes to classify almost half the
15 costs of the supply mains to access, as shown in Table 5.

16 **Table 5: Gaz Métro Classification of Mains**

Line	GM Mains Classification	Access	Demand	Total
1	Distribution only ^a	70.9%	29.1%	100%
	Distribution as % of Distribution			
2	plus Supply	53.2%	21.8%	75%
3	Distribution plus Supply ^a	65.4%	34.6%	100%
	Supply as % of			
4	Distribution plus Supply ^b	12.2%	12.8%	25%
5	Supply only	49%	51%	100%

^a From Document B-0041.

^b Line 3 minus line 2

¹²The 200 m³ DQM per customer is the average in the 10,950–36,500 m³/annum range; the highest DQM that Gaz Métro has assumed could be accommodated by the 60 mm system may be 50% higher.

1 **Q: What is Gaz Métro’s justification for classifying 49% of supply main**
2 **costs to access?**

3 A: Gaz Métro states that supply mains serve the same functions as distribution
4 mains, and that there is no longer any reason to distinguish between these
5 two categories of mains (Document B-0068, DDR 51).

6 **Q: Is this classification of supply lines appropriate?**

7 A: No. Supply mains, even more than the distribution mains, are justified by the
8 demand of large customers, rather than the number of customers. Only 782
9 customers are connected to supply mains, of which nearly 90% are connected
10 directly to a supply main for reasons of geographic convenience (the supply
11 line happened to be closer than a distribution main), while the other 10%
12 required higher pressure or supply than available through the distribution
13 mains (Document B-0068, DDR 52a). Gaz Métro is unable to identify any
14 situations in which supply lines were extended to directly connect specific
15 customers, let alone a situation in which a supply main was extended to serve
16 a small customer (Document B-0068, DDR 53). The total length of Gaz
17 Métro’s supply mains is driven by customer loads—connected directly to the
18 supply mains or through distribution mains fed by the supply lines—not the
19 number of customer connections.

20 It is obvious from Gaz Métro’s applications for authorization to extend
21 service mains that those lines are installed to serve a volume of gas demand
22 from large customers, and that connection of small customers is an
23 afterthought. For example, in its application for the Thetford Mines
24 expansion, Gaz Métro justifies the addition of some 52 km of 168 mm and
25 219 mm supply main at 2,900 kPa on the basis of the loads of about 14 large
26 customers (R-3767-2011, Document B-0005, Tables 1–3). The application

1 does not include any residential or small commercial customers, and notes
2 that the determination of whether to connect those customers would depend
3 on subsequent analyses of the profitability of extending service to them from
4 the supply line. (ibid. at 7, 8)

5 **Q: What would be a reasonable classification of the supply mains?**

6 A: Gaz Métro could simply treat the supply mains as demand-related, as it has
7 previously. Alternatively, Gaz Métro could use the combined classification
8 method for distribution and supply mains that I present in Table 4.

9 **IV. Allocation of Overhead and Miscellaneous Costs**

10 **Q: For which overhead and miscellaneous costs do you have comments on**
11 **Gaz Métro's proposed allocation?**

12 A: I comment on seven such classification and allocation issues, as follows:

- 13 • engineering and planning,
- 14 • gas supply expenses,
- 15 • regulatory affairs, accounting and public affairs
- 16 • billing and meter-reading costs,
- 17 • sales force,
- 18 • advertising and promotion of natural gas,
- 19 • energy-efficiency costs.

20 **Q: What are your comments on the allocation of engineering and planning**
21 **expenses?**

22 A: These costs are related to engineering, system design, asset management, and
23 costs associated with major projects, and have primarily been allocated on
24 total expenses (Document B-0023 at 68). Gaz Métro is proposing to allocate

1 these costs on customer number, on the grounds that “this factor is the most
2 important cost driver for this activity centre” (ibid.).

3 Gaz Métro’s assertion that customer numbers drive engineering and
4 planning expenses is nonsensical. Adding a small customer requires a meter
5 and sometimes a service connection, neither of which is likely to require
6 much engineering or planning. The activities in this category are clearly
7 related to larger projects, primarily for mains.

