



Gazifère Inc.

Incentive Ratemaking Mechanism Review 2006 – 2015

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Final Report

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1. BACKGROUND

Gazifère Inc. (“Gazifère”), distributes natural gas to over 40,000 customers in the Outaouais region of southwestern Québec. Owned by Enbridge Inc. (“Enbridge”), Gazifère is therefore also affiliated with its Ontario sister organization, Enbridge Gas Distribution Inc. (“EGD”). Established in 1959 and with a franchise effective until 2031, Gazifère is focused on growing and diversifying their business in an evolving sector, earning gross revenues of \$61.5M in 2015 and net income (after tax and before sharing) of about \$5.26M from regulated activities. Gazifère has generated revenue contributing to returns above its allowable Return on Equity (“ROE”), sharing incremental profits with customers every year from 2006 to 2015. Mindful of the environment and of its stakeholders, the mission of Gazifère is to distribute natural gas in a reliable and safe manner, while providing complementary energy related services.

While Québec’s primary heating source is traditionally electricity, natural gas has nearly doubled its market share over the past two decades. Approximately 200,000 natural gas customers located in Québec outside Outaouais are served by the province’s only other natural gas distributor, Gaz Métro, representing nearly 97% of the province’s natural gas volume. Both utilities are regulated by the Régie de l’énergie du Québec (“Régie”).

In Gazifère’s 2000 Rate Case, the Régie asked the distributor to include a more comprehensive performance based regulation plan, including capital investments, upon renewal of their Incentive Ratemaking Mechanism (“IRM”). The intention was for IRM to deliver benefits over Cost of Service (“COS”) ratemaking for the distributor and the ratepayers, as summarized below.

<i>IRM Principles and Objectives</i>	<i>Differentiation from Cost of Service</i>
<ul style="list-style-type: none"> • IRM regulation relies on incentives and penalties to stimulate the utility company to achieve a set of desired goals. • IRM provides incentives similar to those in competitive markets, allowing utilities more flexibility and enhancing regulatory efficiency by weakening the link between prices and costs. • The operator or utility is given some discretion or flexibility in achieving set goals. • If a regulated entity is making a lower rate of return than necessary, the regulated price may be adjusted upward. Conversely, if the entity is making a higher rate of return, the incremental profits may be shared between shareholders of the utility and ratepayers of the utility. 	<ul style="list-style-type: none"> • Under COS a regulatory agency fixes the rate of return a utility can earn on its assets. COS can distort incentives for the utility’s use of capital and labour. • Under IRM, the rate of return on assets continues to be fixed, while the total rate of return can change based on operational performance. • Under traditional cost-of-service regulation, utilities are generally permitted to recover all capital costs, with a profit. This certainty of cost recovery provides little incentive to reduce risks associated with major capital expenditures—expenditures that can involve considerable uncertainty and risk. • With IRM, Cost of capital may be higher due to higher risk associated with not meeting the productivity factor (the target rate of productivity improvement in operating costs¹) • A simple price cap incentive regulation has been evidenced to lead to service quality degradation

¹ <http://economics.mit.edu/files/1181>

<i>IRM Principles and Objectives</i>	<i>Differentiation from Cost of Service</i>
	across electric, natural gas and telecommunication utilities in North America and Europe. In such scenarios a quality adjusted price cap which penalises degradation in quality through price reductions have seen to be more effective.

In 2006, the Régie accepted the bulk of Gazifère's Proposal for Comprehensive Performance Based Regulation. After its termination in 2010, the IRM was renewed for a period of 5 years (2011-2015) and the Revenue Requirement underwent a soft-rebasing. During this proceeding, the Régie accepted Gazifère's proposal to evaluate the IRM after several years of actual data were available.

This report evaluates the effectiveness of the IRM in meeting the objectives that it sets out from 2006 to 2015, with a focus on the period from 2010 to 2015.

2. OBJECTIVES AND OVERVIEW

MNP has been retained to conduct an assessment of Gazifère's IRM, as requested by the Régie in its 2010 IRM Decision. This assessment will evaluate IRM's effectiveness in meeting objectives outlined by Gazifère and the Régie in the 2006 IRM Application and Decision and the 2010 IRM Renewal. These objectives were to:

- (1) Lighten the regulatory process.
- (2) Incentivize performance improvements.
- (3) Fairly redistribute productivity gains.
- (4) Improve satisfaction of customers' needs.
- (5) Ensure ease of application and understandability.
- (6) Result in stable and predictable rates.

To enable Gazifère's vision of the future, the IRM should also address key elements of their strategic plan by allowing Gazifère to achieve its objectives to:

- (1) Drive safety and operational reliability.
- (2) Strengthen core business and develop new platforms for growth.
- (3) Maintain the business foundation; uphold the company values; shape, promote and protect the Gazifère reputation; and attract, retain and develop personnel.

Section 3, Current Status Assessment and Framework Review, outlines the history of the IRM process, the factors driving the Revenue Requirement, and the impacts of the IRM mechanism on Gazifère's operations. The Current Status Assessment serves as the foundation on which to layer the IRM evaluation, setting the context for reviewing the IRM's ability to meet the objectives stated above.

An analysis of Gazifère's service territory is provided in Section 4 to understand how the demographics and economy of the region changed during the IRM period and therefore influenced the functioning of the mechanism. The analysis demonstrates that the conditions for success established under different economic circumstances cannot continue to be core criteria in a new paradigm. Broadly speaking, elements of the IRM can be affected by changes to the economic and financial conditions on which they were developed, sometimes compromising the ability of the utility to achieve productivity objectives. Where changes in market conditions are dramatic or unexpected, the IRM elements may not accommodate or incent behaviors intended to drive these anticipated benefits. With this context, MNP's analytical framework in Section 5 considers each component of the IRM.

- **Effect on Revenue Requirement** – How each component impacts the Revenue Requirement.
- **Sensitivities** – The amount of change required for each component to make a material impact on the Revenue Requirement.
- **Circumstances** – How each component changed over-time and the impact of regional demographics and Gazifère's relationship with Enbridge and EGD.
- **Effectiveness** – Success of each component in incentivizing desired behavior.
- **Utility Scale Impact** – The impact of each component on Gazifère compared to large scale utilities.

Observations from the application of the analytical framework are summarized below.

- Customer growth and network expansion is driven primarily by new residential construction in the Outaouais region.
- Some short-term performance improvements have been made to leverage the IRM mechanism. However, there is no evidence discovered that strongly indicates that the IRM provides incentives for long-term performance improvements at Gazifère.
- External factors leading to increased safety requirements, while essential to the business, lead to increase costs and may also lead to decreased productivity that the IRM may not account for.
- Core relationships with Enbridge and EGD also influence Gazifère's decision making.
- Over-earnings could result from any number of factors including productivity gains, over-forecasting of the indexing component, and fluctuations in forecast and actual volumes of gas sold.

These observations informed MNP's assessment of the achievement of IRM objectives, as explained in Sections 6 and 7.

3. CURRENT STATUS ASSESSMENT & FRAMEWORK REVIEW

As a first step to this IRM Assessment, MNP reviewed:

- Gazifère's 2006 Proposal for Comprehensive Performance Based Regulation ("2006 IRM Application")²
- The Régie's final decision D-2006-158 for Phase II of the 2006 IRM Application ("2006 IRM Decision")
- Gazifère Total Factor Productivity Estimate, 2006 (Darryl J. Seal Consulting) and 2010 update (Ian McLeod)³
- Econalysis evidence filed on behalf of Option Consommateurs and ACEF de l'Outaouais ("OC-ACEF de l'Outaouais")⁴
- Measures taken by Gazifère during the 2006-2010 IR Term
- Gazifère's evidence in support of the 2010 IRM and the Régie's final decision D-2010-112 for Phase 1 of the 2011 Rate Case ("2010 IRM Review")
- Interrogatories from the 2010 IRM Review:
 - Union des Municipalités du Québec ("UMQ")⁵.
 - Stratégies énergétiques et Association Québécoise de lutte contre la pollution atmosphérique ("SÉ/AQLPA")⁶.
 - Analysis of the Performance of Gazifère's Incentive Mechanism and Recommendations for its Renewal, Antoine Gosselin for Canadian Federation of Independent Business ("FCEI/CFIB")⁷ and supporting analysis⁸.
 - Evidence on Gazifère's incentive mechanism by Jean-Benoit Trahan, on behalf of Industrial Gas Users Association/Association des consommateurs industriels de gaz ("IGUA/ACIG")⁹.
 - Report on behalf of OC-ACEF de l'Outaouais¹⁰.
- Operational and financial data from 2005 to 2015 provided by Gazifère including:
 - Customer counts and distribution volume.
 - Cost of special projects and summary of ratebase.
 - Operations and maintenance expenses.
 - Income statement summary.
 - Value and size of pipeline infrastructure.
 - Revenue Requirement factors used in rate cases.
 - Quality Indicators.
 - Staffing data.

The Current State Assessment and Framework Review are summarized for each factor of the IRM in subsection 3.1.

² May 31, 2006. File R-3587-2005 (Phase II), Exhibit B-23, GI-9, Document 1.

³ May 2006. File R-3587-2005 (Phase II), Exhibit B-23, GI-9, Document 2; May 4, 2010, File R-3724-2010, (Phase I), Exhibit GI-2, Document 2.

⁴ September 7, 2006. File R-3587-2005 (Phase II), Exhibit C-4-11.

⁵ May 13, 2010, File R-3724-2010 (Phase I), Exhibit, C-6-5.

⁶ May 12, 2010, File R-3724-2010 (Phase I), Exhibit C-5-7.

⁷ June 15, 2010, File R-3724-2010 (Phase I), Exhibit C-3-14.

⁸ May and June 2010, File 3724-2010 (Phase I), Exhibit B-1, GI-8, documents 2 and 2.1.

⁹ June 14, 2010, File R-3724-2010 (Phase I), Exhibit C-2-14.

¹⁰ May 17, 2010, File R-3724-2010 (Phase I), Exhibit C-1-11.

3.1 Revenue Requirement Structure

After five stakeholder consultation sessions from November 2005 to March 2006, Gazifère submitted their Proposal for Comprehensive Performance Based Regulation to the Régie. Gazifère's proposed revenue cap IRM was approved by the Régie in December 2006 for a five-year term with minimal change. While interrogatories generally supported the revenue cap IRM, the OC-ACEF de l'Outaouais identified a risk of increased rates paid by residential customers in the event industrial demand decreases, which could be mitigated by a rate cap IRM. The Régie rejected OC-ACEF's request for a negotiated settlement as they deemed the process too cumbersome for a utility of Gazifère's size.

The Régie accepted the structure of Gazifère's IRM, believing it would satisfy the objectives stated above. The Revenue Requirement in a given year is established according to the previous year's revenue requirement and adjusted based on a predetermined formula, taking into account changes in inflation and productivity. The formula for the Revenue Requirement accepted by the Régie illustrating the IRM structure is provided below:

$$RR_t = \left(\frac{RR_{t-1}}{C_{t-1}} \right) * \left(1 + d(CPI_Q) \right) * C_t + R + Y + Z + ES$$

Where:

- C = average number of customers.
- d = is a discount coefficient which serves as a productivity challenge.
- CPI_Q = forecast rate of inflation using the Quebec Consumer Price Index.
- R = cost of capital adjustment.
- Y = pass through.
- Z = exogenous factors.
- ES = earnings sharing adjustment.

From 2006 to 2010, the Revenue Requirement grew at a compound annual growth rate of about 7.8%. From 2010 to 2015, Revenue Requirement compound annual growth has slowed to an annual rate of about 2.8%.¹¹

¹¹ Calculation 1 – Revenue Requirement Growth, page 35.

