APPROVISIONNEMENT GAZIER

Suivis de la décision D-2006-140

Revente du transport FTLH

Revente du transport FTSH

TABLE DES MATIÈRES

LEXIQUE DES TERMES TECHNIQUES

Dawn	Point situé dans le sud de l'Ontario
Empress	Point situé à la frontière de l'Alberta et de la Saskatchewan qui constitue le point d'interconnexion entre le réseau intra-Alberta de TCPL (« Nova ») et le réseau principal du transporteur
FTLH	Firm Transportation Long Haul; service de transport ferme de TCPL entre Empress et GMi EDA – est également utilisé au sens large pour caractériser tout service de transport ferme contracté entre Empress et GMi EDA
FTSH	Firm Transportation Short Haul; service de transport ferme de TCPL entre Dawn, ou Parkway, et GMi EDA – est également utilisé au sens large pour caractériser tout service de transport ferme contracté entre Dawn et GMi EDA
"Futures"–contrat à terme	Prix d'achat ou vente offert par une tierce partie pour une commodité (molécule, transport ou différentiel de lieu) en fonction d'une quantité donnée, d'une période déterminée et d'un lieu de livraison
GMi EDA	Ensemble des points d'interconnexions entre le système de Gaz Métro et ceux de TCPL/TQM qui sont situés dans la zone de livraison EDA (« Eastern Delivery Area ») de TCPL
TCPL	TransCanada Pipelines Limited

INTRODUCTION

Le présent document a pour but de répondre à deux sujets pour examen de la Régie, demandés dans le cadre de sa décision D-2006-140 (page 50, points 4 et 6).

> *"Présenter une formule visant à établir de façon paramétrique et en lien avec les prix de marché, la valeur pouvant servir de base à l'établissement des prix de revente des capacités excédentaires FTLH."*

> *"Présenter une section traitant de façon approfondie du marché de revente du transport FTSH et de la valeur de revente raisonnable pour ce type de transport"*

1. REVENTE DU TRANSPORT EXCÉDENTAIRE FTLH

Historiquement, le transport FTLH excédentaire correspondait au transport FTLH non utilisé durant la période de l'été résultant d'excédents de capacité une fois la demande et les besoins d'injections rencontrés. Tel que présenté au plan d'approvisionnement 2008 (référence : Gaz Métro 3, document 1, section 3.4 et 5.1) Gaz Métro effectue un autre type de vente de transport FTLH excédentaire soit la vente d'une capacité de transport *a priori* requise pour limiter la provision additionnelle au niveau approuvé par la Régie.

L'analyse demandée par la Régie couvre le type de transport FTLH non utilisé en été. Néanmoins, nous aborderons également la vente du transport FTLH *a priori*. Les deux types de vente de transport seront traités distinctement quant à l'évaluation du prix de revente.

1.1. Valeur de revente du transport FTLH non utilisé

Dans le cadre du plan d'approvisionnement, en fonction de la demande et des outils d'approvisionnement requis, Gaz Métro peut se retrouver avec du transport FTLH excédentaire prévu en été (FTLH non utilisé – référence : Gaz Métro-3, document 6, ligne 23). Ce transport excédentaire est appelé à fluctuer en fonction de la variation entre la demande prévue et la demande réelle ; cette dernière reflétant les aléas de la température, les conditions économiques qui affectent la clientèle, incluant entre autres les mesures d'économie d'énergie mises en place. Dans la majorité des cas, Gaz Métro attend la fin de la saison d'hiver pour vendre, le cas échéant, le transport excédentaire. En plus de la demande annuelle, le niveau des inventaires et les besoins d'injection aux sites d'entreposage viendront également influencer la capacité réelle de transport FTLH non utilisé.

Comme Gaz Métro l'avait indiqué dans le cadre d'une réponse à une demande de renseignement de la Régie (Référence ; R-3596-2006, SCGM -4, Document 1.13), la détermination *a priori* d'un prix de revente pour le transport FTLH comporte un très grand niveau d'incertitude. La valeur du transport FTLH correspond au différentiel de prix entre Empress et Dawn auquel on soustrait le gaz de compression. Cette valeur est tributaire des conditions de marché spécifiques à chacun de ces deux points. Elle dépend aussi du taux de compression mensuel de ce tronçon établi par TCPL. Les prix à ces points géographiques peuvent varier dans le même sens ou en sens opposé, affectant à la hausse ou à la baisse la valeur du transport. Gaz Métro avait également soulevé qu'en matière de valeur de transport, le passé n'est pas garant de l'avenir.

Dans un contexte aussi risqué, Gaz Métro a élaboré une formule afin d'établir un prix de revente du transport FTLH non utilisé qui serait vraisemblablement atteignable. La formule, correspondant à une combinaison de "futures" et de prix historiques, repose sur les paramètres suivants :

