

**Régie de l'énergie**

**Gaz Métro – Application regarding the generic matter relating to the allocation of costs  
and rate structure of Gaz Métro**

**R-3867-2013, Phase 3A**

**Memorandum of the Industrial Gas Users Association**

**(IGUA)**



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## BACKGROUND

In the context of the 2013 rate case, the CFIB raised the question of the value of the operating cost used for the purposes of evaluating the profitability of the investment projects by suggesting that the amount used was possibly too low. At that time, Gaz Métro was using an operating cost of \$41 per residential client and \$59 per business client for purposes of the profitability analysis<sup>1</sup>.

In its proof, the CFIB argued that the rate was too low and that an independent analysis by Gaz Métro was required, for purposes of updating the marginal operating cost. Pending the results of this analysis, CFIB proposed that the amount of \$157 per client be used to evaluate the profitability of investment projects. This amount was derived from a benchmark study dealing with the productivity of production inputs produced by Dr. Lowry in R-3693-2009.

In its proof, the CFIB also proposed that the long-term marginal cost be used in the evaluation of investment projects instead of the short-term marginal cost as the profitability study was prepared on the basis of a 40-year timeline.

In its decision D-2013-106, the Régie indicated that it supported the position of the CFIB and would use the value of \$157 per client until Gaz Métro produces a precise evaluation. The Régie also requested that Gaz Métro update its evaluation of the marginal cost used for purposes of evaluating the profitability of system expansion projects.

*"[26] [TRANSLATION] The Régie shares the opinion of the CFIB on the use of long-term marginal costs. The profitability analysis of the development plan applies over a 40-year period; it therefore appears logical to use long-term costs. The Régie considers that, in the absence of a precise evaluation of the long-term marginal operating costs, it is appropriate to use the value of \$157 proposed by the CFIB.*

*[27] The Régie requests that Gaz Métro use a long-term marginal operating cost of \$157 in the profitability analysis of the residential and CII development plan. This value could be subject to review in a future rate application once the distributor has produced an assessment of these costs.'*<sup>2</sup>

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<sup>1</sup> R-3809-2012, C-FCEI-0027, page 15.

<sup>2</sup> D-2013-106, page 15.

In the context of the 2015 rate file, Gaz Métro presented a “Study of the Marginal Costs of Long-Term Service Delivery Applied to Profitability Analyses”<sup>3</sup>.

However, the Régie judged that the question of determining the marginal costs of long-term service delivery applied to profitability analyses should be dealt with concurrently with the rate structure review. As well, the Régie also judged that procedural equity required that Gaz Métro should be allowed access to an expert opinion when producing its proof. Consequently, in its procedural decision D-2015-048<sup>4</sup>, it postponed the study of that issue in this case.

In response to the Régie’s invitation, Gaz Métro retained the services of Dr. Edwin Overcast from the American firm Black & Veatch, as expert in this file. Dr. Overcast examined the study of the marginal operating cost initially submitted by Gaz Métro in the context of the 2015 rate case and proposed certain adjustments.

Therefore, the purpose of this application is to request approval of the method proposed by Dr. Edwin Overcast for determining the marginal cost of long-term service delivery and to authorize Gaz Métro to use such method in the profitability analysis of investment projects as well as in the profitability analysis of the development plan.

In its procedural decision D-2016-169, the Régie split the study of this issue into two steps, namely:

- the method of determining the marginal costs of long-term service delivery;
- the methodology of evaluating the profitability of system extension projects.

IGUA submits its comments and recommendations relating to the first subject.

## **1. BRIEF REGULATORY HISTORY**

The operating cost has not always been a factor considered in the evaluation of investment projects. Notably, during the 1980s and 1990s, no marginal operating costs were considered during the evaluation of projects. For example, the Nicolet project<sup>5</sup> in 1989 and the Victoriaville expansion project<sup>6</sup> in 1990 were evaluated on the basis of an operating cost per client of zero.

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<sup>3</sup> R-3879-2014, Gaz Métro-17, document 4, B-0154.

<sup>4</sup> Page 8.

<sup>5</sup> R-3170-89.

<sup>6</sup> R-3190-90.