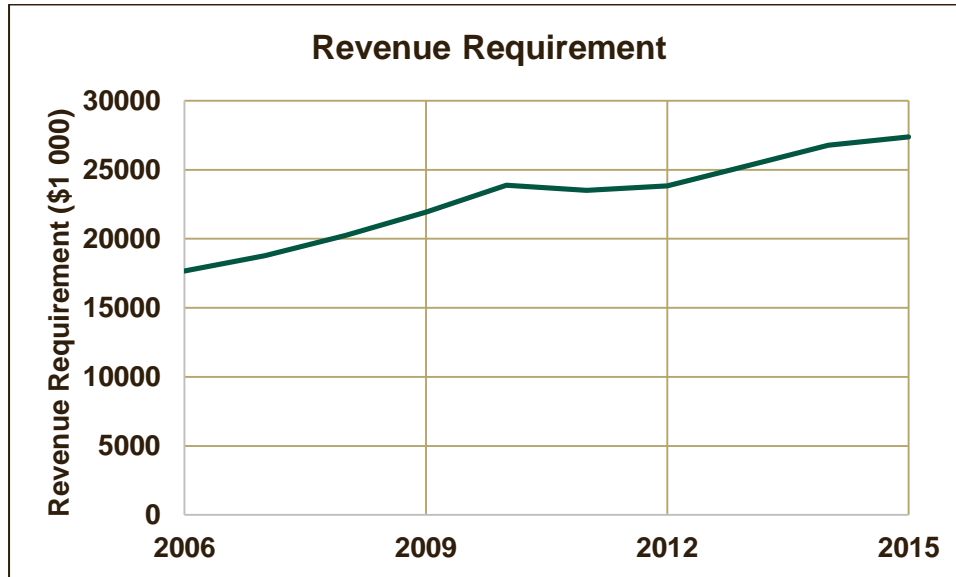


Figure 1: Revenue Requirement Growth 2006 – 2015¹¹

Subsections 3.1.1 through 3.1.8 discuss each component of the IRM structure.

3.1.1 Revenue Requirement Base (RR)

The Régie accepted Gazifère's request to use 2005 as a reference year for distribution revenue in the 2006 IRM Application. Distribution revenue excludes the cost of gas and regulatory and energy efficiency program related deferred accounts.

In the 2010 IRM Review, Gazifère proposed using the 2010 Revenue Requirement, plus adjustments from the projet de renforcement Chemin Pink and changes to depreciation rates, less \$600,000 based on an analysis of over-earnings in prior years. The OC-ACEF de l'Outaouais accepted this soft-rebasing in spite of their belief that insufficient evidence was provided to justify this amount. FCEI/CFIB favoured a \$1.6M downward adjustment. UMQ claimed the \$600,000 represented less than half the productivity gains that ought to be shared by customers, and therefore proposed an \$800,000 downward adjustment. IGUA/ACIG determined that the soft-rebasing constituted a productivity stretch factor of at least 0.5 and that Gazifère should either adjust the productivity factor appropriately, or increase earnings shared with customers. Ultimately the Régie determined that an \$800,000 downward adjustment for the base year was appropriate¹².

Additionally, a one-time exclusion associated with paying down corrective deferral accounts added \$400,000 to the Revenue Requirement. The Régie, save one member, identified one-time exclusions associated with paying down corrective deferral accounts as sub-optimal, due to the year-over-year variances it creates. As a result, the Régie also required Gazifère to submit information explaining how adjustments made to the Revenue Requirement would be distributed¹³.

After the soft-rebasing in 2011, the Régie ordered Gazifère to produce a 2015 revenue requirement based on cost-of service, using actual 2013 data. This data would form the basis for evaluating the effectiveness of the IRM.

¹² Decision D-2010-112, p.43, par. 145.

¹³ Decision D-2010-112, p. 47, par. 159, 160 and 163.

3.1.2 Customers (C)

In the 2006 IRM Decision, the Régie accepted Gazifère's request to index the 2005 reference year distribution revenue to the number of customers, rejecting several recommendations from interrogatories.

- OC-ACEF de l'Outaouais proposed a variance account to capture the difference between forecast and actual number of customers. MNP observes an insignificant difference between the actual number of customers and forecast number of customers from 2006 to 2014. While year-to-year differences fluctuated between -0.5% and 0.8%, over-estimates offset under-estimates during the period.
- IGUA/ACIG proposed excluding supplementary income from large interruptible customers and capturing the variance between projected and actual revenues in a variance account.

From 2006 to 2015, the total number of customers grew from about 31,000 to 41,000, increasing the revenue requirement by about 30%.¹⁴ Customer growth was driven by the provision of gas services for new detached residential development in the Outaouais region. Attracting conversion customers, as opposed to new construction, requires considerably more marketing resources and increased complexity to connect the customer to the network. As well, multi-residential building developers are more likely to select electric heating. For these reasons, the growth of new detached residential homes is more important for customer growth.

In the 2010 IRM Review, there were no objections raised about continuing to index the Revenue Requirement to the number of customers.

While the number of customers proportionately increases the Revenue Requirement, actual operating cost per customer has been increasing from 2006 – 2015 at a disproportionately higher rate of 4.6%, or 3.0% after considering the impact of inflation. Growth in real operating costs per customer slowed after the 2010 IRM Review declining to 0.8% per annum between 2010 and 2015, from 5.8% between 2006 and 2010.¹⁵

From 2006 to 2015, several categories of Operating and Maintenance (O&M) expenses increased more than the average 3% real growth rate on a per customer basis:¹⁶

- Employee benefits (7%).
- General materials and supplies (8%).
- Employee training and development (16%).
- Other Outside Services (9%).

Conversely, a number of O&M expenses fell on a real per customer basis from 2006 – 2015:

- Office materials and supplies (-6%).
- Equipment rent and leases (-7%).
- Travel and entertainment (-7%).
- Casualty and damage (-9%).
- Property and other taxes (-8%).
- Donations and memberships (-10%).

¹⁴ Calculation 2 – Impact of Customer Growth on RR, pages 35-36.

¹⁵ Calculation 3 – Real and Nominal O&M Expenses per Customer, pages 36-37.

¹⁶ Calculation 4 – Changes in O&M, pages 37-38.

Specific O&M cost items with large decreases were the result of cost management (e.g. travel and entertainment, donations and memberships), or driven by external circumstances (e.g. property taxes, insurance) rather than by efficiency improvement initiatives undertaken in light of the IRM.

3.1.3 Inflation (CPIQ)

The Régie accepted Gazifère's request to increase its revenue requirement at the rate of the Consumer Price Index for Québec (CPI_Q) as it was believed to be well understood by customers and was similar to Gazifère's actual cost escalation. The Régie rejected a recommendation from OC-ACEF de l'Outaouais to use historical inflation rates rather than projections from a pre-determined list of financial institutions.

The Régie rejected Gazifère's proposed true-up mechanism between projected and actual CPI_Q citing that such a mechanism isn't in the spirit of an IRM as it adds unnecessary complexity. The Régie emphasized the fact that the spirit of an IRM requires the distributor to bare some of the risk inherent in its choices.

No intervenors in the 2010 IRM Review suggested using any other index. The list of financial institutions used for estimating CPI_Q was reduced from seven to five.

From 2006 to 2015, actual CPI_Q ranged between 0.6% (in 2009) and 3.0% (in 2011) while forecasts ranged between 1.7% (in 2014) to 2.4% (in 2012). During the entire period, the actual compound annual growth rate of CPIQ was 1.5%, compared to 2.0% based on the forecasts. The higher CPI_Q estimates used in the Revenue Requirement contributed somewhat to the phenomenon where earnings sharing increased while productivity decreased.¹⁷

Other indices such as GDP¹⁸ growth and unionized labour costs are used as a Revenue Requirement index in other jurisdictions. If the IRM were indexed to Québec's GDP per capita growth from 2006 to 2014, impact on the Revenue Requirement's annual growth would have varied from 0.95% to 3.4%, with a compound annual growth rate of 2.0%¹⁹. Use of GDP growth would not have materially changed revenue requirement growth during the IRM.²⁰

Construction Union Wage Rates²¹ grew at a faster and more consistent pace than CPI_Q during the IRM. Growth averaged 2.5% from 2006 to 2014 and explains a portion of the increase in O&M costs per customer not considered in the IRM formula.²²

3.1.4 Productivity Factor (d)

A Productivity Factor, referred to as an X factor, represents a challenge to the distributor to improve their performance. Under an X factor, the revenue requirement is indexed by CPI_Q – X each year, where X represents a factor of improved productivity. Productivity factors generally consist of two components: one representing historic productivity improvements and one representing a stretch factor in addition to historic improvements.

In the 2006 IRM Application, Gazifère successfully argued that a discount coefficient would be more simple to apply and easier for customers to understand than an X factor. A discount coefficient is calculated by applying

¹⁷ Calculation 5 – CPIQ Calculations, page 38.

¹⁸ Expenditure based GDP growth in nominal dollars in Québec

¹⁹ 2015 GDP data were not yet available at time of report drafting

²⁰ Calculation 6 – GDP Calculations, page 38.

²¹ Average for all professions for Ottawa part of Ottawa/Gatineau and Montréal

²²

Calculation 7 – Construction Union Wage Calculations, page 39.

an inflation rate to the X factor. Although a discount coefficient was ultimately selected, the evidence and interrogatories focused on discussing X factors as stated below.

Darryl J. Seal Consulting conducted a study to determine an appropriate X factor. Based on the value of physical capital and number of customers, the productivity factor of the five years preceding the IRM Application was 0.2%. The last five years were used since, as with other North American gas distributors, productivity gains were declining as the 'easiest' gains had already been achieved. Average productivity gains were 1.5% from 1991 to 2005, and 0.9% from 1996 to 2005.

The IGUA/ACIG and FCEI/CFIB unsuccessfully argued that if a productivity factor of 0.2% is used, then the distributor should equitably share the first 100 basis points of revenue in excess of allowable ROE, which Gazifère had proposed to retain. Linking together productivity gains and the earning sharing mechanism, they decided a productivity factor of 0.9% is appropriate if Gazifère retained these excess earnings. The Groupe de recherche appliquée en macroécologie (GRAME) made a similar argument where the 0.2% productivity factor would be appropriate with a 75:25 distributor/customer sharing arrangement for the first 100 basis points above allowable ROE.

UMQ unsuccessfully recommended a stretch factor of 0.5% applied to the 0.2% productivity factor. OC-ACEF de l'Outaouais unsuccessfully argued that Gaz Métro's X factor should be adapted to Gazifère which would have resulted in an equivalent 0.9% X factor.

The Régie agreed with the methodology applied by Darryl J. Seal Consulting and deemed the resulting 0.2% productivity factor as appropriate. However, they pointed out that this did not compel Gazifère to improve its performance more than it had in the past, so a 0.2% stretch factor was applied to the 0.2% base productivity factor. In the 2006 IRM, the 0.4% factor applied to the inflation forecast resulted in a 'd' factor of 0.78.

Gazifère commissioned an update to the productivity study for their 2010 IRM Review. Gazifère indicated a productivity improvement of 0.3% per year from 2004 to 2008; however, the Régie noted that while the IRM was implemented from 2006 to 2008, productivity gains declined. The IGUA/ACIG and FCEI/CFIB attributed productivity gains to cost savings over the natural course of business and not attributed to specific performance improvement initiatives.

As with the 2006 IRM Application, intervenors recommended more aggressive productivity factors in the 2010 IRM Review. Proposed productivity factors are provided below.

2010 IRM Review				
<i>Party</i>	<i>Productivity Factor</i>	<i>Stretch Factor</i>	<i>2010 IRM Effective Productivity Factor</i>	<i>2006 Effective Productivity Factor</i>
Gazifère	0.3%	0%	0.3%	0.2%
FCEI/CFIB	-	-	1.15%	-
ACEF de l'Outaouais	0.6%	0.6%	1.2%	0.9%
ACIG/IGUA	-	-	>1%	0.9%
UMQ	0.3%	0.2%	0.5%	0.7%
Approved by The Régie	0.3%	0.3%	0.6%	0.4%

The resulting 'd' factor applied to the Revenue Requirement was 0.68 after the 2010 IRM Review, when CPI_Q was forecast to be 1.9%, resulting in an effective productivity factor of 0.6.

Gazifère stated that they have implemented tangible actions to improve productivity, resulting in less staff per customer.

3.1.4.1 Specific Performance Improvement Initiatives

- Gazifère reorganized their call centre in 2006 to continue to accommodate an increase in calls while maintaining their service quality rating and staffing level.
- In 2008, Gazifère merged their workload management centre and call centre creating a new “customer service” department. This allowed clerical staff with downtime in one department to assist with workload in the other. From 2008 to 2015, the number of Customer Service staff increased from 18 to 19, increasing the amount of customers per FTE from 1,859 to 2,152.²³
- Streamlining of the sales department allowed staff to process more transactions while maintaining staffing levels. From 2006 to 2015, the number of Sales and Communications FTE employees was relatively unchanged, while the net number of customers increased by about 9,500 during the period.
- Gazifère increased the scrutiny of their selection and recruitment process around 2008.
- From 2008 to 2015, the number of customers per FTE employee increased in every department except for Information Technology (“IT”).
- Since the 2006 IRM, Gazifère made improvements to decrease costs paid to subcontractors:
 - First readings for new customers are now estimated, saving approximately \$150,000/year in service contractor fees. FCEI/CFIB attributed \$278,700/year in productivity gains to this improvement, based on their observation that expenses declined by \$278,700 from 2005 to 2006. FCEI/CFIB viewed this as a result of “Gazifère’s increased efforts at implementing the incentive mechanism.”²⁴
 - Increasing responsibilities entrusted to MET, Gazifère’s meter reading service provider, reduced the cost of new service applications from about \$30 to \$5.
- Since the 2006 IRM, Gazifère has made other improvements to their operations to reduce costs and increase productivity:
 - New methods for repairing pipeline leaks reduced cost per repair from \$500 to \$30, while reducing amount of labour required.
 - Gazifère are replacing copper services by plastic, which require inspection substantially less frequently.
 - Gazifère now works with the City of Gatineau to coordinate pipeline maintenance and repairs when streets are being repaved.
 - Gazifère are promoting automated payments, reducing the handling time to process manual payments.
 - Gazifère has reported that on-line billing had been implemented and more than 25% of the customers are now using the on-line billing, which reduce invoices costs, but also gives on-line customers information reducing the necessity to call Gazifère.