1. La valeur des "futures" pour le transport FTLH;

2. La valeur réelle historique du transport FTLH sur le marché; et

3. L'historique des prix de revente de transport FTLH par Gaz Métro;

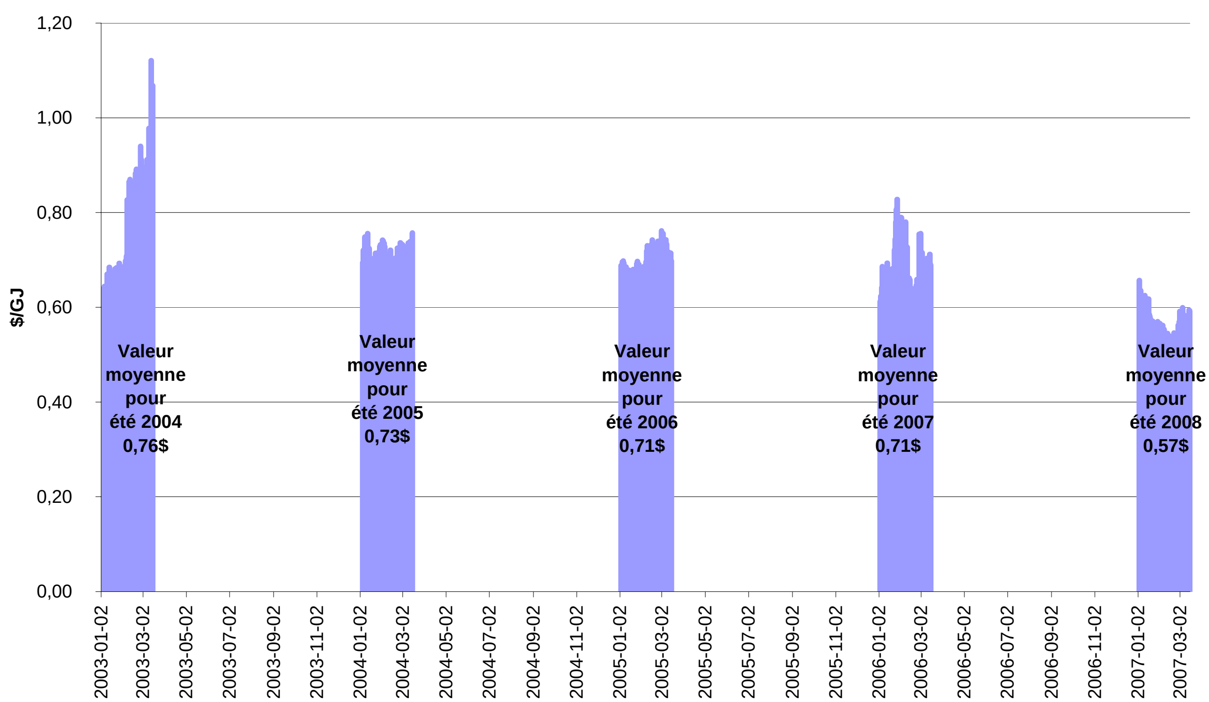
Chacun de ces paramètres est imparfait pour prévoir le prix auquel Gaz Métro pourra revendre son transport FTLH. Chaque paramètre sera analysé distinctement.

1. <u>La valeur des "futures" pour le transport FTLH</u>

Le marché des "futures" nous donne une première idée de la valeur de revente du transport FTLH sur le marché secondaire. Par exemple, durant la préparation du dossier tarifaire 2008, les "futures" disponibles durant les mois de janvier, février et mars 2007 servent d'indicateurs pour évaluer la valeur de revente du FTLH pour l'été 2008. Il faut noter l'écart important qui sépare la prévision du moment de la réalisation des ventes (entre 12 et 21 mois).

Le graphique 1 illustre la valeur du transport sur le marché des « futures » au moment de la préparation de nos quatre derniers dossiers tarifaires.

Graphique 1
Valeur "future" du transport FTLH
sur le marché secondaire



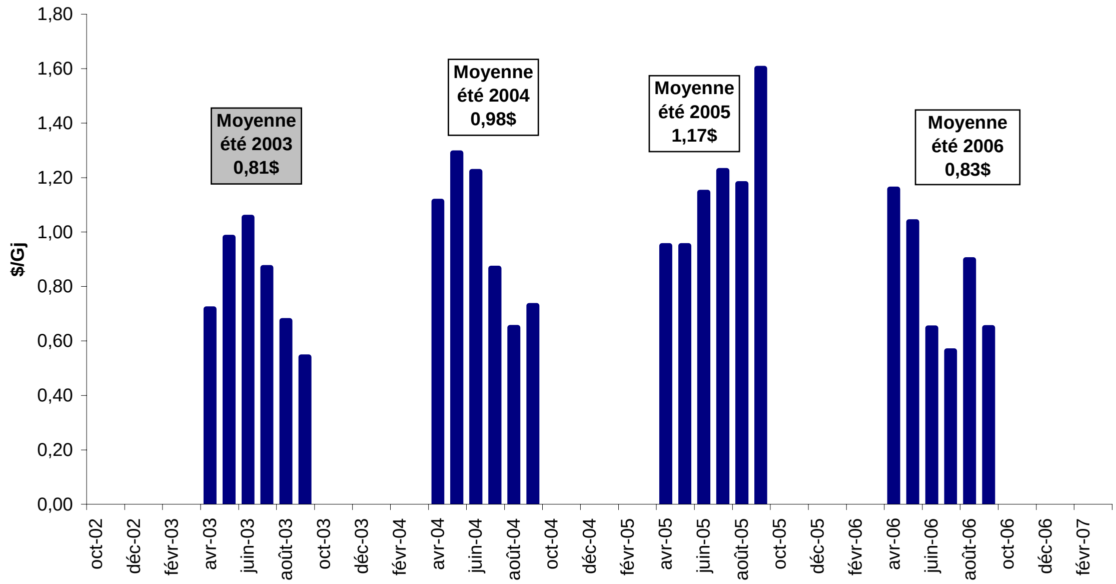
On remarque que la valeur des "futures" a été relativement stable en moyenne au cours des dernières années. Cela s'explique notamment par le fait qu'à plus d'un an d'avance, les "futures" ne tiennent pas compte des fluctuations de prix causées par des évènements ponctuels ou non prévisibles tels que les soubresauts de la température, les ouragans, ou tout autre élément contextuel qui touche continuellement les marchés régionaux du gaz naturel. C'est pourquoi la valeur réelle du transport sera souvent fort différente des prix qui avaient été offerts sur le marché des "futures" plusieurs mois à l'avance.

Ainsi Gaz Métro ne préconise pas l'utilisation exclusive de ce paramètre pour établir le prix projeté de revente. Pour utiliser les "futures" dans l'utilisation du prix projeté, Gaz Métro devrait concrétiser les ventes de transport au moment où elle obtient ces prix. Or, dans la majorité des cas, elle attend la fin de l'hiver pour vendre le transport FTLH non utilisé (donc, presque 12 mois après le dépôt du dossier tarifaire à la Régie).