8 Nor are these costs related to operating expenses, since they are
9 primarily incurred for capital project.

10 This expense category should be allocated in proportion to the total
11 investment in mains and access roads, which are likely to dominate the costs
12 of system design, asset management, and especially major projects. If these
13 costs are also driven by other categories of major projects, such as the LNG
14 plant, those investments should be included in the allocator.

15 **Q: What are your comments on the classification of gas supply expenses?**

16 A: Gaz Métro proposes to allocate costs related to the administration and opera-
17 tion of gas supply and system control on the basis of design-day peak demand
18 for firm customers and maximum demand for interruptible customers. This
19 allocation would only be correct were the costs driven solely by expenditures
20 for a handful of annual hours for various interruptible customer and one day
21 every couple decades for firm customers. This is very unlikely; the staff and
22 equipment used for these functions are required every day, and cannot be
23 freed up for other operations on low-load days.

24 It is more likely that the cost of gas dispatch and system operation is
25 driven by something close to total throughput. These costs should be
26 allocated on throughput, rather than a capacity allocator.

1 **Q: What are your comments on the allocation of regulatory affairs,**
2 **accounting, and public affairs?**

3 A: The category includes accounting, internal audits and finance, pricing and
4 regulation, legal services, corporate control, public and government affairs,
5 and demand forecasting. These costs have previously been allocated on total
6 expenses; Gaz Métro proposes to classify half of these costs as customer-
7 related and half as demand-related.

8 While the existing approach is not clearly cost-based (some categories
9 of expenses require large amounts of these services, which others require
10 little) Gaz Métro's proposal is not much of an improvement. The number of
11 customers has little or nothing to do with these costs. Some of these costs
12 (much of the accounting, internal audits and finance; some legal services; and
13 corporate control) are related to the need to raise capital, and hence should be
14 allocated primarily on investment levels. Most of the remaining costs are
15 related to major projects (much of legal, regulation and public and govern-
16 ment affairs) or to load that drives the need for those projects (and for demand
17 forecasting). Hence, a more reasonable allocator would be a mix of total
18 investments, mains investment (and any other plant categories that include
19 major projects, such as the LNG plant), and peak demand. In the absence of
20 more detail regarding the make-up of the underlying costs, the weighting of
21 those three allocators must be somewhat arbitrary, although not as arbitrary
22 as allocating major project costs on customer number. As an interim measure,
23 an equal weighting of these three allocators seems reasonable.

24 **Q: What are your comments on the allocation of billing and meter-reading**
25 **costs?**

1 A: Gaz Métro proposes to allocate customer billing and meter reading costs on
2 customer number (Document B-0023 at 69). This allocation would only be
3 correct if the costs of metering and billing were the same for all customers.
4 Since D₄, D₅, and some D₃ are metered daily, the metering and billing costs
5 for those customers are almost certainly higher than the costs for D₁
6 customers. The cost differences should be estimated and reflected in alloca-
7 tion of these costs.

8 **Q: What are your comments on the allocation of sales-force expenses?**

9 A: Gaz Métro proposes to continue using its allocator FS27, which is a complex
10 composite of a measure of total revenues (FB09-CL), number of customers,
11 and volumes. Marketing to each customer class (residential, commercial and
12 industrial, and very high-volume) is classified 50% on the number of cus-
13 tomers of that class in the rate group and 50% on the consumption of that
14 class in the rate group, while general sales costs are allocated on revenues
15 across all customer groups.

16 Allocating sales-force expenses is inherently problematic, since few
17 existing customers do use the sales force, which must spend most of its
18 efforts on encouraging potential users to switch to gas. To the extent that
19 existing customers benefit from the sales force, it is because the resulting
20 increase in sales spreads fixed costs over more sales, reducing rates to the
21 existing customers. Hence, the simplest and most appropriate allocator for all
22 the sales-force costs may be the revenue allocator.