While most of these initiatives represent performance improvements sought by Gazifère, several were a result of external factors. For example, the costs in reducing and repairing pipeline leaks are the result of an EGD initiative. Gazifère adopting affiliate’s processes can result in savings, however it can also result in increased

²³ Calculation 11 – Customers per FTE, pages 41-42.

²⁴ File R-3724-2010, Phase 1, Exhibit C-3-14, Revised evidence of FCEI/CFIB, page 6.

costs. For example, increases in the use of hydro excavations due to enhanced safety requirements increased the cost of required contractors (although having a minimal or no impact on labour costs at Gazifère).

In SÉ/AQLPA's interrogatory to the 2010 IRM Review, they cited many of the above improvements as factors that demonstrate the success of Gazifère's IRM. While FCEI/CFIB viewed the implementation of estimated first readings positively, they ultimately concluded that the IRM did not incent Gazifère to control operating expenditures as operating costs per customer had increased.

MNP observed a compound annual growth rate of O&M expenses per customer of approximately 5.8% between 2006 and 2010; however, this has levelled off since the 2010 IRM Review.²⁵ From 2010 to 2015, O&M expenses per customer has risen approximately 0.8% per year.

3.1.5 Capital Cost Adjustment (R)

The Capital Cost Adjustment captures changes in long-term interest rates. In the 2006 IRM Decision, the Régie accepted Gazifère's capital cost adjustment variable 'R' as it extracts an exogenous cost beyond the distributor's control from the incentive mechanism. The Régie rejected OC-ACEF de l'Outaouais's argument that the 'R' variable introduces double counting since the base rate includes interest rates and is indexed to inflation. In spite of this, the Régie saw this mechanism as being fair to both customers and the distributor, since variations in both directions are captured.

In the 2010 IRM Review, the Régie agreed to base the 'R' factor on nominal tax rate, rather than an effective tax rate, as this would improve the neutrality of taxes as an exogenous factor²⁶.

3.1.6 Pass-Through (Y)

Pass-through 'Y' factors are known and predictable elements that impact Gazifère's distribution costs, and quantified outside the incentive mechanism and passed-through. In the 2006 IRM Decision, the Régie approved the disposal of a \$213,000 regulatory expense account. The Régie also approved disposal of the Plan global en efficacité énergétique ("PGÉE") account as a 'Y' factor, which had accumulated \$135,000, and approved PGEÉ as a valid on-going 'Y' factor.

While a small amount of Loss Revenue Adjustment Mechanism ("LRAM") was approved in the 2006 IRM Decision, the Régie rejected inclusion of this as a 'Y' factor in the future. Since a revenue cap incentive mechanism inherently accommodates decreases in volume, an LRAM pass-through was considered unnecessary. Including LRAM moving forward unnecessarily complicated the IRM.

In the 2006 IRM Decision, the Régie also approved onetime disposals of a \$37,500 'Incentive Mechanism Development' account, a \$168,500 'EnVision Implementation' account, and a \$157,900 'Aménagement des nouveaux locaux' account.

In the 2006 IRM Decision, the Régie approved the weather stabilization account, upstream gas costs, and major investments exceeding \$450,000 individually approved by the Régie as valid on-going 'Y' factors. The Régie indicated that any additional 'Y' factors must be justified by the distributor and approved by the regulator.

In the 2010 IRM Review, the Régie sought to differentiate between capital investments that generate revenue versus those that do not. As such, they determined that each investment over \$450,000 will be dealt with on a

²⁵ *Calculation 3 – Real and Nominal O&M Expenses per Customer, pages 36-37.*

²⁶ *Gazifère's proposal was made following decision D-2009-090.*

case-by-case basis. The Volumetric Deviation Account approved in 2007 was also terminated, due to its consistently immaterial balance²⁷.

3.1.7 Exogenous Factor (Z)

In their 2006 IRM Application, Gazifère proposed that the costs of unknown and unpredictable events having an impact on its distribution costs be accrued in a deferred expense account and incorporated into the next year's Revenue Requirement if the balance of this account exceeded \$100,000. In their 2006 IRM Decision, the Régie specified the following: (1) these exogenous factors are generally limited to clearly identifiable, one-time, unpredictable events and (2) they shall not be interpreted as being the results of changes in the inflation rate and/or in the productivity level. Gazifère's proposal to consider the impacts of regulatory orders and changes in accounting treatment as exogenous factors was approved by the Régie who also requested that any variance in taxes be treated as an exogenous factor. The Régie added that in the determination of the soundness of any request to add an exogenous factor to the IRM, it would firstly have to determine if the factor complied with the criteria mentioned above and, secondly, to assess its financial impact on the distributor and the clients.

No changes were proposed or made during the 2010 IRM Review.

3.1.8 Earnings Sharing Mechanism (ES)

As discussed above, some interrogatories from the 2006 IRM Application saw a trade-off between the earnings sharing tranches and the productivity factor. The Régie modified Gazifère's request to retain 100% of earnings within 100 basis points above allowable ROE, to a 75:25 sharing arrangement. The Régie approved the requested 50:50 sharing from 100 to 350 basis points above allowable ROE and customer retention of all earnings above this.

In the 2006 IRM Application, no changes were proposed for Gazifère's forfeiture of earnings above allowable ROE if its service quality falls below 80%. If service quality is between 80% and 90%, Gazifère will only receive its share of the ES multiplied by its service quality rating. Service quality was calculated as the arithmetic average of four quality indicators:

1. Preventative maintenance compliance.
2. Response to emergencies within 35 minutes.
3. Frequency of meter reads (monthly for industrial, bimonthly otherwise).
4. Response to calls within 30 seconds.

In the 2006 IRM Decision, the Régie approved a roll-over of these four service quality indicators, and required the addition of a fifth indicator in 2008 to measure customer satisfaction²⁸. In the 2010 IRM Renewal, Gazifère indicated that they had exceeded all quality indicators. The Régie made a minor change, capping the performance of any individual indicator at 100%²⁹.

In the 2010 IRM Review, the Régie required Gazifère to produce a more comprehensive customer satisfaction survey for the fifth quality indicator¹. Gazifère was required to submit a proposal for this at their next rate application³⁰. The Régie rejected ACEF de l'Outaouais' proposal to make these surveys subject to a benchmarking exercise. The Régie rejected the GRAME proposal to include two environmental indicators: an

²⁷ Decision D-2007-052.

²⁸ Decision D-2006-158, p. 27. As requested, Gazifère filed a proposal in that regard in file R-3637-2007 and the Régie approved a new indicator to measure customer satisfaction in decision D-2007-130, p. 17.

²⁹ Decision D-2010-112, p. 58.

³⁰ Decision D-2010-112, p. 60. As requested, Gazifère submitted a proposal in file R-3758-2011 and the Régie rendered decision D-2011-186 in that regard (pp. 31-33).

energy efficiency target and a GHG reduction target. The Régie accepted Gazifère's proposal to not link ES to performance of its PGEÉ.

In the 2010 IRM Review, Gazifère indicated an increasingly large amount of earnings being shared with customers, in spite of negative productivity gains during the last several years of the IRM period. The customers' share of earnings grew from about \$67k in 2006 to \$719k in 2009. Overearnings from 2006 to 2015 are provided in the table below for reference.

Year	Net Income	Customers' Share of Overearnings	Distributor's Share of Overearnings
2006	5,217,956	66,575	199,726
2007	5,315,521	121,773	327,466
2008	5,961,845	628,231	738,511
2009	6,332,873	718,743	699,848
2010	6,127,916	378,329	596,468
2011	5,821,039	121,119	336,249
2012	5,569,637	69,795	209,386
2013	5,382,717	67,555	202,664
2014	6,100,524	340,037	562,142
2015	5,260,262	39,367	107,023

The IGUA/ACIG attributed the excess revenue to a divergence between forecast and actual interruptible industrial gas volumes, rather than productivity gains. Gazifère identified that this resulted in an immaterial amount of earnings.

The FCEI/CFIB did not believe the Earnings Sharing mechanism was fair, since under cost of service ratemaking the customers would have received the entirety of earnings above allowable ROE. The IGUA/ACIG believed that the current sharing formula produces generous profits for Gazifère and suggested a limitation on distributor profits.

The Régie agreed to leave the Earnings Sharing calculation untouched as it provides an incentive to Gazifère to improve its performance.

According to data provided by Gazifère, they have continued to earn revenue in excess of their allowable ROE after the 2010 IRM Review, although net earnings peaked in 2009. The graph below demonstrates the relationship between regulated net earnings and the sharing of earnings in excess of allowable ROE.³¹

³¹ Data from Net result_regulated_2005 à 2014 - July 2016.xlsx; Gazifère, July 2016.

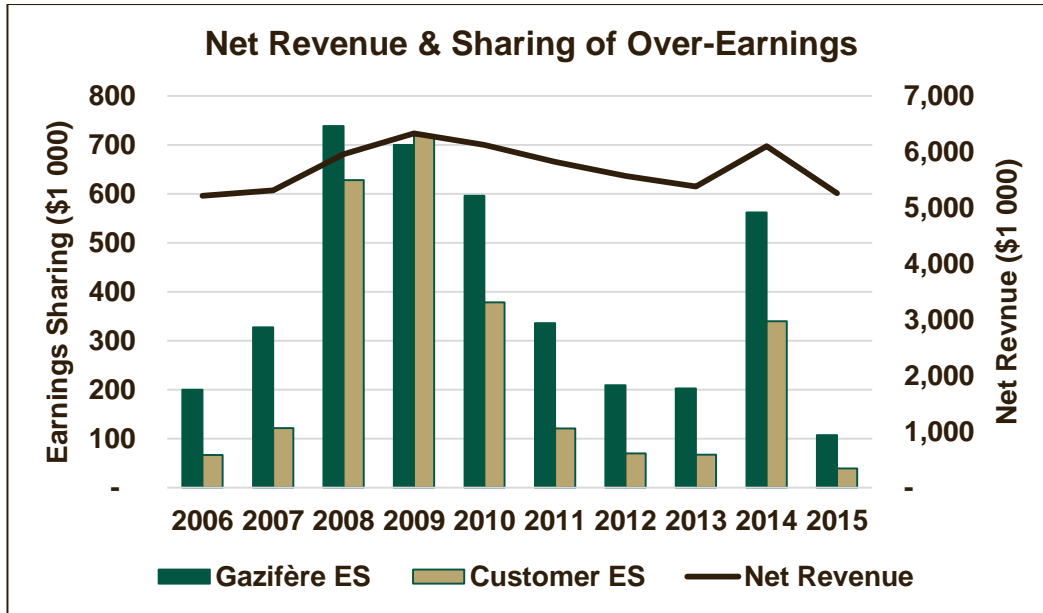


Figure 2: Regulated net earnings and sharing of over-earnings 2006 – 2015

In the evidence provided by FCEI/CFIB for the 2010 IRM Review, they indicated the following amounts contributing to over-earnings in 2009:

- \$320,000 associated with depreciation of fixed assets.
- \$365,000 associated with a decrease in capital tax.
- \$590,000 associated with returns and interest.
- \$97,900 from network development, a portion of which was already included in other categories.

FCEI/CFIB argued that most of the amounts above are outside of Gazifère’s control, and are thus not a product of their own behaviour. According to them, had Gazifère been subjected to cost-of-service, then 100% of the benefit from these external factors would have been retained by customers.