2. La valeur réelle historique du transport FTLH sur le marché

Le graphique 2 présente la valeur réelle du transport FTLH depuis octobre 2002. La valeur réelle est calculée en faisant la différence entre le prix "spot" mensuel moyen à Dawn et celui à Empress. De ce montant, la valeur du gaz de compression nécessaire pour transporter le gaz entre ces deux points est soustraite. La valeur moyenne estivale est calculée sur la période allant du mois d'avril au mois de septembre, période où Gaz Métro prévoit vendre son transport FTLH non utilisé.

Graphique 2
Valeur réelle du transport
Différentiel de prix entre Dawn et Empress
(excluant le gaz de compression)



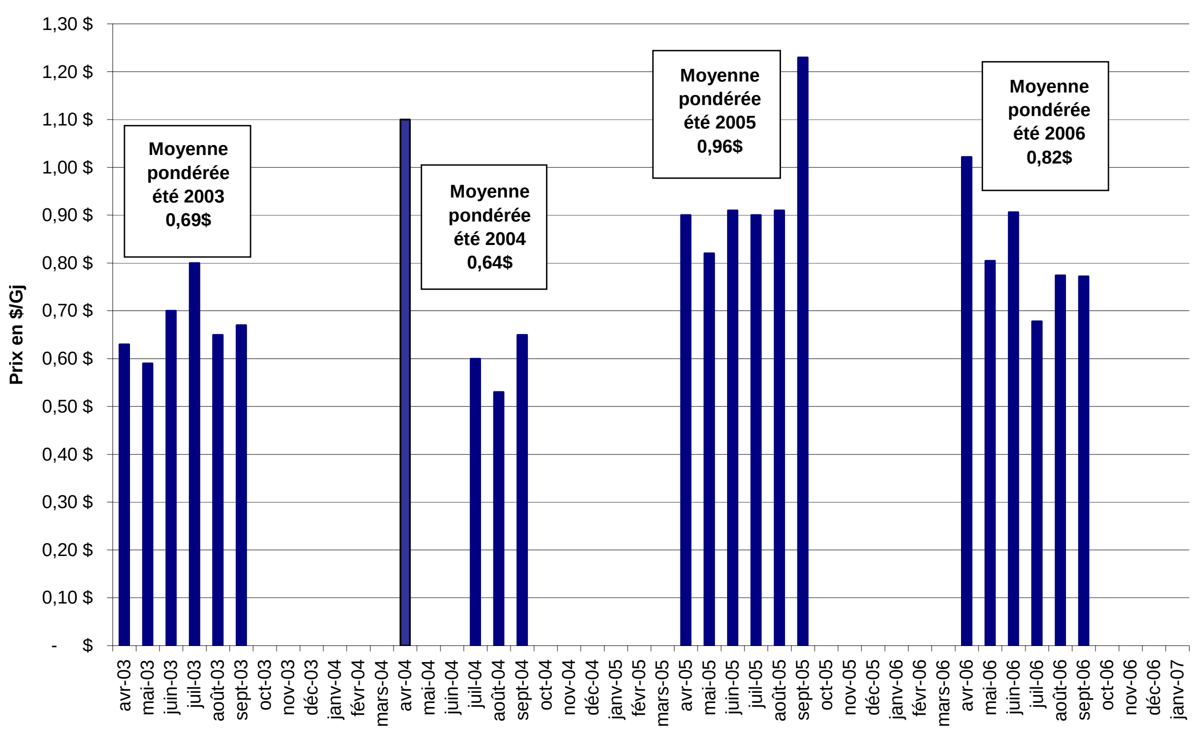
Sources
Prix du gaz à Aeco et Dawn : Gas Daily Price Guide
Différentiel Aeco-Empress : Enerdata
Taux de change : Statistique Canada
Gaz de compression : Ratio de TCPL appliqué au prix du gaz à Empress

La valeur réelle du transport est très volatile et souvent différente de ce qui avait été prévu par le marché des "futures" parce qu'elle est influencée par tous les évènements ponctuels qui touchent le marché. Par exemple, en septembre 2003, la valeur réelle du transport était de 0,54 $/GJ alors qu'en septembre 2005, sous l'impact des ouragans Katrina et Rita, celle-ci s'établissait à 1,60 $/GJ. À titre illustratif, le prix moyen d'octobre 2005, non inclus dans l'analyse, atteint même un sommet de 2,03 $/GJ.

3. <u>L'historique des prix de revente de transport FTLH non utilisé par Gaz Métro</u>

La volatilité est également présente dans le prix de revente des capacités excédentaires de transport de Gaz Métro. Le graphique 3 présente le prix mensuel moyen des ventes réalisées par Gaz Métro. Comme pour la valeur historique du transport FTLH sur le marché, la valeur moyenne estivale est calculée sur les périodes d'avril à septembre.

Graphique 3
Prix des ventes de FTLH par Gaz Métro



Proposition de formule pour établir la valeur de revente du transport FTHL non utilisé

La formule proposée par Gaz Métro vise à établir le prix de revente minimal qu'elle serait potentiellement en mesure de réaliser pour les capacités de transport FTLH non utilisé, considérant l'incertitude du marché et l'écart de temps entre le moment de la prévision et les mois où les ventes se réaliseront (12 à 21 mois).

À cet effet, Gaz Métro propose d'utiliser la valeur minimum des trois paramètres au cours des trois dernières années pour établir le prix projeté de revente du transport FTLH non utilisé, tel qu'évalué au plan d'approvisionnement du dossier tarifaire, sans toutefois excéder le tarif de transport FTLH (Empress-GMi EDA) de TCPL, à 100% de CU, tel qu'utilisé au dossier tarifaire.