In 1995, the Valcourt system extension project<sup>7</sup> did not take into account any operating costs relating to the addition of clients.

Between 1995 and 2000, several extension projects were realized pursuant to the government financing program referred to as the “*Canada-Quebec Infrastructure Works*”<sup>8</sup>. However, important cost overruns were observed for certain of these projects resulting in the Régie requesting, in its Decision D-96-21, explanations relating to the causes of the cost overruns and the failure to reach sales volume projections. The Régie also requested precisions regarding the parameters used for the evaluation of investment projects.

In response to this request, the distributor filed its motion R-3371-97 proposing, among other things, certain amendments regarding the parameters used in the evaluation of investment projects. The Régie rendered its decision regarding these parameters in its decision D-97-25. From that date on, the operating costs per client used in the context of evaluating investment projects were as presented in the following table.

Operating costs per client used in the context of evaluating the profitability of investments

	First year	Subsequent years
Residential clients	\$43	\$41
CII and major industries clients	\$248	\$59

Source: R-3879-2014, B-0154.

These amounts were used in evaluating the profitability of extension projects until they were all replaced by \$157 as a result of the 2013 rate case.

## 2. COMMENTS OF IGUA

### 2.1 Certain examples elsewhere in Canada

The approach adopted by the Régie for evaluating the profitability of extension projects is comparable to approaches found elsewhere in Canada in that it relies on the calculation of the “discounted cash flow” or DCF. According to this calculation, discounted future revenues are compared to the discounted future costs of a system extension project. The DCF result is normally subjected to a “test” that allows to set aside projects considered not profitable.

<sup>7</sup> R-3329-95.

<sup>8</sup> The Governments of Quebec and Canada had set up a program referred to as the “*Canada-Quebec Infrastructure Works*”, that aimed at allowing completion of projects having a structural impact or a growth generating effect on the economy of a region or a municipality.

For example, in British Columbia and in Ontario, the test consists of requiring a profitability index of 0.8 or 1.0, depending on the projects. The profitability index is calculated by the ratio of the net present value of cash inflows over the net present value of cash outflows.

*“Profitability Index (“PI”): A ratio of the net present value of cash inflows over the net present value of cash outflows resulting from a discounted cash flow analysis of a distribution new business project, or an accumulation of projects in the case of a portfolio.”<sup>9</sup>*

According to a recent study filed by the American engineering firm EES Consulting on behalf of FortisBC, this approach based on the calculation of a profitability index is the approach most used in Canada.

In Quebec, the profitability test is based on the internal rate of return (IRR) of a project that must be equal to or greater than the prospective capital cost (PCC). According to the results of the benchmarking prepared by EES Consulting, this approach would be most commonly used in the United States.

*“While there are differences in the actual tests used, all of the tests are attempting to quantify the benefits and costs associated with a new customer. FEI uses a discounted cash flow model and looks at the cost benefit ratio in determining the customer’s share of extension costs. This is the most common approach across Canada and in Washington State. Other utilities in the U.S. look at costs and benefits but use an internal rate of return calculation to determine the amount owed by the customer. Still others look at just the revenues over a set number of years as a proxy for the full cost-benefit approach.”<sup>10</sup>*

The administrative expenses relating to the addition of customers are taken into account in the calculation of the profitability index. These are operating and maintenance expenses that result from the addition of a customer and are updated on an annual basis. These expenses should not be confused with overhead costs which are attributed to extension projects.

FortisBC documents offer the following definition of these operating costs:

*“The O&M input to the Test is intended to capture the incremental O&M required to connect a new customer to the Company’s distribution system, derived by*

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<sup>9</sup> EB-2015-0179, Exhibit A, Tab 1, Appendix H, Page 2.

