

RÉGIE DE L'ÉNERGIE

DOSSIER : R-3669-2008 / Phase 2

APPENDIX A RÉVISÉ DÉPOSÉ AU SOUTIEN DU RAPPORT DE
WILLIAM K. MASHALL INTITULÉ
« IMBALANCE PRICING AND RELATED ISSUES RELATIVE
TO FERC ORDER 890
DÉPOSÉ LE 28 SEPTEMBRE 2010

Régie de l'énergie

DOSSIER: R-3669-2008 phase 2

DÉPOSÉE EN AUDIENCE

Date: 18/04/2011

Pièces n°: C-6.94 en liasse E137.

Le 17 avril 2011

APPENDIX A

Energy Imbalance Charges HQT's proposal vs Alternative proposal

HQT's proposal

For a customer who is short on its schedule, the highest of:

- 1) NY Zone M less 0.16 \$/MWh;
- 2) ISO-NE (Phase II) less 6.00 \$/MWh;
- 3) HOEP and;
100 \$Ca/MWh (for bands 2 and 3 only)

For a customer who is long on its schedule, the lowest of:

- 1) NY Zone M plus 4.50 \$/MWh;
- 2) ISO-NE (Phase II) plus 8.00 \$/MWh;
- 3) HOEP plus 4.00 or 5.00 \$Ca/MWh (off-peak or on-peak);
25 \$Ca/MWh (for band 2 only) and;
0 \$Ca/MWh (for band 3 only)
(all converted in Canadian dollars at the Bank of Canada noon rate)

The map on the next page shows the interconnections in Québec. It has been taken from the HQT OASIS and slightly modified to show the three (four) selected interconnections and the Alcan point. Note for this historical analysis the LAW-HQT interconnection was used but following inservice of the new ON-HQT HVDC interconnection it should be used instead of LAW-HQT.

Alternative proposal

A Proxy price applies for both incremental and decremental cost.

When Hydro Québec is a net exporter out of Québec:

The proxy Québec price is equal to the lowest hourly price, after adjustments for transmission fees, of the markets accepting exports using the market prices for the following three interconnection paths: HQT-NE, HQT-MASS and HQT-ON (HQT-LAW).

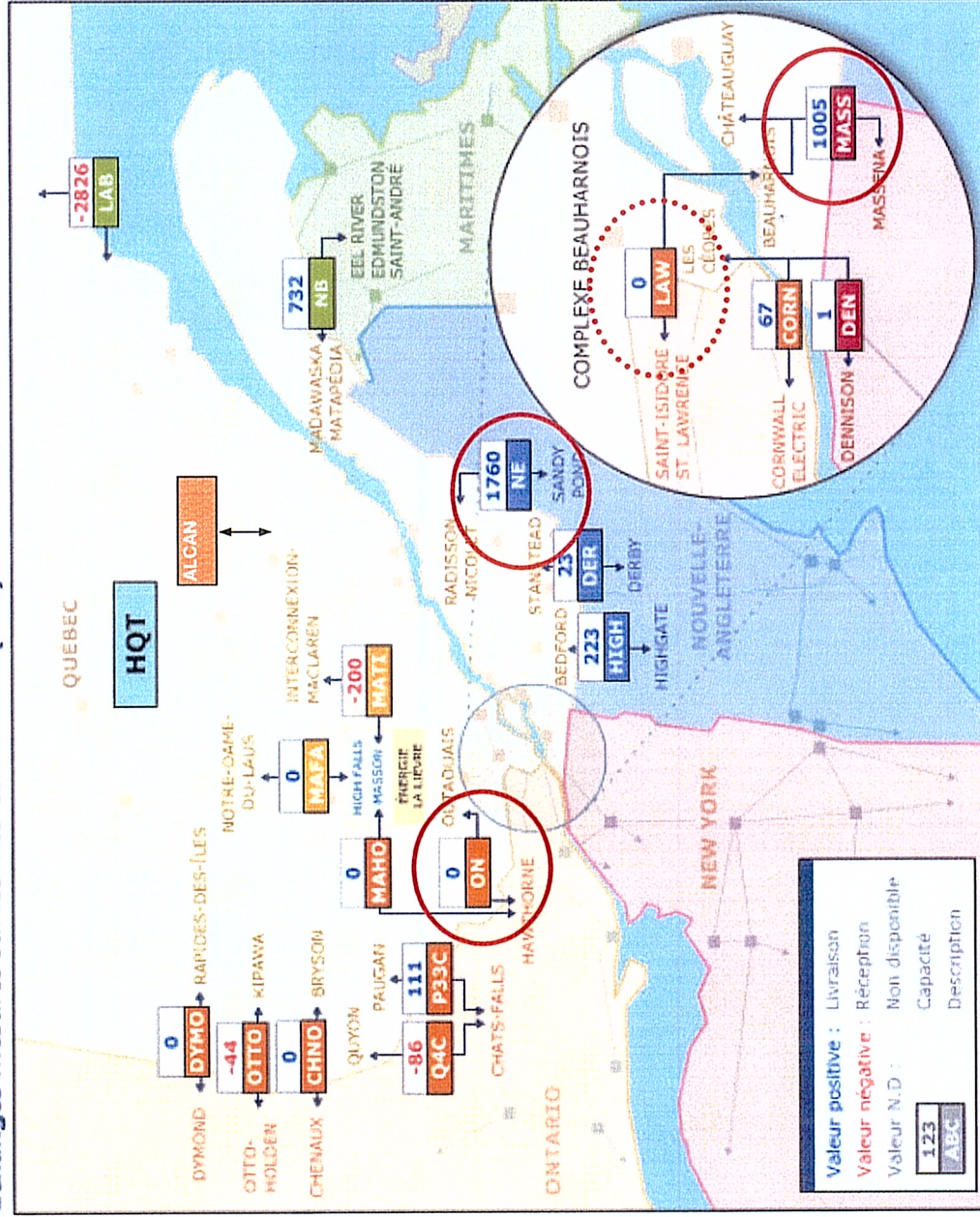
When Hydro Québec is a net importer into Québec:

The proxy Québec price is equal to the highest hourly price, after adjustments for transmission fees, of the markets providing imports using the market prices for the following three interconnection paths: NE-HQT, MASS-HQT and ON-HQT (LAW-HQT)
(all converted in Canadian dollars at the Bank of Canada noon rate)

Schéma des chemins

Échanges mesurés sur les interconnexions (MW)

2009/06/16 8:53 EDT - Mise à jour chaque minute



Numerical examples

(sources: HQT OASIS, Bank of Canada and ISOs)

1) For hour ending 11, on July 8th 2008

Bank of Canada noon rate:	0.9983	CAD/USD
NYISO Zone M	148.66	\$US/MWh
ISO-NE Phase II	285.57	\$US/MWh
HOEP	215.21	\$Ca/MWh
HQT point to point rate with applicable ancillary services	8.26	\$Ca/MWh

Total exports out of the HQT point:	3775	MW
Total imports into the HQT point:	500	MW

(2366 MW for HQP and/or HQD only)
(0 MW for HQT and/or HQD only)

For that hour, using the basic transmission schedules, as available on the HQT OASIS, we saw that Hydro Québec was a net exporter during that hour. They were exporting on the HQT-NE, on the HQT-MASS and on the HQT-LAW paths for that hour. That was an on-peak hour.

HQT's proposal

If the transmission customer is short:

Max of	In native currency			In \$Ca/MWh		
	Price	Adjustment	Subtotal	Subtotal	HQT rate	Final price
1) NY	148.66	-0.16	148.50	148.75	8.26	140.49
2) ISO-NE	285.57	-6.00	279.57	280.05	8.26	271.79
3) HOEP	215.21	0.00	215.21	215.21	8.26	206.95
				=>	271.79	\$Ca/MWh

If the transmission customer is long:

Min of	In native currency			In \$Ca/MWh		
	Price	Adjustment	Subtotal	Subtotal	HQT rate	Final price
1) NY	148.66	4.50	153.16	153.42	N/A	153.42
2) ISO-NE	285.57	8.00	293.57	294.07	N/A	294.07
3) HOEP	215.21	5.00	220.21	220.21	N/A	220.21
				=>	153.42	\$Ca/MWh

Alternative proposal

(using the same exit / transmission fees than those used by HQT)

As Hydro Québec is a net exporter for this hour, with exports made on the HQT-NE, on the HQT-MASS and the LAW-HQT paths, the calculations are made as follows:

Min of	In native currency			In \$Ca/MWh		
	Price	Adjustment	Subtotal	Subtotal	HQT rate	Final price
1) NY	148.66	-0.16	148.50	148.75	8.26	140.49
2) ISO-NE	285.57	-6.00	279.57	280.05	8.26	271.79
3) ONT	215.21	0.00	215.21	215.21	8.26	206.95
				=>	140.49	\$Ca/MWh

Flows per market

(in MW)	Exports	Imports	Nets
NYISO	1156	0	-1156
ISO-NE	1010	0	-1010
Ontario	200	0	-200
Others	1409	500	-909
Total	3775	500	-3275

2) For hour ending 8, on January 16th 2009

Bank of Canada noon rate:	0.7973	CAD/USD
NYISO Zone M	95.67	\$US/MWh
ISO-NE Phase II	99.40	\$US/MWh
HOEP	403.47	\$Ca/MWh
HQT point to point rate with applicable ancillary services	8.26	\$Ca/MWh
Total exports out of the HQT point:	979	MW
Total imports into the HQT point:	2082	MW

(82 MW for HQP and/or HQD only)
(1385 MW for HQP and/or HQD only)

For that hour, using the basic transmission schedules, as available on the HQT OASIS, we saw that Hydro Québec was a net importer during that hour. They were importing on the NE-HQT, on the MASS-HQT and on the LAW-HQT paths for that hour. That was an on-peak hour.

HQT's proposal

If the transmission customer is short:

Max of	In native currency			In \$Ca/MWh		
	Price	Adjustment	Subtotal	Subtotal	HQT rate	Final price
1) NY	95.67	-0.16	95.51	119.79	8.26	111.53
2) ISO-NE	99.40	-6.00	93.40	117.15	8.26	108.89
3) HOEP	403.47	0.00	403.47	403.47	8.26	395.21
				=>	395.21	\$Ca/MWh

If the transmission customer is long:

Min of	In native currency			In \$Ca/MWh		
	Price	Adjustment	Subtotal	Subtotal	HQT rate	Final price
1) NY	95.67	4.50	100.17	125.64	N/A	125.64
2) ISO-NE	99.40	8.00	107.40	134.70	N/A	134.70
3) HOEP	403.47	5.00	408.47	408.47	N/A	408.47
				=>	125.64	\$Ca/MWh

Alternative proposal

(using the same exit / transmission fees than those used by HQT)

As Hydro Québec is a net importer for this hour, with imports made on the NE-HQT, on the MASS-HQT and the LAW-HQT paths, the calculations are made as follow:

Max of	In native currency			In \$Ca/MWh		
	Price	Adjustment	Subtotal	Subtotal	HQT rate	Final price
1) NY	95.67	4.50	100.17	125.64	N/A	125.64
2) ISO-NE	99.40	8.00	107.4	134.70	N/A	134.70
3) ONT	403.47	5.00	408.47	408.47	N/A	408.47
				=>	408.47	\$Ca/MWh

Flows per market

(in MW)	Exports	Imports	Nets
NYISO	0	955	955
ISO-NE	82	82	0
Ontario	0	348	348
Others	897	697	-200
Total	979	2082	1103

3) For hour ending 16, on April 16th 2009

Bank of Canada noon rate:	0.8290	CAD/USD
NYISO Zone M	20.69	\$US/MWh
ISO-NE Phase II	31.92	\$US/MWh
HOEP	36.24	\$Ca/MWh
HQT point to point rate with applicable ancillary services	8.26	\$Ca/MWh
Total exports out of the HQT point:	2236	MW
Total imports into the HQT point:	747	MW

(1041 MW for HQP and/or HQD only)
 (184 MW for HQP and/or HQD only)

*: *excluding the 3000 MW scheduled on the LAB-HQT path by HQ to serve the native load*

For that hour, using the basic transmission schedules, as available on the HQT OASIS, we saw that Hydro Québec was a net exporter during that hour. They were exporting on the HQT-NE and on the HQT-MASS paths for that hour. That was an on-peak hour.