Plus spécifiquement, ce prix est établi selon la formule suivante :

Le minimum entre les paramètres suivants :

- Prix minimum des trois dernières années pour lesquelles des données sont disponibles de la moyenne des "futures" pour des ventes prévues de avril à septembre de l'année analysée, tels qu'obtenus sur le marché secondaire pour la période du 1er janvier au 15 mars de l'année précédente;
- Prix minimum des trois dernières années pour lesquelles des données sont disponibles de la moyenne de la valeur réelle du transport, évalué comme étant le différentiel de prix "spot" mensuel entre Empress et Dawn diminué de la valeur du gaz de compression, pour la période de avril à septembre;
- Prix minimum des trois dernières années pour lesquelles des données sont disponibles de la moyenne pondérée par les volumes des prix réels de ventes réalisées par Gaz Métro pour la période de avril à septembre;
- Tarif de TCPL (FTLH Empress – GMi EDA), à 100% de coefficient d'utilisation.

Voici les données à considérer pour déterminer la valeur de revente du FTLH non utilisé dans le cadre du présent dossier tarifaire.

Valeur du transport FTLH non utilisé ($/GJ)				
	"Futures"	**Valeur réelle du marché**	**Prix moyen des ventes de Gaz Métro**	**Tarif de TCPL**
Été 2004	Non applicable	0,98	0,64	Non applicable
Été 2005	Non applicable	1,17	0,96	Non applicable
Été 2006	0,71	0,83	0,82	Non applicable
Été 2007	0,70	non disponible	non disponible	Non applicable
Été 2008	0,57	non disponible	non disponible	Non applicable
Minimum de chaque paramètre	0,57	0,83	0,64	1,03

Prix projeté Dossier 2008	Minimum des paramètres 0,57 $/GJ

Selon cette formule, la valeur budgétée du prix de revente de capacité excédentaire de FTLH en 2007-2008 serait de 0,57 $/GJ, comparativement au 0,40 $/GJ utilisé aux dossiers tarifaires précédents. Dans ce cas-ci, le prix projeté correspond à la moyenne des « futures » obtenus sur le marché secondaire du 1er janvier au 15 mars 2007 pour des ventes prévues au cours de l'été 2008.

1.2. Valeur de revente du transport FTLH *a priori*

Lors de l'établissement d'un plan d'approvisionnement, Gaz Métro contracte les outils d'approvisionnement nécessaires afin de rencontrer la demande en journée de pointe des clients en service continu, la demande annuelle des clients en service continu et dans la mesure du possible, celle des clients en service interruptible. Les approvisionnements doivent donc permettre de faire face à l'effritement des outils lors d'un hiver froid. À cet effet, Gaz Métro conserve donc une provision additionnelle aux outils pour répondre à la journée de pointe. Une fois la capacité quotidienne maximale de transport pour l'hiver établie, incluant la provision additionnelle, Gaz Métro peut se retrouver dans une situation où elle constate un excédent d'outils. Gaz Métro devra alors prendre une décision à savoir quel outil sera vendu *a priori* sur le marché secondaire, de façon à respecter les outils requis au plan d'approvisionnement, et à quel prix.

Une telle situation excédentaire s'est présentée aux deux derniers dossiers tarifaires, soit 2005 et 2006, et Gaz Métro a effectué des ventes *a priori* de son transport FTSH sur le tronçon entre Dawn et GMi EDA. Au présent dossier tarifaire le choix de Gaz Métro s'est tourné vers une combinaison de vente de transport FTLH et FTSH.

La présente sous-section traite de la vente du transport FTLH *a priori* alors que la section 2 ci-dessous couvre la vente de transport FTSH *a priori*.

À la pièce Gaz Métro-3, document 1, section 3.4, Gaz Métro explique les raisons motivant sa décision d'effectuer une vente temporaire de capacité de transport, plutôt que de retourner définitivement la capacité à TCPL. En fonction de cette décision, il est requis de déterminer le prix de revente de cette capacité de transport.

Malgré le fait qu'il s'agisse du même tronçon de transport que celui analysé à la section précédente, les circonstances de vente ainsi que la période visée rendent inadéquat le prix de vente établi pour le FTLH non utilisé.

Les ventes *a priori* de la capacité de transport FTLH sont prévues être réalisées avant le début de l'année financière (ou au plus tard avant l'hiver) lorsque la demande projetée est définie, contrairement aux ventes de capacité de FTLH non utilisée qui sont réalisées, le cas échéant, après l'hiver, selon le constat de la demande et du niveau des inventaires.

La projection du prix de vente pour ce type précis de transport (FTLH *a priori*) passe par la demande de cotation auprès de tierce partie sur le marché secondaire ("futures"). La concrétisation des ventes de transport au moment où elles sont transigées permet de d'éliminer le risque financier rattaché à la fluctuation des "futures". Si un certain temps s'écoule entre la cotation et la concrétisation de la transaction, la probabilité qu'un impact financier soit généré est très grande, d'où l'importance d'effectuer la transaction dans les plus brefs délais.

Pour le dossier tarifaire 2008, les ventes de FTLH *a priori* prévues ont été réalisées et les revenus effectivement obtenus ont été intégrés.

2. REVENTE DU TRANSPORT FTSH *A PRIORI*

Tel que mentionné précédemment, Gaz Métro peut être dans une situation où elle doit libérer de la capacité excédentaire à la provision additionnelle et ce, avant le début de l'année financière ou au plus tard avant le début de l'hiver, ce qui est défini comme ventes *a priori*.

Contrairement aux ventes de transport FTLH *a priori*, ce type de ventes ne sera pas nécessairement concrétisé à très court terme. Selon la demande prévue au dossier tarifaire et le niveau de capacité excédentaire, Gaz Métro pourrait vouloir réaliser ces ventes seulement quelques semaines avant le début de l'année financière. Ceci lui permettrait d'ajuster le plan d'approvisionnement en fonction de variations de la demande projetée suite à des révisions budgétaires précédant le début de l'année financière. Cette approche a pour but d'assurer la sécurité d'approvisionnement et donc de conserver une certaine marge de manœuvre jusqu'au début de l'année financière.