<sup>10</sup> FortisBC Energy Inc. (FEI), 2015 System Extension Application, Annexe A - FortisBC Energy Inc., System Extension Policy Review, June 2015, page 92

multiplying the O&M per customer by the number of customers. O&M is updated on an annual basis.”<sup>11</sup>

For 2014, the operating and maintenance expenditures per customer used for the purposes of evaluating profitability by FortisBC (FEI) and its subsidiary FortisBC Vancouver Island (FEVI) were as follows<sup>12</sup>:

**Table 4-2: Net Cash Inflows Economic Parameters**

<b>Economic Parameter FEI</b>	<b>2014</b>	<b>Economic Parameter FEVI</b>	<b>2014</b>
<b>O&amp;M per Customer</b>		<b>O&amp;M per Customer</b>	
<i>Residential</i>	\$79.00	<i>Residential</i>	\$58.00
<i>Commercial</i>	\$82.00	<i>Commercial</i>	\$82.00
<b>System Improvement (S I)</b>	\$0.24	<b>System Improvement (S I)</b>	\$0.40
<b>Property Tax Rate</b>	1.91%	<b>Property Tax Rate</b>	1.88%
<b>Income Tax Rate</b>	26.00%	<b>Income Tax Rate</b>	26.00%

In Ontario, policies regarding the evaluation of extension projects were put in place in 1998 by decision E.B.O. 188. The Ontario approach also includes the use of a profitability index calculated on the basis of discounted cash flows relating to investment projects. The operating and maintenance expenditures resulting from the addition of customers are also taken into consideration in the calculation of discounted cash flows. The following excerpt of Decision E.B.O. 188 presents the definition used of operating costs<sup>13</sup>.

(e) Operating and Maintenance Expenditures

The incremental costs directly associated with the attachment of new customers to the system will be included in the operating and maintenance expenditures.

The policies found in Decision E.B.O. 188 of the OEB do not mention which method is employed for the evaluation of that amount.

In addition, most of the utilities apply overhead costs to projects. These generally correspond to a percentage of the capital costs and take into account corporate expenses not directly related to the projects.

<sup>11</sup> FortisBC Energy Inc. (FEI), 2015 System Extension Application, Volume 1, section 2, page 20.

<sup>12</sup> FortisBC Energy Inc. (FEI), 2015 System Extension Application, 2014 Main extension report, section 4, page 18.

<sup>13</sup> E.B.O.188, page 14.

*“All of the utilities surveyed incorporate overhead costs into cost calculations. These overheads include administrative & general (A&G), management and engineering expenses. While FEI uses an overhead adder of 23%, the range for the utilities surveyed run from 9% up to an estimated 50-100%. Note that these will vary considerably based on the accounting practices of each utility and what is included in various accounts. Some utilities may include engineering and management costs in the prices for extensions while others may only look at material and direct installation costs.”<sup>14</sup>*

This brief overview allows to conclude that certain operating expenses (incremental operation and maintenance costs) are generally taken into account in the establishment of the profitability test for investment projects. These operating costs are recovered both by overhead costs and marginal operating costs.

Even if certain Canadian gas distributors publish the marginal operating costs applied when evaluating the profitability of extension projects, the method used for the estimation of this amount seems to be at their discretion and is not contemplated by the system extension policies.

## **2.2 The definition of marginal cost used for purposes of evaluating extension projects**

The profitability analysis for each of Gaz Métro’s extension project integrates what is referred to as an “operating cost” that reflects all costs resulting from the addition of a customer but excludes all costs related to capital as well as overhead costs related to the project. In its proof, Gaz Métro refers to an operating costs as being “[TRANSLATION] *the set of costs that can be linked to a customer once he or she has agreed to become a Gaz Métro customer. It includes the marginal costs the customer generates and the associated internal costs for the maintenance of its facilities and the services that are directly supplied*”<sup>15</sup>.

The term “long-term marginal cost” is also used in this file to designate the unit operating cost. However, IGUA understands that the cost to which this application refers does not correspond to the long-term marginal cost defined by economic theory but instead to additional operating costs (incremental operation and maintenance costs) not related to the capital and not taken into account in overheads costs, resulting from the addition of new customers following completion of the project.

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<sup>14</sup> FortisBC Energy Inc. (FEI), 2015 System Extension Application, appendix A, page 15.

<sup>15</sup> R-3879-2014, Gaz Metro 17, document 4, page 5.



In response to IGUA, Dr. Overcast confirms that this unit operating cost is different from the long-term marginal cost for purposes of establishing rates, which includes all of the distributor's production costs that vary over the long term.

