

# HEC MONTRÉAL

DRIVERS FOR HYDRO-QUÉBEC'S TARIFF L

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## Introduction

Low-cost, renewable, hydroelectricity produced by Hydro-Québec has historically been used as a driver for regional economic development by the provincial government, motivating the establishment of large, power intensive industries within its borders. This strategy has been successful with 47% of Quebec's power being used by industry, mostly in aluminium and pulp and paper, compared to 22% in Ontario.<sup>1</sup> Quebec's policy was able to attract a higher proportion of industry than other provinces, which helped develop Quebec's regions. While Hydro-Québec's electricity rates still remain among the lowest in North America, the government's energy strategy has evolved and focus is now being placed on net economic benefits that a company brings to Quebec in exchange for low, stable electricity rates.

Also changing the energy environment in Quebec is the impending end of a stretch of large surplus electricity from Hydro-Québec and the need to purchase larger quantities of non-heritage power supply. This fundamental change in supply mix is somewhat worrisome to large industrial customers since their rates are based on an average cost of supply. With increasing reliance on Hydro-Québec's supply as projects develop and demand from industrial customers increases, the need to be able to forecast and predict the general trend of the industrial tariff, the tariff L, is becoming more important.

While macroeconomic factors will have some influence over industrial rates and are to a certain extent, predictable, it seems that ultimately tariff L (as with all Hydro-Québec rates) is one that is more heavily reliant on political agendas rather than market drivers. This indicates that a company concerned with the stability of their energy costs, or a power-intensive company wanting to operate in Quebec, will have to build a comprehensive government relations strategy and master the bureaucratic system that seems to dominate energy decisions.

## Energy situation in Quebec

The energy sector in Quebec has undergone tremendous change over the past 50 years. In 1962, coal represented 11% of final energy consumption, oil 67%, natural gas 4% and hydroelectricity

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<sup>1</sup> (Pineau 2010, 7)

18%.<sup>2</sup> Ten years later, coal had practically disappeared from Quebec's energy profile and hydroelectricity continued to grow as Quebec tried to reduce its dependency on imported oil following the two oil crises of 1973 and 1979. Hydro-Québec continued to develop hydroelectric power and by the late 80s, over 1.2 million households had switched to electric heating and production surpluses had attracted energy-intensive business such as aluminium smelting.<sup>3</sup> With electricity accounting for a substantial portion of industrial and residential consumption, natural gas was becoming available to more areas of Quebec and industrial and commercial sectors were accounting for almost 90% of total natural gas consumption. Fuel oil had a monopoly in the transportation sector and a part of the residential sector. By 2002, electricity accounted for 38% of energy consumption in Quebec, fuel oil also accounted for 38% while natural gas and biomass was 14% and 10% respectively. Since 1962, a shift from fuel oil to hydroelectricity was made and the total demand for energy in Quebec has more than doubled.<sup>4</sup>

Quebec is Canada's largest electricity provider and the world's largest hydroelectricity producer. This is due largely from development that occurred between 1962-1995, when Hydro-Québec invested heavily in developing hydroelectric capacity; however from 1996-2006, the pace of development slowed considerably. This slowdown was felt as demand increased faster than supply forcing the government to import high-priced electricity from outside of Quebec. This situation was addressed in the Quebec government's 2006-2015 Energy Strategy which prioritized the resumption and acceleration of hydroelectric development in the province.

The government's strategy focused on four priority areas which included: launching new major hydroelectric projects totaling 4,500 MW; increasing electricity exports; using Hydro-Québec's rate advantage to the benefit of the province, and limiting the role of nuclear energy in the province by focusing on hydroelectric resources.<sup>5</sup> Over the past five years this strategy seems to have been maintained and the province now finds itself in a supply surplus until 2016.

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<sup>2</sup> (Gouvernement du Québec 2004, 12)

<sup>3</sup> Ibid.

<sup>4</sup> Ibid.

<sup>5</sup> (Gouvernement de Québec 2006, 14)

## Hydro-Québec

Hydro-Québec is a government-owned corporation which generates, transmits and distributes electricity in Quebec for residential, commercial, institutional and industrial usage. It is divided into four main branches: HQ Production generates electricity to supply the domestic market and sells excess output to the wholesale markets, HQ TransÉnergie operates the most extensive transmission system in North America, HQ Distribution provides service to residential and business customers, and HQ Équipement carries out engineering and construction work for hydroelectric developments in Quebec.<sup>6</sup> At December 31, 2010, the company's assets totaled \$66 billion; its long-term debt was \$39 billion, which included \$36.9 billion in debentures and medium-term notes that are guaranteed unconditionally and irrevocably by the Quebec government.<sup>7</sup> In 2010, Hydro-Québec recorded net income of \$2.5 billion—exceeding the projection stated in its 2009–2013 Strategic Plan by \$115 million. This strong performance allowed them to pay their sole shareholder, the Quebec government, a dividend of \$1.9 billion.<sup>8</sup>