HQT's proposal

If the transmission customer is short:

Max of	In native currency			In \$Ca/MWh		
	Price	Adjustment	Subtotal	Subtotal	HQT rate	Final price
1) NY	20.69	-0.16	20.53	24.76	8.26	16.50
2) ISO-NE	31.92	-6.00	25.92	31.27	8.26	23.01
3) HOEP	36.24	0.00	36.24	36.24	8.26	27.98
				=>	27.98	\$Ca/MWh

If the transmission customer is long:

Min of	In native currency			In \$Ca/MWh		
	Price	Adjustment	Subtotal	Subtotal	HQT rate	Final price
1) NY	20.69	4.50	25.19	30.39	N/A	30.39
2) ISO-NE	31.92	8.00	39.92	48.15	N/A	48.15
3) HOEP	36.24	5.00	41.24	41.24	N/A	41.24
				=>	30.39	\$Ca/MWh

Alternative proposal

(using the same exit / transmission fees than those used by HQT)

As Hydro Québec is a net exporter for this hour, with exports made only on the HQT-NE and the HQT-MASS paths, the calculations are made as follows:

Min of	In native currency			In \$Ca/MWh		
	Price	Adjustment	Subtotal	Subtotal	HQT rate	Final price
1) NY	20.69	-0.16	20.53	24.76	8.26	16.50
2) ISO-NE	31.92	-6.00	25.92	31.27	8.26	23.01
3) HOEP	N/A	N/A	N/A	N/A	N/A	N/A
				=>	16.50	\$Ca/MWh

Flows per market

(in MW)	Exports	Imports	Nets
NYISO	788	0	-788
ISO-NE	253	0	-253
Ontario	0	184	184
Others	1195	563	-632
Total	2236	747	-1489

4) For hour ending 6, on July 29th 2008

Bank of Canada noon rate:	0.9746	CAD/USD
NYISO Zone M	74.18	\$US/MWh
ISO-NE Phase II	75.19	\$US/MWh
HOEP	32.36	\$Ca/MWh
HQT point to point rate with applicable ancillary services	8.26	\$Ca/MWh

Total exports out of the HQT point:	782	MW	(122 MW for HQP and/or HQD only)
Total imports into the HQT point:	1995	MW	(1200 MW for HQP and/or HQD only)

For that hour, using the basic transmission schedules, as available on the HQT OASIS, we saw that Hydro Québec was a net importer during that hour. They were importing on the NE-HQT and on the MASS-HQT paths for that hour. That was an off-peak hour.

HQT's proposal

If the transmission customer is short:

Max of	In native currency			In \$Ca/MWh		
	Price	Adjustment	Subtotal	Subtotal	HQT rate	Final price
1) NY	74.18	-0.16	74.02	75.95	8.26	67.69
2) ISO-NE	75.19	-6.00	69.19	70.99	8.26	62.73
3) HOEP	32.36	0.00	32.36	32.36	8.26	24.10
				=>	67.69	\$Ca/MWh

If the transmission customer is long:

Min of	In native currency			In \$Ca/MWh		
	Price	Adjustment	Subtotal	Subtotal	HQT rate	Final price
1) NY	74.18	4.50	78.68	80.73	N/A	80.73
2) ISO-NE	75.19	8.00	83.19	85.36	N/A	85.36
3) HOEP	32.36	4.00	36.36	36.36	N/A	36.36
				=>	36.36	\$Ca/MWh

Alternative proposal

(using the same exit / transmission fees than those used by HQT)

As Hydro Québec is a net importer for this hour, with imports made on the NE-HQT, and the MASS-HQT paths, the calculations are made as follows:

Max of	In native currency			In \$Ca/MWh		
	Price	Adjustment	Subtotal	Subtotal	HQT rate	Final price
1) NY	74.18	4.50	78.68	80.73	N/A	80.73
2) ISO-NE	75.19	8.00	83.19	85.36	N/A	85.36
2) ONT	N/A	N/A	N/A	N/A	N/A	N/A
				=>	85.36	\$Ca/MWh

Flows per market

(in MW)	Exports	Imports	Nets
NYISO	85	700	615
ISO-NE	37	500	463
Ontario	0	0	0
Others	660	795	135
Total	782	1995	1213

RÉGIE DE L'ÉNERGIE

DOSSIER : R-3669-2008 / Phase 2

**TABLE 1 AND TABLE 2 RÉVISÉS DÉPOSÉS AU SOUTIEN DU
RAPPORT DE WILLIAM K. MASHALL INTITULÉ
« IMBALANCE PRICING AND RELATED ISSUES RELATIVE
TO FERC ORDER 890
DÉPOSÉ LE 28 SEPTEMBRE 2010**

Le 17 avril 2011

RÉGIE DE L'ÉNERGIE

DOSSIER : R-3669-2008 / Phase 2

**RÉPONSE RÉVISÉE À LA QUESTION 3.1
D'ÉNERGIE BROOKFIELD MARKETING INC. (« EBM »)
À LA DEMANDE DE RENSEIGNEMENTS N° 2
DE LA RÉGIE DE L'ÉNERGIE (« RÉGIE »)**

Le 17 avril 2011

Demande :

3.1 Veuillez expliquer en quoi votre proposition serait équitable pour le client qui a fourni une capacité plus élevée que celle qu'il avait programmée, dans la mesure où ce client ne recevrait aucune compensation du Transporteur.