Gazifère refuted FCEI/CFIB’s claims based on the argument that components of the IRM formula should not be assessed in isolation. Gazifère argued that they must operate against the target revenue as calculated by the formula. Gazifère was able to identify flaws in the FCEI/CFIB analysis such as the inclusion of over-earnings related to deferral of the CIS project, the weather stabilization account, and the late payment penalties in the over-earnings calculations³².

³² File R-3724-2010, Phase 1, Exhibit A-26-2, Transcripts, Volume 2, June 15, 2010, pages 120-124.

3.2 Forecast Volumes

In the 2010 IRM Review, ACIG/IGUA discussed the variance between actual and projected volumes and their impact on the per-unit rate. If Gazifère overestimates continuous service volumes, actual revenue could be lower than expected; conversely, if Gazifère underestimates continuous service volumes, actual revenues may be higher. This impact is however outside the IRM framework and would have a similar impact under cost of service.

From 2010 to 2014, residential volumes were consistently over-estimated by 1% to 4%, which would if anything, reduce Gazifère's earnings. During this period, differences in commercial volumes estimated and actually consumed essentially balanced each other out. The only area with a material difference was with industrial customers who pay the lowest variable rate. Estimates in industrial consumption were consistently underestimated, resulting in higher over-earnings.³³

³³ *Calculation 8 – Forecast Vs. Actual Gas Consumption, page 39.*

4. ANALYSIS OF SERVICE TERRITORY

Changes in the demographics of the Outaouais region dramatically impact Gazifère’s revenue requirement. Since the cost of acquiring a new customer in a new residential subdivision is substantially less than acquiring a customer through conversion of mazout (fuel oil) or electric heat to natural gas, new residential growth provides the bulk of opportunity for Gazifère’s expansion.

4.1 Residential Customer Growth

From 2006 to 2015, the number of customers served by Gazifère grew at a cumulative annual growth rate (CAGR) of 3%. Growth was driven by the residential sector (3.1%), while commercial customers grew at a slower pace (1.2%) and industrial customers were unchanged.³⁴

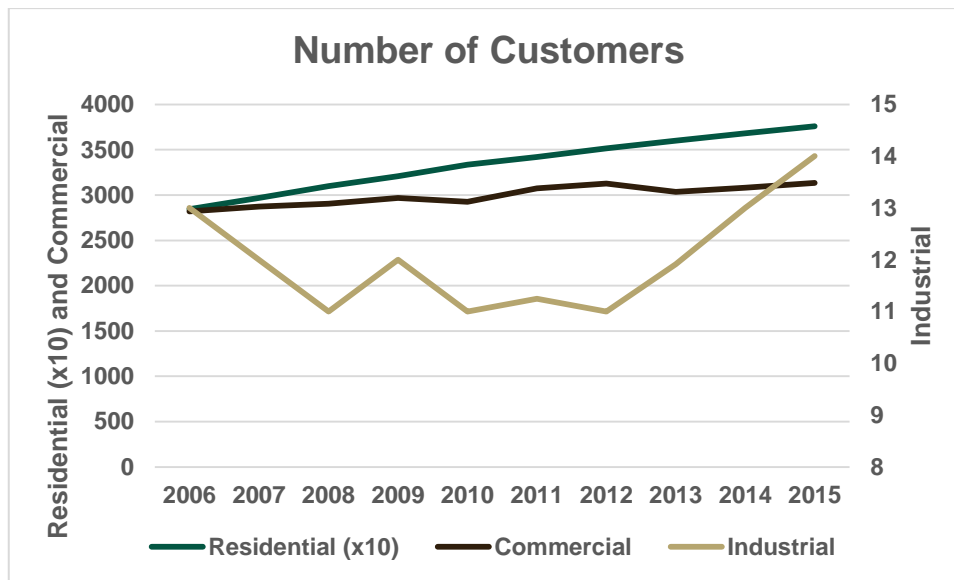


Figure 3: Customer Growth 2006 – 2015

While residential customer growth was consistent throughout the period, the number of commercial customers declined from 2009 to 2010 and from 2012 to 2013. The number of industrial customers fell at the beginning of the IRM and recovered from 2012 to 2015.

From 2006 to 2016, the number of dwellings in the Outaouais region grew at a CAGR of approximately 1.8%. From 2006 to 2011, growth was driven largely by Gatineau (2.4%) and to a lesser extent, Les Collines-de-l’Outaouais. From 2006 to 2015, Gazifère increased their residential market share from approximately 20.3% to 22.5% of dwellings in the region.³⁵

The graph below illustrates Gazifère’s growing market share and the growing number of dwellings during the IRM.

1. ³⁴

2. *Calculation 9 – Customer Growth, page 40.*

³⁵

Calculation 10 – Outaouais residential growth pages 40-41.

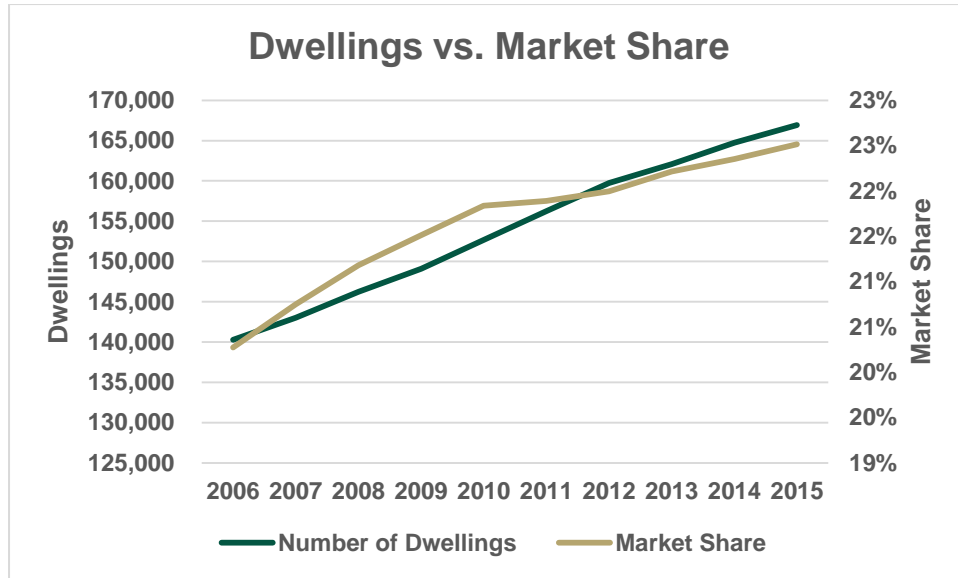


Figure 4: Number of Dwellings vs. Market Share 2006 – 2015

Toward the beginning of the period, the number of new customers relative to the number of new dwellings was more than double Gazifère’s residential market share. From 2007 to 2011, the pace of new customers relative to new dwellings approached Gazifère’s existing market share, before starting to grow again. This relationship is illustrated in the graph below.

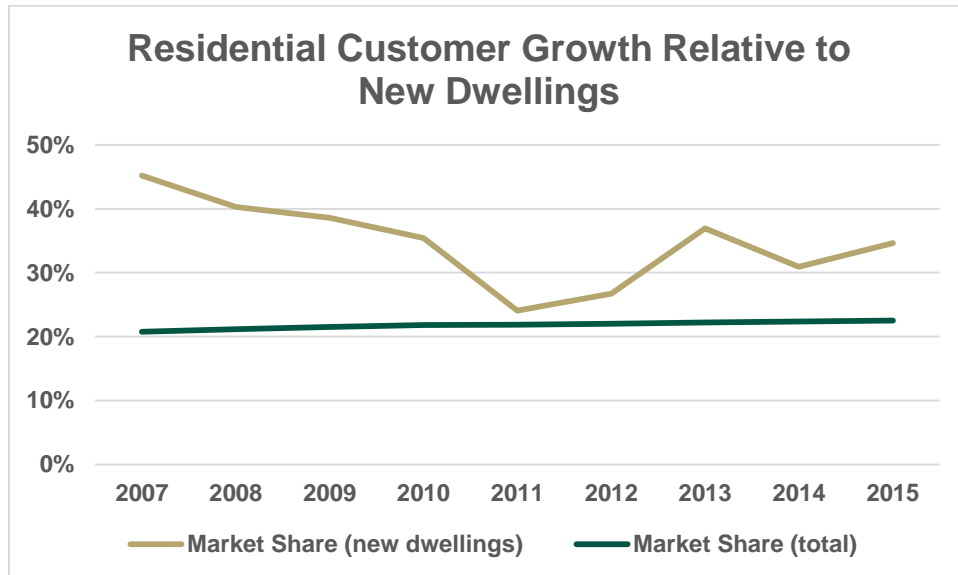


Figure 5: Residential Market Share 2006 – 2015

Both the number of residential permits and the rate of customer growth declined throughout the IRM.

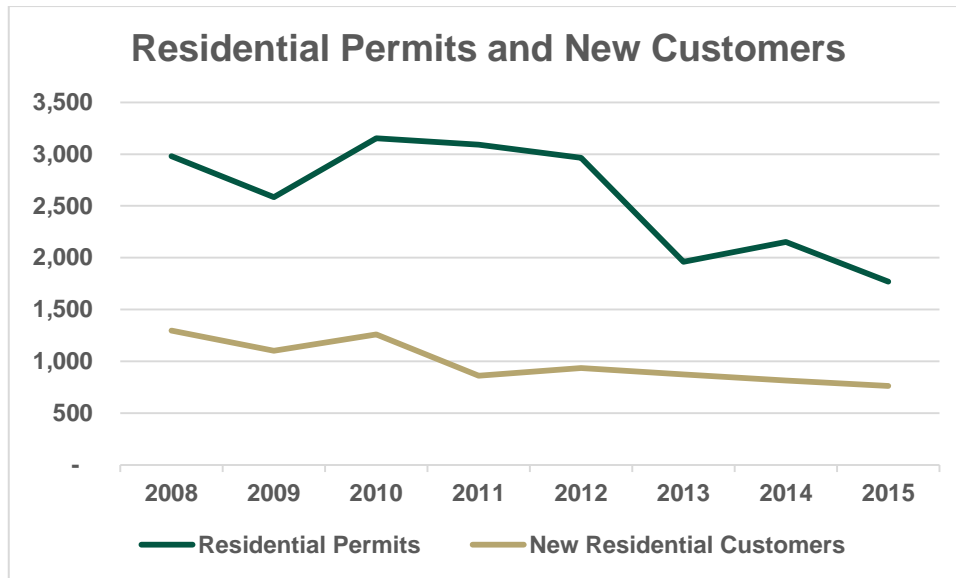


Figure 6: Residential Permits compared to New Residential Customers 2008 – 2014

The decline in new residential building permits in 2009 and recovery in 2010 approximately matched customer growth; however, from 2010-2011 new residential units resulted in proportionately less new residential customers. The decline in residential permits in 2012 does not impact the amount of new customers as may have been expected, implying either success in converting existing residents to natural gas, or improvements in market share of natural gas among new builds.³⁶

The declining growth rate of new customers has a substantial impact on Gazifère’s business. Business planning in 2010 would have considered the residential growth from the past few years; however, growth in new residential customers and residential permits declined from 2010 to 2015, creating revenue pressure for Gazifère.

Another factor for consideration is the type of residential dwellings that were being constructed in different parts of Gazifère’s service territory. Most of the new residential customers that Gazifère were targeting were semi-detached or detached houses that can be connected to the gas distribution infrastructure typically by individual customer acquisition. The newer developments that included townhouse and apartment developments posed a bigger challenge with customer acquisition, where electric heating competes often successfully against gas.

Gazifère has maintained a two pronged customer acquisition strategy, especially for residential customers. One approach had been to target properties located along the existing gas mains (conversion). The second approach included targeting new developments where a decision has already been made to lay down a gas line or a business case has been approved to engage developers working on new construction in new areas.

4.2 Commercial Customer Growth

Market penetration in the commercial sector could be evaluated as a function of either the number of commercial buildings in Outaouais or the amount of indoor floor area used for commercial purposes. Complete data for the

36

Calculation 10 – Outaouais residential growth, pages 40-41.

number of commercial buildings or commercial floor area in Outaouais were not found, making either calculation impossible.

From 2008 to 2015 the number of Gazifère commercial customers grew at a CAGR of 1.1% while the value of commercial property in Outaouais grew by 7.6%.^{37,38} These two numbers are however not directly comparable since a number of factors such as the value of commercial space per building or per square foot varies greatly across the Outaouais region. Using commercial gas volumes as a component in market penetration calculations also provides challenges as it does not accommodate for the impacts of weather, energy efficiency and demande side management, or the intensity of gas-usage in different types of commercial buildings.