## Hydro-Québec and Industry

Over 70% of total industrial consumption in Quebec is accounted for by two sectors: metal smelting and refining, and pulp and paper. The chemical and petrochemical industries are also major consumers.<sup>9</sup> This is explained by low electricity rates caused by production surpluses in the late 80s, which led to the controversial signing of “risk-sharing” agreements with companies such as Alcan and Alcoa which set the price of electricity based on various factors including the market price of aluminium and the value of the Canadian dollar.<sup>10</sup> This type of government-encouraged development has evolved over the past 20 years. Rather than strictly encouraging industry for the sake of regional development, the government, as demonstrated in their current Energy Strategy, is attempting to balance the needs of Quebec and those of industry so as to create a win-win situation. One of the priorities listed in the 2006-2015 Energy Strategy is that “electricity rates must be set at a level that promotes our interests and ensures proper

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<sup>6</sup> <http://www.hydroquebec.com/profile/index.html>

<sup>7</sup> [http://www.hydroquebec.com/financing/profil\\_financier.html](http://www.hydroquebec.com/financing/profil_financier.html)

<sup>8</sup> [http://www.hydroquebec.com/financing/fait\\_saillant.html](http://www.hydroquebec.com/financing/fait_saillant.html)

<sup>9</sup> (Gouvernement du Québec 2004, 9)

<sup>10</sup> (Couture 2008)

management of resources, thus improving price signals while protecting consumers and Quebec’s industrial structure”.<sup>11</sup>

The electricity allocated to major industrial customers continues to play a leading role in regional development; it is responsible for almost 2% of jobs and 22% of Quebec exports. According to the 2006-2015 Energy Strategy, “the Government will continue to use hydroelectricity to attract and support wealth-creating industries. However, the policy applied must be clear, and it must maximize economic benefits for the regions concerned and for Quebec as a whole.”<sup>12</sup> As such, the government reduced the limit below which Hydro-Québec is required to serve customers at the “L” tariff (large industry rate), from 175 MW to 50 MW, however the rate is not guaranteed. The rate is now reserved for new industrial development projects or renewal of electricity contracts that are likely to create jobs and wealth for the province. The rate set may be the published L rate or higher, depending on the scope of the economic benefits generated by the project.<sup>13</sup>

## How Hydro-Québec rates are set

The Régie de l’énergie was established under Bill 116 to “reconcile the public interest, consumer protection, and fair treatment of Quebec’s electricity carrier and energy distributors”.<sup>14</sup> The Régie regulates the rates and conditions for Hydro-Québec TransÉnergie and Distribution, as well as the supply, transportation, delivery and storage of natural gas.<sup>15</sup> The decisions of the Régie follow a process that includes public hearings and its decisions are final and without appeal. The Quebec government has no power to amend a decision made by the Régie, however as we shall see later on, they do have means to influence these decisions.<sup>16</sup>

Bill 116, enacted in June 2000, introduced the concept of “heritage pool electricity” (set at 165 TWh) which is dedicated supply reserved for Quebec markets.<sup>17</sup> This energy is supplied by Hydro-Québec Production to Hydro-Québec Distribution at a fixed average cost of 2.79¢/kWh.

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<sup>11</sup> (Gouvernement de Québec 2006, 11)

<sup>12</sup> (Gouvernement de Québec 2006, 42)

<sup>13</sup> Ibid.

<sup>14</sup> (Gouvernement du Québec 2004, 30)

<sup>15</sup> Ibid.

<sup>16</sup> (Gouvernement de Québec 2006, 23)

<sup>17</sup> (Gouvernement du Québec 2004, 31)

Any additional energy required by HQ Distribution must be purchased at “real cost” from HQ Production or on the open market by a tender process. The price charged to customers is an average of the supply mix obtained by HQ Distribution. Basing prices on averages takes into account the low cost of older generation facilities (which supply the heritage pool electricity) and higher costs of newer supplies which are either from newer, high cost facilities, other renewable energies such as wind power or biomass, or external markets. Prices therefore increase gradually, in line with costs and preserve the expectation in Quebec to maintain low electricity prices.<sup>18</sup> Bill 116 also gives provisions to promote the inter-financing of certain rate categories so as to give an added advantage to residential customers whereby they actually pay less than the actual average service cost for Hydro-Québec.<sup>19</sup>