La présente section a pour but de décrire le marché du transport FTSH et la valeur de revente raisonnable pour fins de projection des revenus au dossier tarifaire. À cet effet, Gaz Métro a retenu les services de la firme Ziff Energy Group dont le mandat était de fournir une analyse du marché de la revente du transport FTSH. Leur rapport est présenté à l'annexe A du présent document.

2.1. Présentation du rapport du consultant

Sans reprendre tous les facteurs énumérés dans le rapport fourni à l'annexe A, Gaz Métro veut soulever certains éléments qui résument le contexte de ce marché.

Tel que présenté dans le rapport de Ziff Energy (page 11), la valeur du transport FTSH en hiver a été plus élevée depuis 2002-2003 que le tarif de TCPL. Cette valeur a été particulièrement élevée au cours des hivers 2002-2003 (1,18 $/GJ), 2003-2004 (1,08$/GJ) et 2004-2005 (1,10$/GJ), mais réduite de façon importante depuis, soit 0,30 $/GJ en 2005-2006 et 0,51 $/GJ en 2006-2007. Ainsi, l'écart avec le tarif de TCPL s'est beaucoup amoindri au cours des deux dernières années.

Plusieurs facteurs expliquent l'appréciation de la valeur du transport au cours des trois premiers hivers de la période analysée, dont entre autres :

- une expiration massive des contrats de FTLH durant cette période. Le marché a migré vers des structures utilisant le FTSH, ce qui a créé une forte demande pour le transport sur la ligne Dawn - Waddington; et
- le fait que la capacité de réception du pipeline Iroquois à Waddington avant 2006 était supérieure à la capacité de transport entre Dawn et Waddington.

Ziff Energy Group précise dans son rapport que la valeur élevée du transport en hiver sur le tronçon Dawn - Waddington observée de 2002-2003 à 2004-2005 ne doit pas être considérée comme un indicateur de sa valeur future. Elle doit plutôt être considérée comme un signal du marché quant au besoin de capacité additionnelle de transport à l'est de Dawn et/ou au besoin de sources d'approvisionnement alternatives ayant accès au pipeline

Iroquois. Effectivement, l'augmentation de la capacité entre Dawn et Waddington est en voie de réalisation et le marché s'apprête à faire le nécessaire en ce qui a trait à des accès alternatifs à Waddington sur le pipeline Iroquois.

Union Gas et TCPL ont dû ajuster leur infrastructure afin de faire face aux nouvelles conditions de marché. L'appariement récent des capacités au point d'interconnexion des pipelines de TransCanada et Iroquois, à Waddington, résultant de l'augmentation de la capacité de 191 TJ/j au 1er novembre 2006 et de l'ajout de 95 TJ/j prévu au 1er novembre 2007, a déjà eu pour effet, toutes autres choses étant égales par ailleurs, de diminuer la prime d'hiver observée dans les années 2002 à 2005 sur la valeur du tronçon Dawn - Waddington.

De plus, l'ajout de capacité dans le nord-est américain via les différents projets de pipelines et les nouveaux projets de terminaux méthaniers proposés ou en construction, modifiera les flux gaziers dans la région et par conséquent, les prix historiquement observés à Waddington en hiver. La mise en place du NE'07 Pipeline Project, décrit en détail aux pages 19 et 20 du rapport de Ziff Energy Group est un exemple éloquent de la situation dans la région du nord est. Ce projet fera en sorte que Waddington ne sera plus le seul port d'entrée du pipeline Iroquois. Ce faisant, Waddington fera bientôt face à de la compétition en provenance d'autres sources d'approvisionnement puisque les utilisateurs d'Iroquois pourront s'approvisionner physiquement à partir de la jonction du pipeline Algonquin. Le gaz qui entrera par cette nouvelle jonction pourra provenir des nouveaux projets de GNL mais aussi de Dawn via la nouvelle route (Empire State Pipeline – Millenium Pipeline Phase 1 – Algonquin); ceci se traduira par une pression à la hausse sur le prix de Dawn et une pression à la baisse sur le prix de Waddington, avec un effet net d'une baisse de la valeur du transport FTSH.

Considérant toute l'activité reliée aux approvisionnements gaziers observée dans la région de New-York, Ziff Energy Group soulève que cela contribuera à éliminer la prime associée à la revente de transport FTSH en hiver.

La diminution de la valeur du FTSH, entamée depuis deux ans, ne peut que se poursuivre étant donné le contexte gazier de ce marché.

2.2. Proposition de Gaz Métro

Tel que recommandé par Ziff Energy Group, Gaz Métro propose d'utiliser, pour le moment, une valeur de revente du transport FTSH *a priori* équivalente à la prime fixe du tarif de transport FTSH en vigueur au moment du dépôt du dossier tarifaire.

À la lumière du rapport du consultant, il ressort que cette approche limite les risques financiers compte tenu de l'évolution récente des capacités sur ce tronçon et surtout de la multitude des nouveaux projets attendus dans la région.

Gaz Métro suivra l'évolution de ce marché et reconsidérera cette approche dès qu'elle la jugera inadéquate.

Tel que mentionné en introduction de cette section, les ventes de transport FTSH ne sont pas nécessairement concrétisées à la date du dépôt du dossier tarifaire, d'où le besoin d'établir une méthode d'évaluation du prix de revente. Néanmoins, selon les circonstances propres à chaque dossier tarifaire, Gaz Métro pourrait réaliser certaines ventes de FTSH avant le dépôt. Le cas échéant, le prix de revente du transport FTSH *a priori* serait déterminé de façon à tenir compte des ventes déjà réalisées et du tarif de TCPL pour la quantité restante à vendre.

Pour le dossier tarifaire 2008, étant donné qu'aucune vente de transport n'a été réalisée avant la date du dépôt, le prix de revente du transport FTSH a priori est égal à 0,286 $/GJ.

ANNEXE A – RAPPORT DE ZIFF ENERGY GROUP

Voir pages suivantes (29 pages en liasse).