Interviews with Gazifère staff, however indicated that new large commercial buildings in Gatineau typically use natural gas as a heating fuel.

4.3 Industrial Customer Growth

From 2006 to 2012 manufacturing activity declined in Outaouais resulting in a cumulative average of 5.6% decrease in the number of manufacturing employees, a 5.4% decrease in manufacturing revenue, and a 2.2% decrease in the number of manufacturing establishments.³⁹ From 2009 to 2013, overall GDP growth in the Outaouais goods-producing sector grew at a CAGR of 1.5%, while provincial growth was approximately 3.1% during the same period.⁴⁰

A total of seven paper mills currently have operations in Gatineau area. From 2010 to 2015 the number of Gazifère's industrial customers has increased; however, the volume of gas sold to industrial customers has decreased.

³⁷

Calculation 9 – Customer Growth, page 40.

³⁸ *Calculation 12 – Commercial Growth in Outaouais, pages 42-43.*

³⁹ *Calculation 13 – Outaouais Industrial Sector page 44.*

⁴⁰ Gross domestic product (GDP) at basic prices by industry, Outaouais and all of Québec, 2009-2013, Institut de la statistique du Québec; Revenu Québec; ministère des Affaires municipales et de l'Occupation du territoire; Fisheries and Oceans Canada and Statistics Canada; Compilation: Institut de la statistique du Québec.

5. ANALYTICAL FRAMEWORK

In addition to the service territory analysis discussed in Section 4, MNP developed a detailed analytical framework to review each component of the IRM formula. Cognizant of Gazifère's circumstances, we reviewed these impacts to gauge the effectiveness of the IRM to incent the behaviors and results that generate earnings sharing in the IRM model, including the sensitivities of these factors on IRM inputs and results. Consideration was also given to Gazifère's unique status in terms of its size (customer base and assets) in comparison to some of the larger gas distribution utilities in Canada and in North America.

The table below provides a summary of this analytical framework and our findings:

Factor	Effect on RR	Sensitivities	Circumstances	Effectiveness	Scale
Definition of formula component.	What effect does this factor have on the Revenue Requirement?	What has to happen to this factor to make a material impact on the Revenue Requirement?	How has this factor changed over time? What impact has Gazifère's relationship with Enbridge and EGD or changes in regional demographics had?	Does this factor incent desired behavior?	What impact does this factor have on Gazifère versus a larger utility?
C – Average number of customers	RR increases or decreases commensurate with the forecast of change in number of customers in the next year.	If the number of customers is forecasted to increase by X% in the next year, then RR increases by X%	From 2006 to 2015, number of customers increased by 29.7%, directly increasing the RR by 29.7%. This represents a CAGR of 2.9%. ⁴¹ New residential development provides the primary source for customer growth. When residential development declines, so does	From 2006 to 2015, RR increased by 54.7%; customer growth alone would have increased RR by 29.7% during this period. ^{41,43} Gazifère is incented to increase the number of customers they serve to increase their RR. As a result, Gazifère's performance was impacted by slower growth in the Outaouais economy. During the latter part of the IRM, migration from other parts of Québec into Outaouais slowed from 5,646	The proportion of marginal to fixed costs impacts the extent to which the RR should be indexed to the number of customers. Larger utilities typically have less fixed costs per customer. Fixed costs amortized over the rate base form a larger proportion of

⁴¹ Calculation 2 – Impact of Customer Growth on RR, pages 35 – 36.

⁴³ Calculation 1 – Revenue Requirement Growth, page 35.

Factor	Effect on RR	Sensitivities	Circumstances	Effectiveness	Scale
			<p>customer and thus RR growth.</p> <p>While overall growth has been robust, customer growth decreased throughout the IRM. Customer growth from 2005 to 2010 averaged 3.6% and declined to a rate of around 2.3% from 2010 to 2015.⁴² The decrease in the growth rate of Gazifère's customer base decreased their rate of revenue growth.</p>	<p>people in 2009-2010 to 4,740 in 2013-2014.⁴⁴ Gazifère has been targeting expansion projects in new developments, since their capital cost is lower than converting an existing building to use natural gas, as reported by Gazifère.</p> <p>In order to maximize allowable ROE, Gazifère is incented to gain new customers through expanding their physical infrastructure. The impact of adding new customers through new infrastructure is generally greater than adding new customers on the existing network. During the IRM, length of physical infrastructure grew at a slower pace (2.5%) than number of customers (3.2%).</p>	<p>rates paid by customers at smaller utilities.</p>
D – a discount coefficient or productivity challenge	The lower the discount coefficient, the more increases to RR are dampened.	If the value of “d” increased substantially, RR would be impacted more by changes in CPI _Q . If the value of d decreased substantially,	<p>From 2006 to 2010 the d factor was 0.78, based on a productivity factor of 0.2%, stretch of 0.2%, and inflation forecast of 1.8%.</p> <p>From 2011 to 2015 the d factor was 0.74 based</p>	Gazifère implemented a number of improvement projects, listed on page 13. The nature of many of these improvements shows that they would have been implemented without an IRM. For example, EGD programs for improving the efficiency of pipeline repairs were adopted because EGD was	<p>In Alberta, both gas utilities use the same X factor in spite of size:</p> <p>Altagas – 1.16%, 72k customers</p>

⁴²

Calculation 9 – Customer Growth, page 40.

⁴⁴ Annual interregional migration, Outaouais, 2009-2010 to 2013-2014; Régie de l'assurance maladie du Québec (RAMQ), use of the insured persons registration file (FIPA) by the Institut de la statistique du Québec.

Factor	Effect on RR	Sensitivities	Circumstances	Effectiveness	Scale
		<p>changes in RR would be less impacted on changes from CPI_Q.</p> <p>The d factor reduced the RR by 5.5% during the period from 2006 to 2015. If the 'd' factor had been 0.1, RR would have been reduced by 19% during the period.</p>	<p>on a productivity factor of 0.3%, stretch of 0.3%, and inflation forecast of 2.3%.</p> <p>Gazifère's total productivity factor ("TPF"), which drives the 'd' factor, has remained relatively unchanged over-time:</p> <p>2004 – 2008 average: 0.3%.</p> <p>2001 – 2005 average: 0.2%.</p> <p>Year-over-year changes are much more volatile. Since 1990, values range from -1.9% to 5.8%.</p>	<p>implementing the program, independent of the IRM. Interviews with Gazifère staff showed that short term performance improvements goals were set in alignment of the IRM, however long term decisions were not necessarily motivated as a result of the IRM except for some opportunity, such as the on-line billing.</p>	<p>ATCO Gas – 1.16%, 1.1M customers.</p> <p>Larger utilities in Ontario have X factors around the same magnitude:</p> <p>Union Gas – d factor of 0.6 (results in X factor of 1.13% for 2016), 1.2M customers.</p> <p>EGD – \$162M of imbedded savings in custom IRM.</p> <p>Gazifère could have the ability to leverage improvements made by EGD.</p>
CPI_Q – forecast rate of the Québec Consumer Price Index	An increase or decrease in the forecast of CPI _Q impacts RR by the same percentage,	A change of X% in CPI _Q will impact the RR by X% x d. The highest forecast CPI _Q observed from 2006 to	CPI _Q ranged from 0.6% – 3% from 2006 to 2015. During the entire period, the cumulative annual growth rate of CPI _Q was 1.5%. ⁴⁵	<p>Gazifère has no control over CPI_Q.</p> <p>Analysis of O&M costs indicates that only a small portion of O&M incurred by Gazifère are related to CPI_Q. The relationship between these two items is so weak that</p>	Larger utilities use similar indicators for changes in GDP or CPI _Q . Changes in O&M costs from one year to another do

⁴⁵ Calculation 5 – CPIQ Calculations, page 38.

Factor	Effect on RR	Sensitivities	Circumstances	Effectiveness	Scale						
	albeit dampened by the 'd' factor.	2015 was 2.4% which would impact RR by 1.78%.	Estimates of CPI _Q were generally higher than actual CPI _Q . From 2006 to 2015, estimates were on average 0.4% higher than actuals. ⁴⁵	<p>larger increases to O&M costs were experienced in periods of smaller CPI_Q.</p> <p>In reality, increases to Gazifère's costs are driven by increases in costs paid for subcontractors, costs resulting from changes in Enbridge and EGD programs or rules, and fluctuations in other uncontrollable cost centres. For example, regulatory and consulting expenses increased dramatically in 2010 during the IRM soft-rebasing.</p> <p>Gazifère's salary and benefits did increase on a per customer basis during the IRM period in part due to changes in salary structure at EGD after recovery from the 2008 oil price scenario. (Please refer to Appendix A Table 14)</p>	<p>not appear to be related to CPI_Q.</p> <p>In Alberta, a portion of indexing is related to increases in labour costs.</p>						
R – cost of capital adjustment reflecting long-term changes in interest rates	Impacts on cost of capital due to increases or decreases in long-term interest rates are directly passed through to RR.	If interest rates rise or fall dramatically, increase or decrease in cost of capital increases or reduces RR commensurably.	<p>Outlook for long-term interest rates drastically fell in 2009, resulting in strongly negative R components from 2009 to 2013, as shown in the table below.</p> <table border="1"> <thead> <tr> <th>Year</th> <th>R (\$k)</th> </tr> </thead> <tbody> <tr> <td>2006</td> <td>-369.5</td> </tr> <tr> <td>2007</td> <td>-310.8</td> </tr> </tbody> </table>	Year	R (\$k)	2006	-369.5	2007	-310.8	Gazifère's cost of borrowing is driven by market conditions estimated for a stand-alone entity based on report published by RBC.	Larger more diversified utilities would likely have access to cheaper, more stable capital. Gazifère saves on issuance costs through its relationship with Enbridge as Gazifère directly borrows from Enbridge.
Year	R (\$k)										
2006	-369.5										
2007	-310.8										

Factor	Effect on RR	Sensitivities	Circumstances	Effectiveness	Scale																						
			<table border="1"> <tr><td>2008</td><td>94.2</td></tr> <tr><td>2009</td><td>-273.9</td></tr> <tr><td>2010</td><td>-66.5</td></tr> <tr><td>2011</td><td>-436.4</td></tr> <tr><td>2012</td><td>-560.1</td></tr> <tr><td>2013</td><td>-432.9</td></tr> <tr><td>2014</td><td>423.5</td></tr> <tr><td>2015</td><td>34.4</td></tr> </table>	2008	94.2	2009	-273.9	2010	-66.5	2011	-436.4	2012	-560.1	2013	-432.9	2014	423.5	2015	34.4								
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Y – pass through costs of service	Pass through costs directly impact RR.	Drastic changes in upstream gas costs, deferral accounts, weather normalization, and large capital projects directly impact RR.	<p>Pass through costs increased steadily from 2006 to 2013 before plateauing, as shown in the table below.</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Y (\$k)</th> </tr> </thead> <tbody> <tr><td>2006</td><td>691.4</td></tr> <tr><td>2007</td><td>515.4</td></tr> <tr><td>2008</td><td>849.9</td></tr> <tr><td>2009</td><td>1514.1</td></tr> <tr><td>2010</td><td>2285.9</td></tr> <tr><td>2011</td><td>2586.8</td></tr> <tr><td>2012</td><td>2687.7</td></tr> <tr><td>2013</td><td>3128.3</td></tr> <tr><td>2014</td><td>3160.0</td></tr> <tr><td>2015</td><td>3147.2</td></tr> </tbody> </table>	Year	Y (\$k)	2006	691.4	2007	515.4	2008	849.9	2009	1514.1	2010	2285.9	2011	2586.8	2012	2687.7	2013	3128.3	2014	3160.0	2015	3147.2	<p>Network expansion projects aimed at adding additional customers can be passed through IRM, providing Gazifère with a mechanism to recover expenses from system expansions. However, in the 2010 IRM Review the Régie determined that investments should be dealt with on a case-by-case basis to differentiate between capital investments that generate incremental revenue vs. those that do not.</p>	<p>Since costs are passed through, utility scale is not a direct factor; however, larger utilities may have a higher threshold for allowing a cost to pass through the formula.</p> <p>Pass-through costs might be more noticeable if they are large relative to the rate base.</p> <p>Upstream gas costs and weather normalization are similar across different sized utilities since they</p>
Year	Y (\$k)																										
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Factor	Effect on RR	Sensitivities	Circumstances	Effectiveness	Scale										
					are based on consumption.										
Z – exogenous factors	Passed through RR if in excess of \$100,000	Z factor directly impact RR provided impact is in excess of \$100,000.	<p>There were no Z factors from 2006 to 2012. From 2013 to 2015 approximately \$2.2M in Z factors were added to the RR, as shown in the table below.</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Z (\$k)</th> </tr> </thead> <tbody> <tr> <td>2006 to 2012</td> <td>0</td> </tr> <tr> <td>2013</td> <td>729.8</td> </tr> <tr> <td>2014</td> <td>944.5</td> </tr> <tr> <td>2015</td> <td>533</td> </tr> </tbody> </table>	Year	Z (\$k)	2006 to 2012	0	2013	729.8	2014	944.5	2015	533	There is effectively no difference for pass-through exogenous factors under IRM versus Cost of Service.	<p>Since costs are passed through, utility scale is not an impact; however costs would be more noticeable when there are fewer customers to distribute them across.</p> <p>Threshold should be commensurate with utility size.</p>
Year	Z (\$k)														
2006 to 2012	0														
2013	729.8														
2014	944.5														
2015	533														
ES – earnings sharing adjustment	Reduces RR if ROE exceeds 100 basis points beyond allowed ROE	If Gazifère's profit exceeds 100 basis points beyond their allowed ROE, RR is reduced accordingly; however, RR remains the same if Gazifère's ROE is less than the allowed amount.	From 2006 to 2015 over \$6.5M in over-earnings were generated. Over-earnings peaked in 2009 and decreased substantially after the 2010 soft-rebasing. Under the IRM formula, over-earnings from 2011 to 2015 were about \$2.1M.	<p>This mechanism allowed a redistribution of profits for other factors that were not considered in the IRM such as forecast gas volume variance, reduction in tax rates, and fluctuations in the allocation between regulated and unregulated activities.</p> <p>The lack of a mechanism in the IRM to account for changing cost allocations between regulated and unregulated activities contributed to overearnings. During the IRM 10.2% of administration costs were assumed to be for non-regulated</p>	Should not depend on utility size.										