Hydro-Québec, every summer, submits an application to the Régie asking for a change in rates and includes information to help with the decision such as demand forecasts, expenditure plans and revenue requirements. In the fall, public hearings are organized to allow all interested parties to comment on Hydro-Québec’s application. A few months later, the Régie issues its decision based on the public hearings and information provided by Hydro-Québec. The final rate reflects the amount of revenue required to cover the authorized expenditure and provide an acceptable rate of return that is set by the Régie.<sup>20</sup>

Hydro-Québec pays the government of Quebec a dividend annually which is set by the government following the submission of the current year’s financial data. A dividend will not be declared if it reduces the rate of capitalization of Hydro-Québec to less than 25%.<sup>21</sup> In order to encourage a more diverse energy portfolio and encourage investment in other renewable energies, Hydro-Québec is sometimes mandated by the government to purchase alternate types of electricity, such as wind or biomass, from local producers, further affecting the final rates charged to customers. Additionally, the price of the heritage pool, which currently accounts for 97% of Hydro-Québec’s supply, is legislated. So while the Régie is mandated to decide annual rates using relatively objective criteria and considering public opinions, the government does have means of influence on the final rates charged to customers.

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<sup>18</sup> Ibid.

<sup>19</sup> <http://www.canlii.org/en/qc/laws/stat/rsq-c-r-6.01/latest/rsq-c-r-6.01.html> Article 52.1, RSQ, chapter R-6.01

<sup>20</sup> Ibid.

<sup>21</sup> (Government of Quebec 2010, 15.1)

## Breakdown of tariff L

Hydro-Québec has various set rates which they charge their different classes of customers. The different rates are meant to ensure that consumption billing is fair based on comparable electricity consumption profiles and costs of providing services.<sup>22</sup> For each of these four types of customer (residential, commercial, institutional and industrial), a base rate is applied which reflects an average cost of heritage pool electricity, and additional purchased supply. On top of the base rate is an additional charge imposed by HQ TransÉnergie for transportation as well as from HQ Distribution for both distribution and customer service. An example of what is included in the residential rate can be seen in the table below.

Government of Quebec			
Régie de l'énergie		Hydro-Québec	
% of average rate	40%	HQ Production	Non-heritage pool supply (market price)
		Heritage Pool (97%) 3.18¢/kWh	(3%) 10.32¢/kWh
	25%	HQ TransÉnergie	
		Transport: 2.21¢/kWh	
23%	HQ Distribution		
	Distribution: 2.03¢/kWh		
12%	Customer service: 1.08¢/kWh		
Average service rate for residential customers: 8.81¢/kWh			
Note: the rate actually paid by residential customers in 2009 was 7.08¢/kWh due to the interfinancing between customer categories.			

Figure 1: Residential rate structure<sup>23</sup>

Tariff L is reserved for Hydro-Québec's large industrial customers who require 50+ MW of power. The rate is lower than others because it takes into account the lower distribution costs for large quantities of electricity. The L rate has two main components: \$12.18/kW for the subscribed load and 2.97 ¢/kWh as well as any credits or adjustments for supply at medium or high voltages.<sup>24</sup> The result is a rate that varies between 4-5¢/kWh, depending on the consumption pattern of the business concerned. There are currently 279 customers who qualify for this industrial rate, most of which are in primary metal processing, petrochemicals, and pulp and paper. However, more stringent qualification requirements based on the government's new

<sup>22</sup> <http://www.hydroquebec.com/majorcustomers/tarif-affaires.html>

<sup>23</sup> (Pineau 2010, 3)

<sup>24</sup> (Hydro-Québec Distribution 2011, 59)

energy strategy has made it so that since 1999, only one new business with a load over 50 MW has been given access to the L rate.<sup>25</sup>

## Market Dynamics

As previously mentioned, 97% of Hydro-Québec’s current supply is provided by the heritage pool generated by HQ Production and has been legislated for Quebec consumption at a fixed base rate of 2.79¢/kWh. Additional supply requirements must be purchased on the market and may either come from HQ Production at market pricing, from independent suppliers or alternative energy mandated by the government or from markets outside of Quebec.

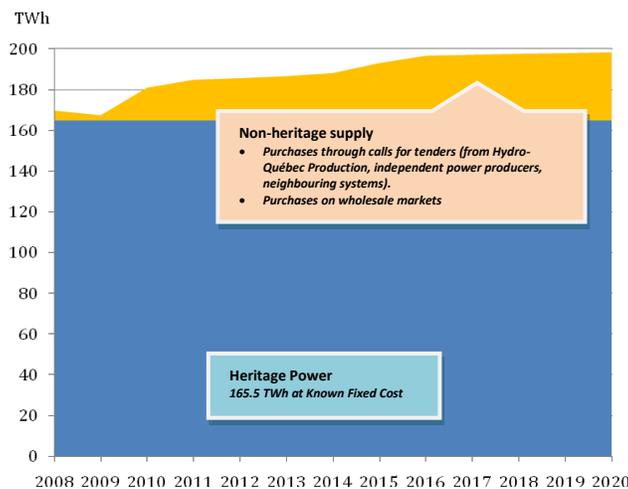


Figure 2: Non-heritage demand forecast<sup>26</sup>

Currently, Hydro-Québec finds themselves in a strong surplus situation, however by 2016, despite a forecasted net decrease in growth, they will need to find additional supply in order to satisfy peak demand and maintain service reliability criteria legislated by the Hydro-Québec Act.<sup>27</sup>