Resale Value Of TransCanada's Firm Short-Haul Transportation

Prepared for:

Gaz Métro

Montréal, Québec

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25th Anniversary
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RESALE VALUE OF TRANSCANADA'S FTSH

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INTRODUCTION

In March 2007, Gaz Métro retained the services of Ziff Energy to develop an independent report on the resale value of TransCanada's firm short-haul transportation (FTSH) between Dawn and Montréal. The report was to provide comments with regards to:

- the historical and current value of FTSH from Dawn
- the general factors that have influenced the value of FTSH over the past few years
- factors that are likely to influence the value of FTSH over the next few years
- the appropriate value Gaz Métro should assign to FTSH for rate making purposes.

CONCLUSIONS

1. Extremely high FTSH premiums[1] that existed between 2002/03 and 2004/05 was a market signal for additional Dawn to Waddington capacity and/or alternative competitive supplies to access the Iroquois pipeline at points downstream of Waddington.

2. In response to this market signal, natural gas infrastructure additions have been made in Canada and the U.S., dampening the effect of New York City pricing on Waddington the past two winters.

3. Weak links in North American natural gas infrastructure continue to be reinforced, allowing more gas supply to become even more fully integrated - most notably growth in LNG, the Rockies Express pipeline to the Northeast, and the NE'07 Pipeline Project. ***Ziff Energy believes this reinforcement will cause natural gas prices across North America to converge (relative to gas prices over the past several years) and cause the Dawn to Waddington premium to fade.***

4. If the availability of the new supply (LNG, Rockies) is delayed, any gas price premium New York City would pay to attract supply from other regions, would (given the removal of pipeline constraints) flow to the Dawn supply and pricing point or to the U.S. equivalent – not to the holder of FTSH.

5. ***Ziff Energy believes a resale value for Dawn to Montréal FTSH higher than the NEB approved transportation toll would be not supported by North American natural gas market fundamentals***.

[1] premium being the value of the FTSH in excess of the National Energy Board approved FTSH tolls (net of fuel and pressure charges

Key Observations

In order for Ziff Energy to comment on the future value of FTSH, it was important to understand actual market values in the context of corresponding market infrastructure and supply/demand fundamentals. These fundamentals (supply availability, pipeline constraints, market demand) drive natural gas pricing dynamics. Ziff Energy could then assess how planned changes to these fundamentals would impact the value of FTSH going forward. Key observations include:

1. The primary secondary market for Dawn to Montréal FTSH has been the U.S. export market at Waddington[2] (Iroquois pipeline receipt point at the New York state/Ontario border near Cornwall).

2. The FTSH has consistently had a negative resale value during the summer. The price differential between Waddington and Dawn does not cover the cost of compressor fuel. Waddington deliveries have remained high in the summer with significant excess capacity due to lower demand in markets east of Toronto.

3. The value of FTSH sold at Waddington on a day-to-day basis during in winter continues to reflect a premium relative to the 100% load factor toll[3]. However, the ***premium has declined significantly over the past two winters*** and was almost eliminated in 2005/06.

4. The transition from long-haul service from Western Canada to short-haul service from Dawn required the pipeline infrastructure to adapt to a new regional gas flow pattern. The high premium in the early years was an indication of a pipeline constraint from a major pricing point, Dawn, and a signal that the economics would support an expansion. ***Few FTSH service holders from Dawn benefited from the high price differential simply because little FTSH was contracted to points east of Toronto***. Western supplies benefited from the high Waddington price in the early years of the transition.

5. The Dawn to Waddington pipeline constraint is gradually being eliminated and soon the Dawn to Waddington premium will disappear. The North American gas supply picture is currently undergoing a major transformation that will alter gas flow patterns on a regional and inter-regional basis. Any remaining Dawn to Waddington premium is not likely to survive the change as:

   - Dawn prices firm up with the NE'07 Pipeline Project
   - Waddington, currently the only physical supply source for the Iroquois pipeline, will face competition from other supplies entering the Iroquois pipeline in the New York City/Long Island area

[2] firm demand at Waddington represents 45% of the total market demand East of Toronto served by the TransCanada Canadian Mainline. Iroquois interconnects with a number of U.S. interstate pipelines but to date Waddington has been sole point of physical receipt of gas supplies due to much higher operating pressure of Iroquois pipeline
[3] the lowest unit cost of transportation based on utilizing the capacity each and every day of the year

- available West-to-East capacity from Dawn is supplemented with East-to-West capacity created when new Eastern supplies flow into the North American pipeline grid from New Brunswick, Québec, and Boston.