Factor	Effect on RR	Sensitivities	Circumstances	Effectiveness	Scale												
				<p>activities; however, this value changes from one year to another. A table on page 45 (calculation 16) provides O&M costs allocated to regulated activities under the IRM with a constant allocation versus what those costs would have otherwise been under a variable allocation.⁴⁶</p> <p>There is insufficient evidence to prove a direct relationship between productivity gains and overearnings over a long term period as illustrated in the table below where one can observe that overearnings increased dramatically from 2007 to 2008 in spite of a drop in productivity.</p> <table border="1" data-bbox="1205 906 1625 1101"> <thead> <tr> <th data-bbox="1205 906 1289 979">Year</th> <th data-bbox="1289 906 1478 979">Productivity Change⁴⁷</th> <th data-bbox="1478 906 1625 979">Over-earnings</th> </tr> </thead> <tbody> <tr> <td data-bbox="1205 979 1289 1019">2006</td> <td data-bbox="1289 979 1478 1019">0%</td> <td data-bbox="1478 979 1625 1019">\$266k</td> </tr> <tr> <td data-bbox="1205 1019 1289 1060">2007</td> <td data-bbox="1289 1019 1478 1060">0.10%</td> <td data-bbox="1478 1019 1625 1060">\$449k</td> </tr> <tr> <td data-bbox="1205 1060 1289 1101">2008</td> <td data-bbox="1289 1060 1478 1101">-0.60%</td> <td data-bbox="1478 1060 1625 1101">\$1,366.7k</td> </tr> </tbody> </table>	Year	Productivity Change ⁴⁷	Over-earnings	2006	0%	\$266k	2007	0.10%	\$449k	2008	-0.60%	\$1,366.7k	
Year	Productivity Change ⁴⁷	Over-earnings															
2006	0%	\$266k															
2007	0.10%	\$449k															
2008	-0.60%	\$1,366.7k															

⁴⁶ R-3924-2015, Exhibit B-0279, GI-39 doc 3.1_REVISED 2015-11-12

⁴⁷ File 3724-2010, Exhibit B-1, GI-2, Document 2, Total Factor Productivity, 2011 Rate case – Phase 1.

6. ASSESSMENT OF THE IRM'S ABILITY TO MEET OBJECTIVES

Section 6 draws on the history of the IRM, the IRM factors and Gazifère's environment to determine the effectiveness of the IRM framework in meeting the IRM's objectives.

6.1 Objective 1: Lighten the Regulatory Process

Finding: The IRM did not minimize regulatory process or costs.

Support: Several key factors highlight that the IRM did not materially streamline the regulatory process for setting Gazifère's rates:

- Regulatory costs and consulting costs increase dramatically during years where there is an IRM rebasing, although this only happens once every five years.
- Due to the annual "closing of the books" and rate setting process, Gazifère is required to perform much of the work they otherwise would have under Cost of Service.
- Regulatory staffing levels increased from about 2 to 3 FTE during the IRM.
- Some of the additional regulatory burden due to the IRM can be attributed to first time implementation of the regulatory process, and costs/time associated with internal preparedness to the change. However, the IRM did not culminate in lower costs or complexity.

6.2 Objective 2: Incentivize Performance Improvements

Finding: Some performance improvements implemented during the IRM are attributed to decisions made by senior management at Gazifère, while others were a direct result of variables not under Gazifère's control, such as changes at Enbridge and EGD, or improvements in technology.

Support: Several key factors highlight how some performance improvements would have been made regardless of whether or not Gazifère was under an IRM, while others were a result of the IRM:

- Several long-term performance improvements were made as a result of Gazifère incorporating Enbridge-derived parent or affiliate changes to procedures and technological programs at the corporate level. For example, Enbridge IT and corporate policies in relation to customer service.
- Some performance improvements such as cuts to discretionary expenses (travel and entertainment and donations and memberships) likely resulted from pressure to reduce expenses under the IRM.
- Gazifère maintains about the same amount of staff per customer at the beginning and end of the IRM.

6.3 Objective 3: Fairly Redistribute Productivity Gains

Finding: Overearnings were redistributed to customers as intended under the IRM.

Support: To the extent that overearnings were a result of productivity gains, those were redistributed according to the formula described in Section 3.1.8.

- While it is not possible to prove the relationship between productivity gains and overearnings, it should be noted that some improvements such as e-billing would likely generate additional earnings from a reduction in billing costs resulting in some portion of overearnings being related to productivity gains.
- From 2006 to 2015, customers received approximately 39% of overearnings.

6.4 Objective 4: Improve Satisfaction of Customers' Needs

Customer needs can be categorized into both customer service for existing and new customers as well as expansion and availability of services to newer developments and new customer acquisition strategies.

Finding: Most of the short term infrastructure investments and expansion plans executed during the IRM period may not have originated as a direct result of the IRM, but their timing and implementation were in alignment with IRM objectives and the targets set during that period for customer satisfaction.

Support

- Customer service improved during the IRM period, as a direct result of improving communication and customer service technology to reduce overall response time for customer while maintaining a number of customer service representative (CSR), hence increasing their productivity.

6.5 Objective 5: Ensure Ease of Application and Understandability

Finding: It is unclear whether or not an IRM ensured a more understandable rate setting process.

Support: From the perspective of Gazifère, there is little evidence to suggest that the IRM promoted knowledge and understandability of rate setting process. Gazifère did not face any reduction in the regulatory burden through the IRM, when taking into account the regulatory work that is required during the IRM and after in the rebasing period (2010 or 2016-2018). During the IRM, Gazifère's regulatory affairs and budget staff increased by one FTE.⁴⁸

From the ratepayer's perspective there is also no clear indication if the change in regulatory process at Gazifère altered the overall understanding of the customers and how the rates are set and/or impact of the IRM regulation. There is no evidence to suggest that an awareness initiative was undertaken by Gazifère's management either internally or externally with the switch to the IRM process.

6.6 Objective 6: Result in Stable and Predictable Rates

Finding: Rates were stable and predictable during the IRM.

Support: Using CPI_Q as an index resulted in more stable and predictable rates than using other metrics such as GDP growth. In comparison with Cost of Service regulation, while the IRM did not necessitate less frequent filings, it did have an impact in terms of the time and effort associated with data reporting requirements. That said, Cost of Service regulation and the use of rate trackers and rate riders provides a measure of rate predictability.

⁴⁸ Calculation 11 – Customers per FTE, pages 41 – 42.

7. SUMMARY OF FINDINGS AND CONCLUSION

7.1 Performance Improvement and Regulatory Burden

Economic regulation of utilities is intended to provide a number of benefits for different stakeholder groups. “For customers, regulation provides access to an essential, high-quality service at prices that are reasonable with respect to cost and not unduly discriminatory. For utilities, regulation provides an opportunity to earn a fair return, which has provided adequate incentive for capital formation in a capital-intensive industry”⁴⁹.

The IRM is designed to prevent service degradation in light of pressures to reduce costs and to encourage the improvement in performance in overall operations of the utility or in specific areas that require changes. We assume that the main purpose of introducing the IRM was two pronged: to reduce regulatory burden; and to incentivize improvement in performance.

In light of this, MNP has found that a complex series of factors were not accounted for by the IRM, including those factors outside of Gazifère’s control. This resulted in the IRM not meeting all of its key objectives in the longer term, however short term targets set in alignment with IRM objectives were effective, providing value to ratepayers. Secondly, while the overall regulatory burden in implementing the IRM was lighter at the start of the review period, the soft rebasing in 2010 required significant Gazifère effort, resulting in the conclusion that there was no decrease in regulatory burden.

7.2 Customer Growth

Customer growth is mainly dependent on new home construction in the Outaouais region. It is substantially less expensive and easier for Gazifère to acquire new customers through network expansion to new-build subdivisions than through conversion of homes on existing network infrastructure. In the first five years of the IRM, robust growth in Gatineau resulted in a steady and predictable increase in customers and reasonable penetration in new build areas. As new construction in the region began to slow in 2010, Gazifère’s revenue growth slowed accordingly, falling below IRM expectations. It should additionally be noted that the slowing of customer growth can also be attributed to the effects of the 2008 recession and its impact over the next few years. These external influences were not completely accounted for in the forecasted volumes that were developed in the IRM rate setting process.

7.3 Shareholder Requirements

Shareholder requirements and associated actions to maintain profits amid declining revenue growth resulted in across-the-board cost cutting measures. When revenue growth slowed, cuts were required to maintain profit margins. While these cost cutting measures were not necessarily undertaken as a result of implementing the IRM in the long term, our review has found that in the short term it did create opportunities for performance improvements and goal setting in line with the objectives of the IRM. The productivity factor determination process for Gazifère plays a significant role in the overall structure of the IRM. A separate productivity factor study, outside the scope of this report, may be undertaken later (retrospectively) to further investigate the impact of this on the IRM structure.

⁴⁹ <https://emp.lbl.gov/sites/all/files/REPORT%20LBNL-37577.pdf>

7.4 Safety Requirements

Safety requirements mandated by legislation, and implemented and enforced by Enbridge across subsidiaries, increased maintenance costs, which resulted in relatively lower financial performance during the IRM. For example, where one technician was required for a simple underground maintenance task at the beginning of the IRM, three were required at the end, tripling the amount of labour.

7.5 Subcontractor Costs

The lack of flexibility in selecting subcontractors stems from two factors:

1. Where large contracts are negotiated by Enbridge on Gazifère's behalf, Gazifère enjoys better negotiating power but suffers from a lack of flexibility/choice.
2. Gazifère experiences a lack of competition for contracts. To work in Québec, field services crews must be certified to operate in Québec, therefore diminishing the pool of resources, specifically from Ontario.

7.6 IRM Indexing

Inadequate IRM indexing stems from an IRM based on increases in CPI_Q whereas relatively few costs incurred by Gazifère were represented by this index. We found that O&M costs decreased while changes in CPI_Q increased. In other words, the changes in O&M costs were counterintuitively found to be inversely proportional to changes in CPI_Q .

7.7 Summary and Recommended Next Steps

Many of the trends described above continued after the IRM ceased and with the return to Cost of Service. Recommendations to changes in the IRM framework are beyond the scope of this report; however, it is clear that further research and analysis is required to understand how the original IRM objectives could be met under an alternate framework.

In summary, MNP has found that the IRM mechanism for Gazifère's rate setting process was able to meet some but not all of its objectives. As discussed above there are external influences beyond the realm of both Gazifère and the Régie that have had an impact on the performance of Gazifère under the IRM. For a successful IRM implementation with a utility, the IRM must consider and account for both internal and external variables within its environment. This finding may be exemplified in Gazifère's case given its relative size, ability to implement material changes in its business and its status as a subsidiary of a larger organisation.