R 3.1 : Nous vous référons à la réponse de M. W. Marshall.

Our proposal is not to require that settlement be only on the net imbalance as seems to be implied in the question. It is for some degree of flexibility using a single fair balancing price.

The HQT proposal, with separate prices for surplus imbalance (decremental price) and deficit imbalance (incremental price), will result in windfall gains to Hydro Quebec for no reason. This can be illustrated with the example provided in my evidence and quoted in the Preamble. Let us use the actual pricing data of Hour 6 on July 29, 2008 (given in Tables 1 and 2 of my report) to evaluate the settlement for the situation where BEMI is 10 MW short on a 100 MW schedule and NLH is 10 MW long on a 200 MW schedule. The table below details the settlement.

Transmission Customer	BEMI	NLH	Totals
Schedule (MW)	100	200	300
Delivery (MW)	90	210	300
Total imbalance (MW)	-10	10	0
Imbalance by Band			
Band 1 (up to 2MW or 1.5%)	-2	3	0
Band 2 (up to 10MW or 7.5%)	-8	7	0
Band 3 (over 10MW or 7.5%)	0	0	0
Proposed HQ Prices*			
Band 1 price (\$/MWh)	67.69	36.36	
Band 2 price (\$/MWh)	<u>110.00</u>	<u>22.50</u>	
	-		
HQ Settlement (\$)	<u>1015.38</u>	<u>266.58</u>	<u>-748.80</u>
Proposed BEMI prices**			
Band 1 price (\$/MWh)	<u>85.36</u>	<u>85.36</u>	
Band 2 price (\$/MWh)	<u>93.90</u>	<u>76.82</u>	
BEMI Settlement (\$)	<u>-922.52</u>	<u>793.82</u>	<u>-128.70</u>
Differential Settlement	<u>-92.86</u>	<u>-527.24</u>	<u>-620.10</u>

* Taken from Hour 6 July 29/08 of Table 1 of W. Marshall Evidence

** Taken from Hour 6 July 29/08 of Table 2 of W. Marshall Evidence

The results of the settlement analyses illustrate that the HQ proposal would collect \$748.80 when there was in fact no imbalance service that was required. NLH actually provided the imbalance for the BEMI shortfall so this \$748.80 is a windfall gain to HQ.

Using our proposal with one incremental/decremental price (adjusted by +/- 10% for Band 2 and +/- 25% for Band 3 consistent with the FERC pro forma OATT) there would still be a penalty amount of \$128.70, even though no service was supplied. In this

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- Supprimé : 5
- Supprimé : 0
- Supprimé : 935
- Supprimé : 284
- Supprimé : 08
- Supprimé : 651.30
- Supprimé : 0
- Supprimé : 73
- Supprimé : 0
- Supprimé : 73
- Supprimé : 88.8
- Supprimé : 72
- Supprimé : 66
- Supprimé : 871.86
- Supprimé : 50.81
- Supprimé : 1
- Supprimé : 5
- Supprimé : 63.52
- Supprimé : 466.73
- Supprimé : 530.25
- Supprimé : 651.30
- Supprimé : 651.30
- Supprimé : 1
- Supprimé : 5

situation NLH, the customer with the surplus, would be paid for its surplus energy, either \$793.82 under our proposal or only \$266.58 under the HQ proposal.

In many markets there is no penalty associated with similar imbalances as the settlement is done for all imbalances at the incremental/decremental price. This is the situation in New Brunswick, New England, NY and Ontario as well as PJM, MISO, ERCOT, CAISO, SPP and AESO where there are detailed hourly bid markets. It is worth noting that FERC have accepted this elimination of penalties for the US markets listed above because they are deemed to be superior to the pro forma requirement.

While it is premature in this hearing to develop the rules for a detailed dispatch market in Quebec it is possible to consider a slight modification that would approximate the outcome of a market. That modification would be to allow Transmission Customers to trade their imbalances.

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