23 The number of residential and general-service customers in the various
24 D₁ groups is certainly a poor predictor of the distribution of sales efforts
25 among those groups. The sales force is unlikely to be spending much time on
26 individually meeting and contacting the smallest groups of D₁ customers or

1 potential customers. To the extent that Gaz Métro continues to divide sales-
2 force costs among the customer classes based on effort, rather than share of
3 system benefit, the allocation of residential and commercial-industrial sales
4 efforts to customer groups should use only the volume or revenues for that
5 group. For the very large customers, individual meetings with customers
6 (understanding their fuel needs, planning and investment cycles, and
7 decision-making processes) may represent a substantial portion of the sales
8 effort, so the number of customers (or more likely, potential customers) may
9 be relevant in allocation based on effort level.

10 While I do not favour Gaz Métro's effort-based approach to allocating
11 these costs, if the Board approves that approach it should at least remove cus-
12 tomer number from the allocators of the residential and commercial-indus-
13 trial sales-force costs.

14 **Q: What are your comments on the allocation of expenses for advertising
15 and promotion of natural gas?**

16 A: Gaz Métro's approach for these expenses is quite similar to its treatment of
17 sales-force costs. Since the split of advertising costs among general costs and
18 residential commercial-industrial and very-large customer expenses differs
19 from that of the sales effort, Gaz Métro develops a separate allocator (FS28)
20 for this category.

21 The deficiencies in Gaz Métro's approach for this category are the same
22 as for the sales-force expenses. As for the sales force, the appropriate
23 allocator for advertising costs is total distribution revenue.

24 **Q: What comments do you have on the allocation of energy-efficiency costs?**

25 A: Gaz Métro's allocation factor for the costs of the Global Energy Efficiency
26 Plan is not well documented. The majority of the costs (for incentives) are

1 assigned to rate groups based on some detailed information from Gaz Métro's
2 Global Energy Efficiency Plan team; it is not clear whether that information
3 consists of detailed tracking reports on the mix of participants by rate group,
4 or an allocation of each program's costs among eligible rate groups.¹³
5 Administration and other costs are allocated among rate groups using some
6 unspecified mix of customer number and volumes, apparently similar to the
7 approach Gaz Métro takes with the sales-force expenses.¹⁴ While I cannot
8 comment on the details of Gaz Métro's allocation, I do have some observa-
9 tions regarding the general approach.

10 There are two major approaches to allocation of energy-efficiency
11 program costs. The first allocates energy-efficiency costs to all customer
12 groups, based on volume or demand, to reflect the fact that all customers
13 share benefits from energy-efficiency: reduced congestion, reduced
14 greenhouse gas emissions, reduced need to add new supply resources, and
15 deferral of reinforcements on the local transmission and distribution system.
16 As Black and Veatch say, "the improved efficiency of gas appliances has
17 created available capacity to serve new loads within the existing system"
18 (Document B-0005 at 5).

19 The second approach allocates energy-efficiency costs to the partici-
20 pating classes, since the participating class captures the bulk of the benefits

¹³The description in Document B-0006 (at 67) suggests that Gaz Métro uses both direct assignment and allocation (based on volume and revenues). This allocation may overstate the costs allocated to the smallest D₁ customers, who probably have only a gas range and little opportunity for energy-efficiency investment.

¹⁴I requested this derivation in my DDR 1(b) but GMI simply pointed to Documents B-0039 and B-0040, which provide no derivation of the allocator. The same is true for a number of other allocators.

1 of the energy-efficiency measure. In addition to the energy-efficiency
2 benefits that all customers share, the participating class also uses less gas,
3 directly reducing its cost allocation and bill. In addition to being relatively
4 simple, this approach reduces conflict between customer groups over one
5 another's energy-efficiency program designs and scope. Since each class
6 pays for the programs that serve it, the other classes have little interest in
7 whether the programs are efficiently designed.

8 Gaz Métro's approach appears to be attempting to allocate costs to the
9 rate groups that participate in each program, which is a reasonable starting
10 point. However, since the energy-efficiency programs also benefit other
11 classes, some allocation on throughput or peak demand should be considered
12 in the future. For example, in Nova Scotia, the Utility and Regulatory Board
13 has chosen to allocate 75% of energy-efficiency costs to the participating
14 classes and 25% on the basis of energy consumption.

15 Q: Does this conclude your testimony?

16 A: Yes.