OTHER PRICING POINTS INFLUENCE DAWN AND WADDINGTON

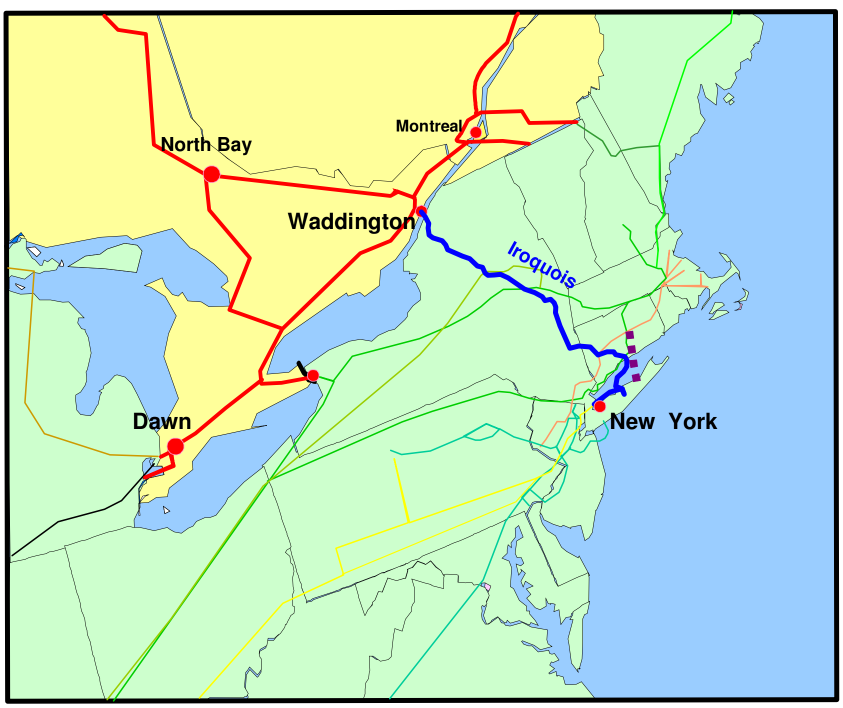
FTSH Facilities and Tolls

Gaz Métro has contracted FTSH service with TransCanada from Dawn to its markets in the TransCanada Eastern delivery area. The primary resale market between Toronto and Montréal over the past few years has been the U.S. export market at Waddington.

The value of FTSH on the secondary market corresponds principally to the gas price difference between Dawn and Waddington less the cost of fuel and costs for high pressure service at Waddington.

Dawn and Waddington are located on the Eastern short-haul facilities that extend from the Michigan border in south western Ontario to Quebec City. Figure 1 shows these facilities in red.

Figure 1
Eastern Short-Haul Facilities



Tolls for TransCanada's service from Dawn have fluctuated over the years but are currently at a 5 year low. The unit cost of this service over the year depends on its actual utilisation. Table 1 provides the resulting unit cost depending on whether the service is used each and every day of the year (365 days).

Table 1
Dawn to Gaz Métro EDA Short-Haul Service

Delivered to Waddington		
Toll (Cdn$/GJ)		
365 days Utilisation	Fuel Ratio	Waddington Pressure Charge (Cdn$/GJ)
$0.28	1.3 to 2.3%	$0.023

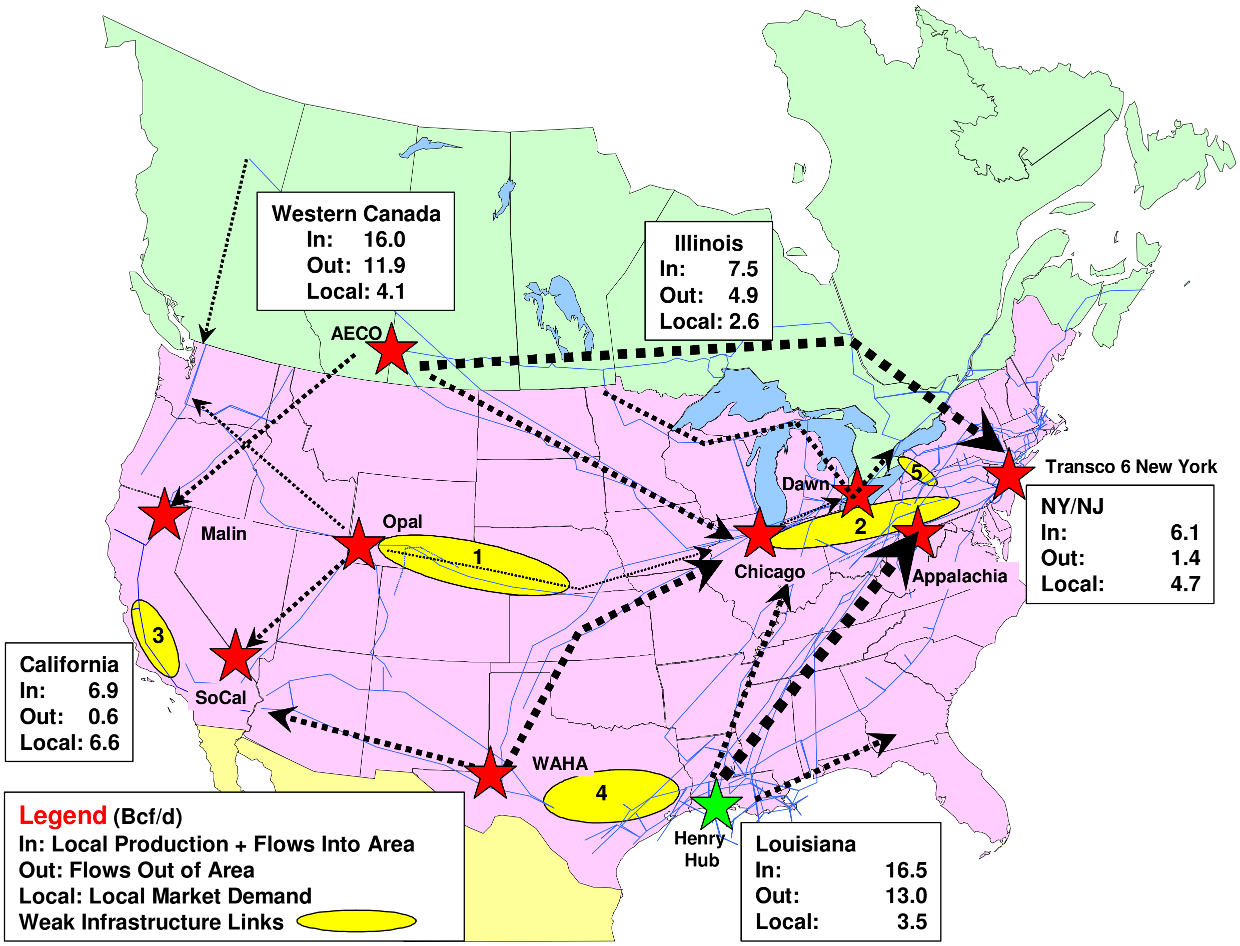
The toll applicable from Dawn to Montréal FTSH delivered to Waddington remains the higher Gaz Métro EDA toll.

The user of this service also has to provide fuel gas in kind to TransCanada. The cost of this fuel gas to the user of the service is the product of the fuel ratio and the price of gas at Dawn. Deliveries at Waddington are also subject to a higher pressure service charge which is currently Cdn$0.023/GJ.