<sup>25</sup> (Gouvernement de Québec 2006, 24)

<sup>26</sup> (Hydro-Québec Distribution 2011, 16)

<sup>27</sup> (Hydro-Québec Distribution 2011, 31)

**TABLEAU 4.1-1**  
**BILAN EN ÉNERGIE AVANT DÉPLOIEMENT DES MOYENS DE GESTION EXISTANTS**  
**(EN TWh)**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Besoins visés par le Plan</b>	<b>184,8</b>	<b>185,6</b>	<b>186,6</b>	<b>188,1</b>	<b>193,0</b>	<b>196,6</b>	<b>197,1</b>	<b>197,6</b>	<b>197,9</b>	<b>198,3</b>
- Volume d'électricité patrimoniale	178,6	178,6	178,8	178,8	178,9	178,9	178,9	178,9	178,9	178,9
<b>= Approvisionnements additionnels requis au-delà du patrimonial</b>	<b>6,2</b>	<b>7,0</b>	<b>7,8</b>	<b>9,3</b>	<b>14,2</b>	<b>17,7</b>	<b>18,2</b>	<b>18,7</b>	<b>19,1</b>	<b>19,5</b>
<b>- Approvisionnements non patrimoniaux de long terme</b>	<b>7,1</b>	<b>13,7</b>	<b>16,4</b>	<b>18,5</b>	<b>20,0</b>	<b>21,4</b>	<b>21,4</b>	<b>21,4</b>	<b>21,4</b>	<b>21,5</b>
• TransCanada Energy	-	4,3	4,3	4,3	4,3	4,3	4,3	4,3	4,3	4,3
• HQP - Base et cyclable	5,3	5,3	5,3	5,3	5,3	5,3	5,3	5,3	5,3	5,3
• Biomasse (incluant Tembec)	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2
• Éolien I : 990 MW	1,4	2,3	2,6	2,6	2,6	2,7	2,6	2,6	2,6	2,7
• Éolien II : 2000 MW	0,1	1,4	3,3	4,7	5,5	6,3	6,3	6,3	6,3	6,3
• Éolien III : 500 MW	-	-	0,0	0,4	1,0	1,6	1,6	1,6	1,6	1,6
• Biomasse II ( 125 MW )	-	0,0	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4
• Petite hydraulique ( 150 MW )	0,1	0,1	0,3	0,6	0,7	0,7	0,7	0,7	0,7	0,7
<b>= AAR (Surplus) avant déploiement</b>	<b>(0,9)</b>	<b>(6,7)</b>	<b>(8,6)</b>	<b>(9,3)</b>	<b>(5,9)</b>	<b>(3,7)</b>	<b>(3,2)</b>	<b>(2,7)</b>	<b>(2,3)</b>	<b>(2,0)</b>

37%

Figure 3: Hydro-Québec Distribution energy balance sheet 2011-2020<sup>28</sup>

HQ Distribution in their 2011-2020 Supply Plan forecasts an overall slowdown in demand due mainly to lower demand from industry (notably pulp and paper), provincial energy efficiency, and the expected rise in the heritage pool rates as announced during the 2010-2011 provincial budget.<sup>29</sup> Population growth is expected to slow and the aging population is expected to negatively impact Quebec's economic growth. While many other sources echo these sentiments, it is interesting to note that HQ Distribution's forecast appears to be quite conservative as it is in many cases well below the average of other forecasts (see Figure 4). This trend can also be seen in its population growth and housing construction forecasts.

<sup>28</sup> Ibid.