Another aspect to consider is the objectives or the success factors that have been set for the IRM process for Gazifère. Traditionally incentive rate making mechanisms have focused on the following performance dimensions:

- Reliability,
- Employee Safety,
- Public Safety,
- Customer Satisfaction,
- Plant Performance, and
- Costs.

But with evolving industry challenges, additional aspects will need to be considered and incorporated into incentive mechanisms. The following are some emerging performance trends that may be further investigated to establish their relevance to Gazifère and any incentive mechanisms in the future:

Performance Dimension	Purpose⁵⁰
System Efficiency	To indicate the extent to which the utility system as a whole is being operated more efficiently.
Customer Empowerment	To indicate the extent to which customers are participating in demand- side programs or installing demand-side resources.
Environmental Goals	To indicate the extent to which the utility and its customers are reducing environmental impacts, particularly related to climate change.
Regulatory Environment	To indicate changes in policy/law/regulation that will impact delivery of service to customers (in Gazifère's case use of renewable natural gas in the grid).

While this may not be an exhaustive list and there are many more relevant performance dimensions that can be established for Gazifère and its unique corporate structure and situation, it provides an avenue for further investigation.

Variants from the revenue cap IRM exist and could be studied to determine an alternate framework that may better achieve the overall IRM objectives. Different IRM methodologies are summarized below.

IRM Variant	Principles and Objectives
Rate Cap	<ul style="list-style-type: none"> • Based on a price index that includes an inflation measure. • Distributor can vary price percentage, provided it is not greater than the price cap index.
Revenue Cap	<ul style="list-style-type: none"> • Similar to rate cap regulation, but based on a revenue index. • More appropriate than rate cap regulation when costs do not vary appreciably with units of sales. • Useful where the fixed-to-variable cost ratio is high.
Sliding Scale	<ul style="list-style-type: none"> • A utility's rate of return is maintained within a defined band. • If earnings become too large, rates are cut; if earnings become too small, rates are increased.
Custom IRM	<ul style="list-style-type: none"> • Based on a custom index. • Rates based on a five year forecast of a distributor's revenue requirement and sales volume. • Rate setting is intended to be customized to each distributor. • Most appropriate for distributors with significantly large multi-year or highly variable investment commitments that exceed historical precedents and flexibility holds greater value.

⁵⁰ http://www.synapse-energy.com/sites/default/files/Utility%20Performance%20Incentive%20Mechanisms%2014-098_0.pdf

APPENDIX A – DATA AND CALCULATIONS

Financial Data has been provided by Gazifère and has not been independently audited or verified by MNP.

1. Calculation 1 – Revenue Requirement Growth

Year	Revenue Requirement
2006	17699.2 ⁵¹
2007	18785.0 ⁵²
2008	20249.1 ⁵³
2009	21944.2 ⁵⁴
2010	23875.9 ⁵⁵
2011	23512.9 ⁵⁶
2012	23825.2 ⁵⁷
2013	25298.1 ⁵⁸
2014	26785.7 ⁵⁹
2015	27380.4 ⁶⁰

Cumulative Annual Growth Rate 2006 – 2010:

$$CAGR = \frac{23875.9}{17699.2}^{\frac{1}{4}} - 1 = 7.8\%$$

Cumulative Annual Growth Rate 2010 – 2015:

$$CAGR = \frac{27380.4}{23875.9}^{\frac{1}{5}} - 1 = 2.8\%$$

Total Growth from 2006 to 2015:

$$Total\ RR\ Growth = \frac{27380 - 17699}{17699} = 54.7\%$$

2. Calculation 2 – Impact of Customer Growth on RR

To isolate the impact of customer growth, $RR_{t-1,C}$ is calculated as the change in RR from the previous year if only the number of customers in the previous year (“ C_{t-1} ”) and expected number of customers in the next year (“ C ”) are included⁵¹⁻⁶⁰. This is exactly equal to the percent change in the number of customers as illustrated by the table below.

⁵¹ GI-10 – doc. 2.1 – Calcul du revenu de distribution selon la formule, R-3587-2005

⁵² GI-2 – doc.2, Calcul du revenu de distribution selon la formule, R-3621-2006

⁵³ GI-14 – doc. 2, Calcul du revenu de distribution selon la formule, R-3637-2007

⁵⁴ GI-15 – doc. 2, Calcul du revenu de distribution selon la formule, R-3665-2008

⁵⁵ GI-23 – doc.1 - révisé - Calcul du revenu de distribution selon la formule, R-3692-2009

⁵⁶ GI-35 – doc. 2 - Calcul du revenu de distribution selon la formule, R-3724-2010

⁵⁷ GI-27 – doc. 2 - Calcul du revenu de distribution selon la formule, R-3758-2011

⁵⁸ GI-17 – doc. 2 - Calcul du revenu de distribution selon la formule, R-3793-2012

⁵⁹ GI-26 – doc. 2 - Calcul du revenu de distribution selon la formule, R-3840-2013

⁶⁰ GI-17 – doc. 2 - Calcul du revenu de distribution selon la formule, R-3884-2014

Year	RR _{t-1, C}	C _{t-1}	C	RR = RR _{t-1} x C / C _{t-1}
2006	16053	29394	31319	17104
2007	17104	31319	32295	17637
2008	17637	32295	33612	18356
2009	18356	33612	35233	19242
2010	19242	35233	36366	19860
2011	19860	36366	37407	20429
2012	20429	37407	38372	20956
2013	20956	38372	39126	21368
2014	21368	39126	39929	21806
2015	21806	39929	40633	22190
% Difference between 2006 and 2015			29.7%	29.7%
CAGR			2.9%	2.9%

$$CAGR = \frac{40633}{31319}^{\frac{1}{9}} - 1 = 2.9\%$$

$$CAGR = \frac{22190}{17104}^{\frac{1}{9}} - 1 = 2.9\%$$

3. Calculation 3 – Real and Nominal O&M Expenses per Customer

Year	Number of Customers ⁶¹	O&M Expenses ⁶²	O&M Expenses per Customer	Inflation ⁶³	Cumulative Inflation	Real O&M perCustomer
	A	B	C = B / A	D	E = Product (1+D ₀ ...1+D _n)	F = C / E
2006	31269	7,344,431	235	1.7%	1.00	235
2007	32562	7,935,429	244	1.6%	1.02	240
2008	33889	8,534,843	252	2.1%	1.04	243
2009	35057	9,891,272	282	0.6%	1.04	270
2010	36273	11,276,801	311	1.2%	1.06	294

⁶¹ Actual number of average customers per year, provided by Gazifère

⁶² Actual O&M expenses per year, provided by Gazifère

⁶³ CPI_Q Actual Data, Statistics Canada

Year	Number of Customers ⁶¹	O&M Expenses ⁶²	O&M Expenses per Customer	Inflation ⁶³	Cumulative Inflation	Real O&M perCustomer
2011	37283	10,768,565	289	3.0%	1.09	266
2012	38270	11,579,420	303	2.1%	1.11	272
2013	39052	12,766,392	327	0.7%	1.12	292
2014	39917	13,455,648	337	1.4%	1.13	297
2015	40733	14,299,000	351	1.05%	1.15	306

$$\text{Nominal O\&M per customer increase (2006 to 2015)} = \frac{351}{235}^{\frac{1}{9}} - 1 = 4.6\%$$

$$\text{Real O\&M per customer increase (2006 to 2015)} = \frac{306}{235}^{\frac{1}{9}} - 1 = 3.0\%$$

$$\text{Real O\&M per customer increase (2006 to 2010)} = \frac{294}{235}^{\frac{1}{4}} - 1 = 5.8\%$$

$$\text{Real O\&M per customer increase (2010 to 2015)} = \frac{306}{294}^{\frac{1}{5}} - 1 = 0.8\%$$

4. Calculation 4 – Changes in O&M

Nominal expenses per customer are calculated by dividing actual customers by the number of customers in the table below. Real expenses per customer are calculated by dividing nominal expenses per customer by the inflation factors calculated in *Calculation 3 – Real and Nominal O&M Expenses per Customer*. The Real Change is the CAGR of the real expenses per customer.

	Actual Expense (\$k)		Nominal Expense per Customer		Real Expense per Customer		Real Change
	2006	2015	2006	2015	2006	2015	
Number of Customers			31269	40733			
Inflation Factor					1	1.15	
Employee Benefits - Active	658	1,852	21.05	45.48	21.05	39.55	7%
Employee Training And Development	13	78	0.42	1.91	0.42	1.66	16%
General Materials And Supplies	20	61	0.65	1.50	0.65	1.31	8%
Office Materials And Supplies	113	101	3.60	2.49	3.60	2.16	-6%
Other Outside Services	188	599	6.00	14.71	6.00	12.79	9%
Equipment Rents And Leases	7	6	0.22	0.14	0.22	0.12	-7%
Travel And Entertainment	79	62	2.51	1.53	2.51	1.33	-7%
Casualty And Damage	80	49	2.55	1.21	2.55	1.06	-9%

	Actual Expense (\$k)		Nominal Expense per Customer		Real Expense per Customer		Real Change
	2006	2015	2006	2015	2006	2015	
Donations And Memberships	128	77	4.10	1.90	4.10	1.65	-10%

5. Calculation 5 – CPI_Q Calculations

Year	CPI _Q in Rate Case ⁵¹⁻⁶⁰	CPI _Q Actual ⁶³
2006	1.8%	1.7%
2007	1.8%	1.6%
2008	2.1%	2.1%
2009	2.0%	0.6%
2010	1.7%	1.2%
2011	2.3%	3.0%
2012	2.4%	2.1%
2013	1.9%	0.7%
2014	1.7%	1.4%
2015	1.9%	1.05%
CAGR	2.0%	1.5%

6. Calculation 6 – GDP Calculations

Year	GDP (\$M) ⁶⁴	Growth
2006	240,854	
2007	249,012	3.39%
2008	255,751	2.71%
2009	259,559	1.49%
2010	267,920	3.22%
2011	272,174	1.59%
2012	274,769	0.95%
2013	278,963	1.53%
2014	281,687	0.98%
CAGR		2.0%

⁶⁴ Gross domestic product, expenditure-based, provincial and territorial, Final consumption expenditure, Statistics Canada (provincial data for 2015 not available)
<http://www5.statcan.gc.ca/cansim/a26?lang=eng&id=3840038>

7. Calculation 7 – Construction Union Wage Calculations

Year	Montreal ⁶⁵	Ottawa	Average
2006	28.16	28.56	28.36
2014	34.10	34.90	34.50
CAGR	2.4%	2.5%	2.5%

8. Calculation 8 – Forecast v. Actual Gas Consumption

Residential	Forecast ⁶⁶	Actual ⁶⁷	Delta	%
2010	61375.9	58940.6	-2435.3	-4%
2011	63385.2	61896.5	-1488.7	-2%
2012	62773.5	61280.4	-1493.1	-2%
2013	63495.0	62769.0	-726.1	-1%
2014	63711.3	63526.2	-185.1	0%
2015	64799	63612	-1187	-2%

Commercial	Forecast ⁶⁶	Actual ⁶⁷	Delta	%
2010	61312.1	62115.3	803.1	1%
2011	63447.3	60606.4	-2840.9	-4%
2012	61826.3	60026.7	-1799.6	-3%
2013	60987.2	59472.2	-1515.0	-2%
2014	59175.4	59874.0	698.6	1%
2015	59428	59650	222	0%

Industrial	Forecast ⁶⁶	Actual ⁶⁷	Delta	%
2010	30673.1	52016.3	21343.2	70%
2011	33346.4	43559.3	10212.8	31%
2012	37973.4	42555.7	4582.3	12%
2013	39534.6	50728.0	11193.4	28%
2014	43463.2	46656.8	3193.6	7%
2015	43968	46044	2076	5%

⁶⁵ Construction union wage rates, average for all trades in all months of each year, Statistics Canada

⁶⁶ G-24 doc.1 – état annuel du nombre de clients, des volumes et des revenus de distribution, cause tarifaire 2010 – 2011 – 2012 – 2013 – 2014

⁶⁷ Volumes and client number_ 2005 à 2014.xlsx, Gazifère, January 2016

9. Calculation 9 – Customer Growth

Year	Residential ⁶⁷	Commercial ⁶⁷	Industrial ⁶⁷	Total
2005	27119	2729	13	29861
2006	28440	2818	13	31269
2007	29680	2874	12	32562
2008	30970	2904	11	33889
2009	32080	2968	12	35057
2010	33340	2925	11	36273
2011	34200	3075	11	37283
2012	35130	3126	11	38270
2013	36010	3033	12	39052
2014	36820	3080	13	39917
2015	37586	3133	14	40733

$$\text{Residential Customer Growth (2006 to 2015)} = \frac{37586}{28440}^{\frac{1}{89}} - 1 = 3.1\%$$

$$\text{Commercial Customer Growth (2006 to 2015)} = \frac{3133}{2818}^{\frac{1}{9}} - 1 = 1.2\%$$

$$\text{Total Customer Growth (2006 to 2015)} = \frac{40733}{31269}^{\frac{1}{9}} - 1 = 3.0\%$$

$$\text{Total Customer Growth (2006 to 2015)} = \frac{40733 - 31269}{31269} = 30.3\%$$

$$\text{Total Customer Growth (2005 to 2010)} = \frac{36273}{29861}^{\frac{1}{5}} - 1 = 3.6\%$$

$$\text{Total Customer Growth (2010 to 2015)} = \frac{40733}{36273}^{\frac{1}{5}} - 1 = 2.3\%$$

10. Calculation 10 – Outaouais residential growth

Dwellings ⁶⁸	2006	2011	CAGR
Les Collines-de-l'Outaouais	15800	17,450	2.0%
Gatineau	100,203	112,755	2.4%
Papineau	14,360	14,569	0.3%
La Vallée-de-la-Gatineau	13,921	14,924	1.4%
Pontiac	8,993	9,224	0.5%

⁶⁸ 2006, 2011 Census Data, Statistics Canada

Dwelling data between censuses was extrapolated using the number of residential permits as weights. A dwelling projection from Institut de la statistique du Québec was used for extrapolation between 2011 and 2016.