*“Please remember that in economic theory marginal cost is the first derivative of a continuous total cost function with respect to output. Utility cost functions are not continuous because of lumpy additions, technological changes and sunk costs that render the long-run cost of market models impossible since no period is long enough to make all costs variable when plant is added discreetly over time to provide capacity. We have used a reasonable process to address these constraints but also recognize inadequacies of long-run marginal cost estimates of O&M.”<sup>16</sup>*

IGUA is of the opinion that the term attributed to the cost contemplated by this application, namely the “long-term marginal cost” may create confusion as it is a term commonly used in economic theory to designate the variation of the total production cost, including the cost of capital, resulting from a minute variation in the quantity produced. The estimate of \$157 used since 2013 when evaluating project profitability was derived from a study relating to the total productivity of the production factors.

IGUA understands, based on these observations, that the marginal cost in question in this file corresponds to supplementary operating expenses generated by the addition of customers at the time of completion of a particular extension project. These are operating expenses that are incurred over and above the “overhead costs” that are considered as capitalizable expenses in the evaluation of projects. The overhead costs take into account operating expenses not directly related to the project. The marginal operating cost therefore correspond to operating expenses in addition to overhead costs.

### **2.3 The costs that make up the marginal operating cost**

The list of costs that Gaz Métro proposes to consider in the establishment of the marginal operating cost is the same as that produced in the context of the 2015 rate case<sup>17</sup>. This list includes the costs relating to administrative services, the reading of meters as well as the inspection and maintenance of the connections. IGUA believes that it is necessary to ensure that these expenses are not also capitalized as overhead costs.

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<sup>16</sup> B-0207, page 2

<sup>17</sup> 17 R-3879-2014, B-0154, Gaz Metro 17, document 4, page 3.

In the 2013 annual report, Gaz Métro produced a description of the methodology used for calculating overhead costs attributed to investment projects. The calculation of these overhead costs is based on the operating expenses per cost centre.

*“[TRANSLATION] the annual amount of anticipated capitalized overhead costs is fixed. It corresponds to the addition of:*

*Operating costs per cost centre X capitalization rate of the cost centre.*

*Finally, an annual rate of capitalized overhead costs is established:*

*\$ anticipated capitalized overhead costs + 20% of anticipated capitalized depreciation of investments vehicles<sup>18</sup> (Emphasis added)*

In the context of the 2009 rate case, Gaz Métro produced a list of cost centres that are taken into account in the establishment of overhead costs (see schedule 1). This list shows that certain administrative expenses not directly related to the project are already taken into account in the profitability analysis. For example, these are expenses relating to accounting, cost control and certain administrative services, as well as expenses related to maintenance of the system. It must be ensured that the operating cost per customer does not include these amounts that are already taken into account in the capitalized overhead costs.

As indicated above, certain indirect costs are already taken into account in the profitability study through overhead costs. It is important that these costs not be added again to the marginal operating cost.

For example, the list of expenses subject to capitalized overhead costs, produced in schedule 1, includes several cost centres (column CC of the table attached) that relate to operation and maintenance of the connections, meters and pipeline. It must be ensured that the costs relating to the maintenance of the meters and connections are not considered both in the establishment of overhead costs and in the establishment of the marginal operating cost in the calculation of profitability .

IGUA believes that it is important to ensure that the costs considered for the establishment of the marginal operating cost not be also taken into account at the time of establishing the overhead costs allotted to each project. IGUA requests that the Régie require that such a demonstration be made.

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<sup>18</sup> R-3871-2013, B-0126, Gaz Métro 52, Document 1, page 39.

In this regard, IGUA suggests that the list of all the cost centres included in the establishment of the overhead costs rate be updated. It also suggests that the cost centres relating to the costs included in the calculation of the marginal operating cost be produced. Both lists could then be compared and, as the case may be, the list of costs included in the establishment of the marginal operating cost, could be adjusted.

## 2.2 The methodology used to estimate the marginal operating cost

For its estimation of the unit operating cost, Gaz Métro consulted various departments internally. Interviews were held with managers of various divisions to evaluate which cost centres are affected by the addition of new customers. Gaz Métro then came up with an estimate of the costs generated by the addition of customers. The result of this exercise was then reviewed by Dr. Overcast in the course of his mandate. He estimated that the approach used by Gaz Métro is valid and that it gives results that take into account three of the distributor's market segments as well as the evolution of the unit cost over time as they should.