<sup>29</sup> (Hydro-Québec Distribution 2011, 7)

**TABLEAU 2A-3  
COMPARAISON DES PRÉVISIONS ÉCONOMIQUES AU QUÉBEC**

Prévisionniste	(date de la révision)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>PIB du Québec (\$ de 1997), croissance en %</b>												
Hydro-Québec Distribution	(Août 2010)	3,0	2,3	2,4	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8
Moyenne du consensus		2,9	2,6	2,6	2,5	2,0						
Conference Board of Canada	(Avril 2010)	2,6	2,3									
Mouvement Desjardins	(Juin 2010)	3,0	2,5	2,0	2,0	1,5						
Banque de Montréal	(Juin 2010)	2,9	2,8									
Banque TD	(Juillet 2010)	3,6	2,2									
Banque Royale du Canada	(Juin 2010)	3,5	3,3									
Banque Nationale du Canada	(Été 2010)	2,8	2,3									
Banque Scotia	(Juin 2010)	3,0	2,3									
Global Insight	(Mai 2010)	2,6	3,1	3,1	3,0	2,4						
SCHL	(2e trim. 2010)	2,6	3,0									
Ministère des Finances du Québec	(Juin 2010)	2,3	2,6									
<b>Mises en chantier au Québec, en milliers d'unités</b>												
Hydro-Québec Distribution	(Août 2010)	48,5	39,0	40,0	37,0	35,0	33,0	32,0	31,0	30,0	29,0	28,0
Moyenne du consensus		48,1	43,8	48,0	47,2	45,8						
Conference Board of Canada	(Avril 2010)	45,5	39,7									
Mouvement Desjardins	(Été 2010)	49,0	46,0	43,0	42,0	40,0						
Banque de Montréal	(Juin 2010)	47,0	44,5									
Banque TD	(Juillet 2010)	49,3	41,1									
Banque Royale du Canada	(Juin 2010)	49,8	44,8									
Banque Nationale du Canada	(Été 2010)	47,0	41,0									
Banque Scotia	(Juillet 2010)	50,0	44,0									
Global Insight	(Mai 2010)	52,5	52,6	53,1	52,5	51,6						
SCHL	(2e trim. 2010)	47,3	41,5									
Ministère des Finances du Québec	(Juin 2010)	44,8	42,7									
<b>Revenu personnel disponible (\$ de 2002), croissance en %</b>												
Hydro-Québec Distribution	(Août 2010)	2,2	1,5	1,2	1,5	1,5	1,5	1,5	1,4	1,4	1,4	1,4
Conference Board of Canada	(Avril 2010)	2,0	-0,1									
Mouvement Desjardins	(Été 2010)	1,8	2,2									
Ministère des Finances	(Juin 2010)	-	1,1									
<b>PIB manufacturier du Québec (\$1997), croissance en %</b>												
Hydro-Québec Distribution	(Août 2010)	4,0	2,0	2,4	2,3	2,2	2,1	1,9	1,8	1,8	1,8	1,8
Conference Board of Canada	(Avril 2010)	1,3	3,6									
<b>PIB tertiaire du Québec (\$ de 1997), croissance en %</b>												
Hydro-Québec Distribution	(Août 2010)	2,7	2,4	2,6	2,4	2,2	2,2	2,1	2,0	2,0	2,0	2,0
Conference Board of Canada	(Avril 2010)	2,7	2,4									

Note : le Distributeur dépose la prévision du Conference Board of Canada pour les années 2012 à 2014 sous pli confidentiel.

Figure 4: Comparison of HQ Distribution economic forecasts<sup>30</sup>

On the supply side, the main market drivers that will impact the cost of the non-heritage power that HQ Distribution will have to purchase are the following:

## Natural Gas

The main substitutes for hydroelectricity in Quebec are natural gas and oil. Historically, natural gas has been used mainly by industry; however usage is increasing in residential use especially for heating. Recent developments in shale gas have radically changed the natural gas market in North America, increasing stocks and allowing for low prices despite higher demand in 2010. However, in March 2011, a temporary moratorium on the use of chemical fracturing during shale gas drilling was called in Quebec pending a detail environmental assessment. While this delay impacts shale gas development in Quebec, there is still healthy production in other parts of the country and a healthy distribution network to transport it to industry in Quebec. Overall, long-

<sup>30</sup> (Hydro-Québec Distribution 2010, 52)

term pricing is expected to remain relatively stable with increased supply coming from increased shale gas production counterbalancing rising demand coming from industry. Generally, it is expected that the Henry Hub wholesale price for natural gas will rise gradually from 2011-2025, which is partially explained by inflation.<sup>31</sup> However, environmental tightening surrounding shale gas production could push prices further in the long term, and ultimately, while a substitute to hydroelectricity, still remains more expensive than hydroelectricity.