Year	Estimated Dwellings	Residential Permits ⁶⁹	Delta	Residential Customers ⁶⁷	Market Share	New Residential Customers
2006	140,281	-	-	28,438	20%	
2007	143,020	Not Available	2,739	29,676	21%	1238
2008	146,243	2,981	3,223	30,974	21%	1298
2009	149,103	2,586	2,859	32,077	22%	1103
2010	152,658	3,154	3,556	33,337	22%	1260
2011	156,227	3,092	3,569	34,197	22%	860
2012	159,729	2,965	3,502	35,133	22%	936
2013	162,096	1,960	2,367	36,007	22%	874
2014	164,735	2,153	2,639	36,824	22%	816
2015	166,937 ⁷⁰	1,768	2,202	37,586	23%	
2016	168,117	Not Available	1,180			

$$\text{Number of Dwellings Growth (2006 to 2016)} = \frac{168117}{140281} - 1 = 1.8\%$$

11. Calculation 11 – Customers per FTE

Year	Number of Customers	Operations & Maintenance	Sales & Communication	Customer Service	Admin	Regulatory Affairs	IT	Total
2006	31319	10	8	17	6	2	0	43
2007	32295	12	8	18	6	3	0	46
2008	33612	11	7	18	5	3	0	44
2009	35233	11	6	16	6	2	3	44
2010	36366	11	8	17	5	3	7	50
2011	37407	12	7	18	6	3	7	53
2012	38372	12	8	20	6	3	8	57
2013	39126	13	9	19	6	3	7	56
2014	39929	12	8	19	6	3	7	55
2015	40733	13	9	19	7	3	7	58

⁶⁹ Billing Permits, Dwelling units, census metropolitan areas, unadjusted, cumulative, Ottawa-Gatineau, Quebec part, Ontario/Quebec, Statistics Canada Archive

⁷⁰ Institut de la statistique du Québec, Direction des statistiques sociodémographiques, Perspectives démographiques du Québec et des régions, 2011-2061

Year	Number of Customers	Operations & Maintenance	Sales & Communication	Customer Service	Admin	Regulatory Affairs	IT	Total
2008* Customers per FTE		2961	4919	1859	6352	12223	N/A	759
2015 Customers per FTE		3194	4526	2152	6190	13578	5468	706
Difference		233	-393	293	-161	1355	N/A	-53

**2008 new billing system implemented*

12. Calculation 12 – Commercial Growth in Outaouais

Commercial property value was evaluated by subtracting the value of commercial permits from the 2015 commercial property value for each year from 2008 to 2015. A minor adjustment was made to accommodate for changes in property value. Relative changes in market share were determined by evaluating the number of new commercial customers per permit value adjusted for changes in commercial property value.

Year	Commercial Property Value	Commercial Permits ⁷¹	Change in Property Value	Commercial Customers ⁶⁷	Land Value Estimate ⁷²	Land Value Factor	Adjusted value of new permits	Value of permits per new customer	Adjusted commercial property value	Commercial property value per customer
	$A_t = A_{t+1} - B_t$	B	$C = A_t - A_{t-1}$	D	E	$F = E_t / E_{2007}$	$G = B/F$	$H = G / (D_{t-1} - D_t)$	$K = A/F$	$M = K/D$
2007				2,874						
2008	1,566,840	131,014		2,904	15.4	1.00	131,014	4,367	1,566,840	540
2009	1,697,854	70,534	131,014	2,968	16.2	1.05	67,003	1,047	1,612,856	543
2010	1,768,388	292,107	70,534	2,925	15.9	1.03	282,370	- 6,554	1,709,441	584
2011	2,060,495	105,930	292,107	3,075	15.2	0.99	107,468	718	2,090,416	540
2012	2,166,425	146,387	105,930	3,126	15.1	0.98	148,709	2,869	2,200,790	704
2013	2,312,812	146,796	146,387	3,033	15.4	1.00	146,415	- 1,569	2,306,808	540
2014	2,459,608	150,192	146,796	3,080	15.3	1.00	150,879	3,216	2,470,861	802
2015	2,609,800 ⁷³	102,557	150,192	3,133	15.3	0.99	103,161	- 33	2,625,171	838
CAGR (2008 - 2015)	7.6%	N/A	N/A	1.1%	N/A	N/A	N/A	N/A	7.6%	N/A

⁷¹ Value of residential and non-residential building permits, census metropolitan areas, unadjusted, cumulative, Ottawa-Gatineau, Quebec part, Ontario/Quebec, Statistics Canada

⁷² Direct average net asking rent (\$ per square foot), Ottawa-Gatineau, Office Insight, JLL, <http://www.jll.ca/canada/en-ca/Research/Office%20Insight-Q1%202015-Ottawa.pdf?0836df5c-ed94-46af-a33a-b56c4be7c0d9>

⁷³ Distribution of the standardized property assessment by immovable use, Outaouais, fiscal year 2015, Ministère des Affaires municipales et de l'Occupation du territoire, Évaluation foncière des municipalités du Québec; Compilation: Institut de la statistique du Québec, Direction des statistiques sectorielles et du développement durable

13. Calculation 13 – Outaouais Industrial Sector

Year	Number of Establishments ⁷⁴	Employees ⁷⁴	Wages ⁷⁴	Revenue ⁷⁴	Value Added ⁷⁴	Industrial Volume ⁶⁷	Industrial Customers ⁶⁷
2006	278	4,123	183,868	1,622,572	699,137	48,523	13
2007	256	3,821	177,859	1,554,821	650,232	45,673	12
2008	253	3,433	156,663	1,390,823	559,133	55,555	11
2009	247	3,062	136,359	1,126,811	461,329	47,908	12
2010	254	2,790	115,481	976,901	386,974	52,016	11
2011	252	2,866	119,685	1,065,929	396,278	43,559	11.25
2012	244	2,926	133,751	1,160,274	449,008	42,556	11
CAGR	-2.2%	-5.6%	-5.2%	-5.4%	-7.1%	-2.2%	-2.7%

*Data beyond 2012 not available

14. Calculation 14 – Salary and Benefits

Year	Number of Customers	Number of FTE	Salary and Benefits	Inflation (CPIQ)	Inflation Factor	Real S & B per Customer	Real S & B per FTE
2006	31269	43.0	4,172,789	1.70%	1.00	133	97,041.60
2007	32562	45.8	4,634,604	1.60%	1.02	140	99,598.64
2008	33889	44.3	5,020,202	2.10%	1.04	143	109,244.10
2009	35057	44.3	5,706,032	0.60%	1.02	160	126,775.92
2010	36273	50.3	6,343,908	1.20%	1.03	170	122,663.31
2011	37283	53.1	7,104,707	3.00%	1.06	180	126,339.80
2012	38270	57.0	8,211,859	2.10%	1.08	198	133,238.41
2013	39052	56.4	8,554,361	0.70%	1.09	201	139,297.01
2014	39917	55	9,301,411	1.40%	1.10	211	153,172.75
2015	40733	58	9,371,301	1.05%	1.11	207	146,446.03
CAGR	3.0%	3.4%	9.4%	-	1.2%	5%	4.7%

⁷⁴ Principal statistics on manufacturing activity by NAICS, manufacturing industries, Outaouais and all of Québec, 2012; statistics Canada, Annual Survey of Manufactures and Logging, 2012, adapted by the Institut de la statistique du Québec; Compilation : Institut de la statistique du Québec, Direction des statistiques sectorielles et du développement durable.

15. Calculation 15 – Growth in Pipeline Infrastructure

$$CAGR \text{ mains length (2005 to 2015)} = \frac{937383^{\frac{1}{10}}}{733488} - 1 = 2.5\%^{75}$$

16. Calculation 16 – Impact of Fixed O & M allocation⁷⁶

Year	O&M allocated to non-regulated activities, with constant 10.2% allocation (\$k)	O&M allocated to non-regulated activities, with variable allocation (\$k)	Impact of not updating cost allocation
2006	518	492	-26
2007	556	560	5
2008	577	604	27
2009	608	685	77
2010	654	872	218
2011	735	1,056	321
2012	818	1,272	454
2013	899	1,330	431
2014	974	1,425	451

⁷⁵ Km Mains, Provided by Gazifère

⁷⁶ Provided by Gazifere (2015 data not available)

APPENDIX B – CIRICULUM VITAE

Jason Hails, MBA

Jason Hails is a Partner within MNP Consulting based in Toronto, Canada and leads the firm's Energy & Natural Resources Practice nationally. Jason is also the Leader for Consulting in MNP's Eastern Region. Jason brings 25 years of business experience, including 15 years consulting primarily to the public sector and the energy, utilities and natural resource industries in Canada and the United States. Much of Jason's time is concentrated in the Electricity and Natural Gas industries, however Jason has also worked within Upstream Oil and Gas, Mining and Water/Wastewater industries. In addition, Jason has supported numerous clients in Manufacturing, Transportation, Logistics, Real Estate, Construction, Retail and Not-for-Profit industries. Jason has acquired significant knowledge and experience in the areas of:

- Economics and business development.
- Regulatory affairs and financial compliance.
- Performance measurement and process improvement.
- Policy development and implementation.
- Climate change and sustainability initiatives.

Within the Energy and Natural Resources industry, Jason has worked with numerous market participants across Canada and the U.S. Current and previous clients include Regulators, Agencies and Energy Ministries and a diverse cross-section of companies, from Clean Technology startups to large integrated Utilities and Resource companies.

Sample current and previous clients include:

- Regulators, Agencies and Energy Ministries - Ontario Energy Board, the Independent Electricity System Operator (and former Ontario Power Authority), Alberta Utilities Commission, National Energy Board, AB Energy, AB Environment and Sustainable Resource Development, British Columbia Utilities Commission, Manitoba Public Utilities Board.
- Energy Companies – Kinder Morgan, TransCanada Pipelines, Enbridge Gas Distribution, , Manitoba Hydro, SaskPower, SaskEnergy, Suncor, ENMAX, EPCOR, SNC-Lavalin T&D, Duke Energy, Pacific Gas & Electric, BC Hydro, Fortis BC, Gazifère, Oakville Hydro, Guelph Hydro, Sudbury Hydro.

Jason's Utilities and Public Sector experience spans a number of functional areas, including Revenue Management, Risk Management, Renewable and Traditional Generation (Thermal, Nuclear, Wind, Solar, Hydro, etc.), Sustainability, Transmission and Distribution, Regulatory and Witness Support, Supply Chain, Financial Operations, IT and other shared services. Organizational development work in the energy sector has included merger integration, governance and organizational structure reviews/implementations and operations/shared services reviews for regulatory and efficiency mandates. Jason's experience also includes system and process-based performance measure development and implementation for energy companies and regulatory bodies.

Jason holds a Bachelor of Arts in Political Science and Economics from York University, and obtained an MBA from the University of British Columbia. Jason recently sat on the Board of the Ontario Sustainable Energy Association and is a member of the Energy Working Group of the Greater Toronto Region Board of Trade. Jason has worked with many Boards and Senior Executive teams, and provides expert witness testimony before various provincial Energy regulators.



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