Dr. Overcast proposes to withdraw certain costs from the list of costs to be considered in the establishment of the marginal operating cost given that those costs are not affected by the addition of new customers. Dr. Overcast indicates that most of the operating costs do not vary on the basis of the number of customers and did not intervene in the estimation of the operating cost.

*"most of the costs are fixed over wide ranges of customer additions and hence are not relevant to the added costs of attaching new customers."*<sup>19</sup>

As a result of this exercise, Gaz Métro proposes the establishment of limits, determining a minimum and maximum cost for the first year and subsequent years as well as for the three different markets segments.

### **Marginal operating cost**

Market	Year 1		Year 2 and following	
	Minimum 2014 cost	Maximum 2014 cost	Minimum 2014 cost	Maximum 2014 cost
Residential	\$55.88	\$409.33	\$9.10	\$369.60
CII	\$90.41	\$452.93	\$10.11	\$370.61
Major industries	\$390.70	\$735.21	\$326.74	\$702.12

Source: B-0209, page 2

<sup>19</sup> B-0207, page 2.

Gaz Métro specifies that each profitability analysis will be done using a marginal cost that reflects the specific characteristics of the new customers. The minimum cost for each item shall be used unless specific characteristics of the new customers dictate the use of the maximum limit.

In addition to the concerns set forth in section 2.1, IGUA supports the approach proposed by Gaz Métro for the establishment of the marginal operating cost. Using minimum and maximum limits, as proposed, as well as the segmentation of the distributor's three major markets, will lead to more exact profitability evaluations.

### **2.3 Impact of the proposed method**

In response to a request for information on the part of IGUA, Gaz Métro produced the detail of its profitability analysis relating to the system extension project in Drummondville (R-3991-2016) using the proposed approach for evaluating the marginal operating cost. This project relates to the extension of the system to connect one sole major consumer to the distribution system. The results of the analysis show that the proposed changes would have the effect of reducing the IRR of the project from 6.01% to 5.89%<sup>20</sup> and delay the tariff break-even point by approximately two years. In its evaluation, Gaz Métro substituted an operating cost of \$2,640 for the first year and \$2,560 for the following years to the \$157 cost per year that it is presently using. The simulation that was produced shows that an increase, even substantial, of the marginal operating cost had a relatively weak impact on the IRR and the other results of the profitability study.

The corporate overhead costs for the project are evaluated at \$235,445<sup>21</sup>, which represent 14.53% of the capital costs. IGUA submits that the sole customer concerned by this extension project in Drummondville is being attributed an amount that is already high for the corporate services. As expressed in Section 2.1, it is important, in the name of equity, to ensure that the additional \$2,560 covering operating expenses that are added to the \$235,445 already taken into account to cover overhead costs, not relate to the same expenses.

IGUA also incidentally submits that it does not understand why the marginal operating cost used for the simulation is greater than the maximum limit set at \$702.12 for major industries

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<sup>20</sup> B-0207, page 6.

<sup>21</sup> The corporate overhead costs correspond to 14.53% of the value of the fixed assets for that project.

customers indicated in the evidence.<sup>22</sup> I will request precisions on this matter in the course of the hearing.

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<sup>22</sup> B-0145, page 11.

SCHEDULE 1

The following extract is taken from R-3662-2008, Gaz Métro – 7, Document 3.1 Page 2 of 3:

The projection 5/7 2008 was elaborated in detail, in accordance with the operating expenses budget of each cost centre. The following table shows the calculation of the overhead costs so established:

**Analysis of projection 5/7 2008 of the corporate overhead costs**

CC	Description	Subjective expenses				COC30/09/2008	
		Salaries	Benefits	Others expenses	Total	% COC	\$ COC
10018	Control center	1,134,553	258,696	19,600	1,412,849	40.1%	566,552
10026	Accounting	659,892	184,550	(52,900)	791,542	14.1%	111,607
10027	Cost control	745,414	208,716	12,560	966,690	83.0%	802,353
12200	Administrative services and follow up	393,335	109,574	25,050	527,959	50.0%	263,979
14002	Engineering and environment	1,243,848	337,705	335,865	1,917,418	59.4%	1,138,946
14012	Transportation management	2,000,586	526,760	4,201,980	6,729,326	35.2%	2,368,723
14014	Procurement, goods and services Corp.	618,774	170,065	(99,350)	689,489	48.5%	334,402
14015	CNC and tools	559,503	153,229	351,745	1,064,477	80.0%	851,581
14016	Logistics	368,848	98,293	24,525	491,666	76.3%	375,142
14018	Administration East - Mtl	994,98	270,925	99,400	1,365,313	21.0%	286,716
14022	Administration Montérégie	616,747	171,388	38,851	826,986	30.8%	254,712
14026	Administration Estrie	533,755	145,692	48,783	728,230	17.2%	125,256
14031	Administration West - Mtl	83,215	268,643	51,770	1,303,628	33.1%	431,501
14035	Administration Laurentides	539,753	147,911	77,700	765,364	35.7%	273,235
14039	Administration Abitibi-Témiscamingue	272,190	70,781	70,396	413,367	2.5%	10,334
14057	Administration Québec	532,679	139,408	66,967	739,054	16.0%	118,249
14061	Administration Mauricie	481,697	129,471	62,250	673,418	7.8%	52,527
14065	Administration Saguenay Lac St-Jean	455,915	116,812	63,801	636,528	8.9%	56,651
14075	Administration metering	642,043	176,244	4,555	822,842	20.4%	167,860
	<b>Subtotal</b>	<b>13,777,735</b>	<b>3,684,864</b>	<b>5,403,548</b>	<b>22,866,147</b>	<b>37.6%</b>	<b>8,590,325</b>
12037	Construction Acq. Customer			72,089	72,089	99.4%	71,671
14003	Ing. Major projects			201,080	201,080	16.2%	32,535
14005	Geomatic administration			75,300	75,300	33.7%	25,399
14009	Metering			231,300	231,300	36.5%	84,471
14010	Qualité - recycling			45,850	45,850	79.8%	36,602
14020	System Mtl - East			123,612	123,612	21.7%	26,824
14021	Technical services East - Mtl			123,610	123,610	20.7%	25,587
14024	System Montérégie			145,120	145,120	15.2%	22,044
14025	Technical services Montérégie			66,927	66,927	45.5%	30,465
14028	System Estrie			171,243	171,243	17.5%	29,985
14029	Technical services Estrie			14,881	14,881	40.6%	6,045
14033	System West - Mtl			109,720	109,720	13.2%	14,527
14034	Technical services West - Mtl			109,720	109,720	30.3%	33,212
14037	System Laurentides			186,700	186,700	13.3%	24,775
14038	Technical services Laurentides			103,850	103,850	42.9%	44,572
14041	System Abitibi			90,400	90,400	30.1%	27,201
14044	System - System updating			103,400	103,400	73.1%	75,575
14045	Mechanical and piping - System upgrade			103,400	103,400	68.0%	70,271
14046	Soldering - System upgrade			74,500	74,500	67.6%	50,355
14048	Construction			57,540	57,540	83.0%	47,758
14052	Cathodic protection			112,122	112,122	63.1%	70,715
14053	Transmission			89,702	89,702	25.5%	22,901
14059	System Québec			218,100	218,100	18.5%	40,414
14060	Technical services Québec			27,600	27,600	66.4%	18,329
14063	System Mauricie			111,050	111,050	19.8%	21,999
14064	Technical services Mauricie			13,329	13,329	45.4%	6,053
14067	System Saguenay Lac St-Jean			118,385	118,385	14.1%	16,728
14068	Technical services Saguenay Lac St-Jean			28,484	28,484	22.0%	6,252
14080	Operations - East Group 3			123,612	123,612	19.5%	24,080
14081	Management major projects			6,700	6,700	100.0%	6,700
14085	Operations - Acq. Group 3 West			111,410	111,410	26.9%	29,992
	<b>Subtotal</b>			<b>3,170,736</b>	<b>3,170,736</b>	<b>32.9%</b>	<b>1,044,035</b>
	<b>Total</b>				<b>26,036,883</b>	<b>37.0%</b>	<b>9,634,360</b>