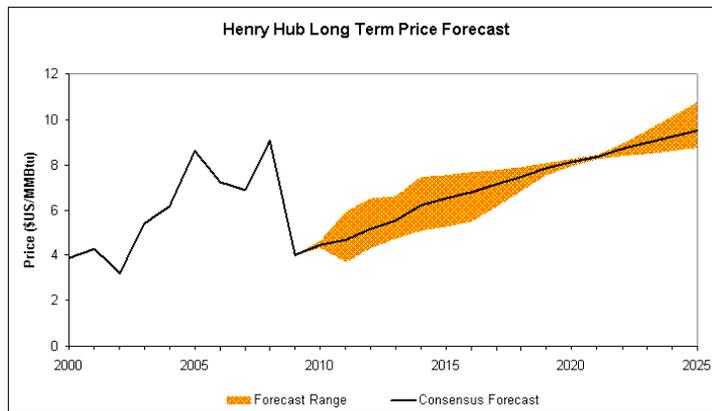


Figure 5: Long term Henry Hub natural gas price forecast<sup>32</sup>

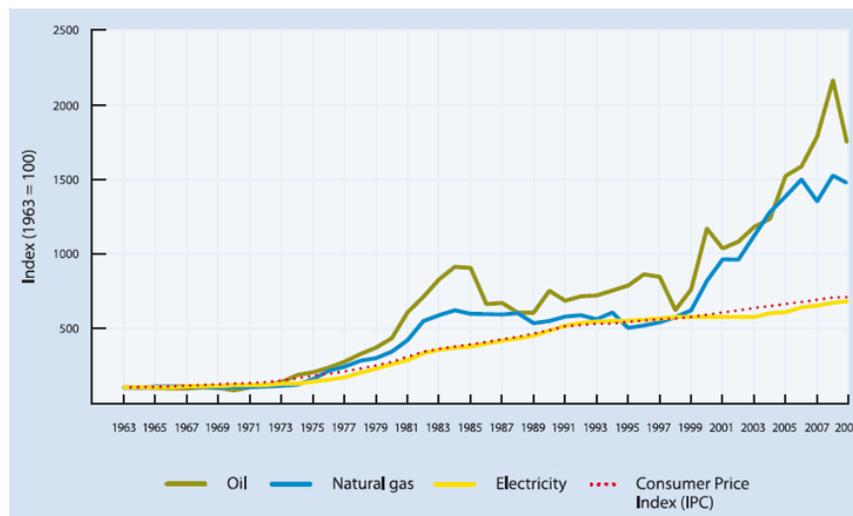


Figure 6: Historic pricing Henry Hub natural gas<sup>33</sup>

<sup>31</sup> <http://www.nrcan.gc.ca/eneene/sources/natnat/shocou-eng.php>

<sup>32</sup> Ibid.

<sup>33</sup> (Hydro-Québec Distribution 2010, 54)

## Oil

In their latest supply plan, HQ Distribution did not believe that fuel prices could be maintained above 80 US\$/barrel over the long term mostly because of the slow economic recovery in the U.S. following the global financial crisis, the sovereign debt crisis in Europe and the expected slowdown in Chinese growth.<sup>34</sup> This forecast was made prior to the crisis in the Middle East and overall is no longer particularly valid. Going forward, increasing global demand and higher cost supply will support high long-term prices. Current cost effective supply is being depleted in the Western world and is requiring a higher environmental risk. Further, reliance on external supply has become more risky despite OPEC's pledge to maintain current output. BRIC countries, especially China, are driving demand as vehicle ownership increases. As the world recovers from the global financial crisis, normal world economic growth is also fueling demand.

Ultimately, pricing has become increasingly volatile and is being driven by factors outside of the realm of influence of Quebec. This, coupled with growing environmental concerns and greenhouse gas emission targets means that reliance on fuel is decreasing, as has already been seen historically in Quebec, and is now limited mostly to the transport industry. So while oil prices are a factor influencing hydroelectricity prices based on its contribution to inflation, there should not be a direct impact of fluctuating oil prices on hydroelectricity prices.

## Electricity

As it stands now, the price of Hydro-Québec's electricity is expected to increase by 2.5% in 2012 and 2013, as per HQ Distribution's 2009-2013 strategic plan. As part of the 2010-2011 budget, the Quebec government legislated a progressive 1¢ hike from 2014 to 2018 to the price of heritage power, which will then be adjusted for inflation. The increases for heritage power however, will not impact tariff L customers.<sup>35</sup>

Aside from domestic markets, Hydro-Québec can purchase additional supply from Ontario, New England, New York and New Brunswick. What is interesting about these external markets, especially New England and New York, is that they are counter-cyclical to Quebec's. In winter

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<sup>34</sup> (Hydro-Québec Distribution 2010, 54)

<sup>35</sup> (Hydro-Québec Distribution 2010, 57)

months, when Quebec requires more power in order to satisfy demand, neighbouring markets have excess supply to sell. This is one of the reasons that Hydro-Québec opts to purchase supply externally rather than build additional capacity in the province at a potentially higher cost than these purchases.<sup>36</sup>

**TABLEAU 4B-4**  
**TAUX DE RÉSERVE DISPONIBLES EN HIVER ET EN ÉTÉ**  
**DANS DIFFÉRENTS RÉSEAUX VOISINS**  
**(EN MW)**

Zones de réglage voisines	Réserve de référence (1)	Réserves anticipées horizon 2014 (1) (2)	
		Période d'été	Période d'hiver
Maritimes	15%	> 100%	51%
New York	18%	28 - 32%	73 - 78%
Nouvelle-Angleterre	15%	22 - 28%	59 - 67%
Ontario	18%	25 - 30%	36 - 47%

(1) Données tirées de la référence 1.1, pages 30-35

(2) Les marges haute et basse des taux de réserve sont calculées à partir de différentes hypothèses quant aux ressources disponibles à l'horizon 2014.

Figure 6: Energy availability on external markets<sup>37</sup>

While there are important quantities of energy availability and a counter-cyclical pull on prices, HQ Distribution is limited by the physical infrastructure of transmission lines and connection points for what can actually be purchased (and equally sold) from external markets. The capacity available for transmission between markets (based stability and voltage limits, safety, authorized capacity etc.) is listed in Figure 7.

**TABLEAU 4B-5**  
**CAPACITÉ DES INTERCONNEXIONS DISPONIBLE À LA POINTE**  
**EN MODE IMPORTATION**

Capacité d'interconnexion à partir de chacun des réseaux (en MW)	
Maritimes	435 MW
New York	1100 MW
Nouvelle-Angleterre	0 MW
Ontario	1530 MW
Énergie La Lièvre	150 MW
Labrador	265 MW

Figure 7: Transmission capacity<sup>38</sup>

<sup>36</sup> (Hydro-Québec Distribution 2010, 179)

<sup>37</sup> (Hydro-Québec Distribution 2010, 183)

It is difficult to determine to what extent the prices of neighbouring markets would impact Hydro-Québec rates since it would depend on how much energy is required, what time of year it is needed, the exchange rate, and the location of the market that is being purchased from. Hydro-Québec Distribution in the past has been able to negotiate competitive rates from neighbouring markets in the same range of what it would have cost from HQ Production. However, based on the estimates of prices charged to large power industries (whose rates could be comparable to prices paid by HQ Distribution), it is possible to get an idea of the order of magnitude difference there is between prices in Quebec and neighbouring markets. Detailed estimates of pricing for additional blocks needed by Hydro-Québec could be made using known data such as the current supply mix, demand forecasts and price expectations.



- 1) For a monthly consumption of 3,060,000 kWh and a power demand of 5,000 kW; rates in effect April 1, 2010.
- 2) In Canadian dollars.

Figure 8: Average prices for large-power customers in North American markets

<sup>38</sup> (Hydro-Québec Distribution 2010, 186)

## Industry

Hydro-Québec's current demand forecast for large business is an average annual growth of 1% from 2010-2020.<sup>39</sup> The growth is driven mainly by the aluminium sector which has a number of expansion projects in the pipeline for 2015-2016. The steel and mining sectors are also experiencing growth due to increased global demand. Pulp and paper however has been experiencing a deceleration in growth which is expected to continue in the long run. The modest growth forecasted by Hydro-Québec may however be conservative given the methodology used to collect data.

Demand forecasting for large power is based on information provided by industry which may not necessarily reflect the full picture for each company. There may be projects in the pipeline that companies are not yet in a position to discuss with Hydro-Québec. Demand from industry is also dependant on the state of their own private installations dedicated to their own production. Currently there are 87 private energy installations in service, under construction or in development with a total capacity of 1,410 MW, of which 7.1 MW was sold to Hydro-Québec in 2010.<sup>40</sup> The reliability of these dams to provide the required output to industry will ultimately affect demand to Hydro-Québec. For example, low water levels at Rio Tinto Alcan's hydroelectric facilities in the Saguenay required them to purchase additional supply from Hydro-Québec in 2010. Hydro-Québec was in a surplus situation in 2010, and was able to accommodate the request, however the fact that they will find themselves in a tighter supply situation as of 2016, can ultimately negatively affect prices, especially the industrial tariff, if industry demand suddenly increases or if the private installations are not sufficient to satisfy demand.

## Government

So far, the potential market drivers for Hydro-Québec rates have been surveyed. They include the market conditions for natural gas, fuel and electricity, both in Quebec and in neighbouring

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<sup>39</sup> (Hydro-Québec Distribution 2011, 16)

<sup>40</sup> [http://www.hydroquebec.com/transenergie/fr/commerce/pdf/schema\\_localisation.pdf](http://www.hydroquebec.com/transenergie/fr/commerce/pdf/schema_localisation.pdf)

market. The state of Quebec's industry and the private energy sources currently in place to satisfy some of that demand is also a major driver. These factors will mostly affect the average price of the additional supply which Hydro-Québec must purchase over and beyond the heritage power block, however there is another major driver which will ultimately be the deciding factor in what final price is charged to the Quebec population: the government.

As we have seen, the Quebec government has direct influence on the Hydro-Québec rates through its ability to legislate purchase requirements from small or developing renewable energy producers such as wind installations or biomass producers. A portion of these purchases are driven by regional development strategies of the government, including the recently announced Northern Plan. These purchases are usually mandated at a cost above market price and will contribute to driving up average rates. The government also has direct influence over the heritage power rates as seen in the increases set in price in the 2010-2011 budget. The Régie de l'énergie has the final say on rates set by HQ TransÉnergie and HQ Distribution, however these can be influenced by government legislation regarding sourcing of the non-heritage supply. The level of influence that the government has on the final rates of Hydro-Québec seems to marginalize the force of the market drivers that should be impacting prices. This suggests that a company that is dependent on stable and low rates from Hydro-Québec, such as Alcoa or Rio Tinto Alcan, needs to focus primarily on government relations in order to ensure stability.

## Regional development

The appropriate intervention from government in Hydro-Québec's rates balances several political issues. Pierre-Olivier Pineau identifies six of them: national identity, regional and industrial development, public finances, economic efficiency, environment and equality.<sup>41</sup> The issue at play that will ultimately affect tariff L and large industry is the current governmental view on regional and industrial development. There has been a shift in government strategy from attracting power intensive industry to Quebec in order to develop the regions with low power rates as seen in the late 1980s, to evaluating the full spectrum of impact that a company's presence will have a maximum benefit to Quebec as a whole.

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<sup>41</sup> (Pineau 2010, 5)

There has been ongoing debate regarding whether tariff L-type contracts are beneficial to the province since the market price that could be obtained by exporting that same power appears to be so much higher. Closer analysis shows that if the full spectrum of benefit that a large corporation brings to the province is factored in (jobs, investments, ancillary industries) that the price that Quebec obtains per kWh is more than double what is possible on the market (see Figure 9).<sup>42</sup>

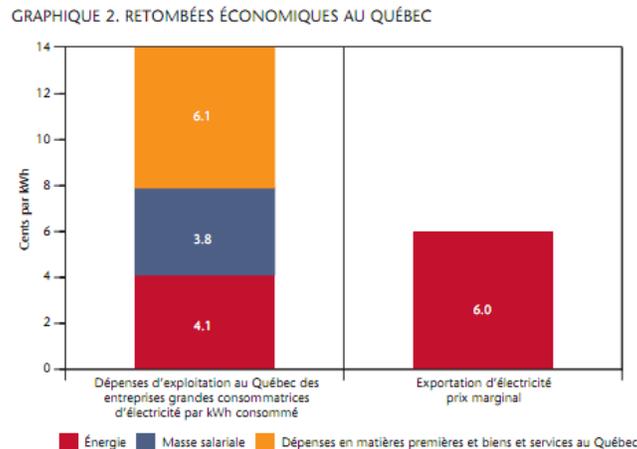


Figure 9: Full economic benefit of large power vs. potential export price

## What does this mean for tariff L?

Given the structure for how rates are set at Hydro-Québec and what market drivers and government factors are at play, especially for large power industrial rates, what exactly does it mean for a company who is largely dependent on the energy provided? Overall, the outlook is positive; the structure currently put in place by the government with the majority of supply accounted for by the heritage block provisions sends a strong message that electricity prices will remain stable for major electricity consumers.<sup>43</sup>

Planned heritage block price increases are generally announced early on by government and industry, and by maintaining robust government relations strategies, a company should have early and clear visibility on these plans. The remaining non-heritage supply can also be

<sup>42</sup> (Boulanger 2008, 62)

<sup>43</sup> (Gouvernement de Québec 2006, 24)

forecasted by companies by comparing Hydro-Québec's forecasted demand with their own development pipeline, modeling price scenarios for wind and biomass contracts already in place, estimating market purchase price for the remaining block to be purchased and forecasting economic growth in Quebec. Given the relatively small size of market purchases, the margin of error will be small on forecasts and because it is a crown corporation, tender submissions and pricing information is usually available in the public forum through the Régie de l'énergie.

Overall, the energy-intensive industries that were fortunate enough to set up shop in Quebec during the push for regional development, and contribute to the overall benefit of the province, will likely be insulated from drastic energy policies in order to maintain economic stability in the province. However, given the new energy strategy in play with the Quebec government, it has become increasingly difficult to benefit from Quebec's low-cost energy without contributing to the province as a whole. Sound government relations are needed by any industry in Quebec who is heavily reliant on energy in order to ensure that the government continues to maintain an environment that prioritizes industrial development.

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