Key Pricing Points in North America

Figure 2 highlights major natural gas pricing points in North America. Henry Hub (located in Louisiana), is the reference point for natural gas pricing in North America.

Figure 2
Key Natural Gas Pricing Points



While Transco Zone 6 New York, Dawn and Chicago are key pricing points, Waddington is not. However, Waddington and many other similar points in North America play a role in providing additional gas pricing signals that are essential to ensuring an efficient market.

As shown in Figure 2, Chicago has access to most of the major North American supply basins. The Gulf of Mexico remains the primary supply source for the New York area.

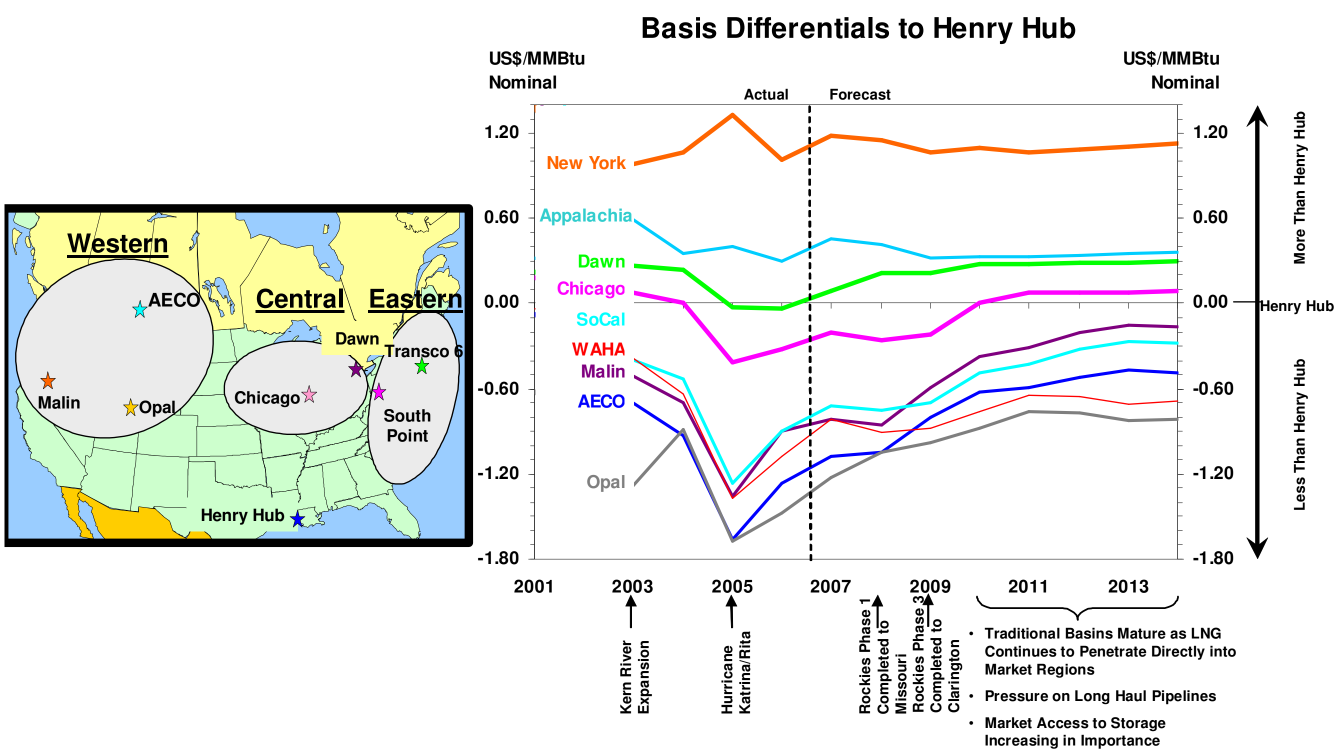
The North America pipeline grid is interconnected and responsive to changes in Henry Hub pricing. Still, there are several weak links in the grid which can cause the gas basis[4] to change quickly in response to tightness in regional supply/demand fundamentals. *Gas pricing at Dawn and Waddington (used to establish the value of FTSH in the secondary market), is impacted by events at the local, regional and North American level.*

Pricing Regimes Affecting Dawn and Waddington

Figure 3 shows the actual annual gas basis for the various key pricing points for the 2003 to 2006 period. The forecast for 2007 - 2014 is also included. It clearly indicates that:

- New York pricing is highest
- stranded Rockies gas production depresses prices in the West
- Chicago pricing has largely been below Henry Hub the past few years while Dawn has oscillated around the Henry Hub price.

Figure 3
Basis Differential to Henry Hub



[4] the gas basis is the difference between the Henry Hub gas price and the price at another pricing point in North America. The gas basis is a useful indicator of relative gas pricing across North America

Three pricing regimes that effect Dawn and Waddington because of:

- the proximity of Waddington to New York City
- the proximity of Dawn to Chicago
- the influence of western supply basins on Chicago pricing.

The first price regime is the **U.S. East Coast** with natural gas prices higher than Henry Hub. Transco Zone 6 New York is the highest priced market in North America. The second regime is the **West** and somewhat disconnected from Henry Hub. This market sees pricing generally lower than Henry Hub. A weak link between the U.S. Rockies gas production areas and the North American pipeline grid currently limits the market reach of this supply. The low pricing reflects competition for western markets among supply basins.

Chicago and Dawn are part of the third price regime - **Intermediate.** This market has Chicago prices more directly influenced by the lower prices in the West.

Waddington Pricing Tracks New York

Figure 4 shows Waddington prices definitely fluctuate as a function of Transco Zone 6 New York pricing. This is to be expected since Waddington is the inlet point to the Iroquois pipeline which directly supplies Long Island and Eastchester New York.

Figure 4
Price Differential
Transco Zone 6 / Henry Hub and Waddington / Henry Hub

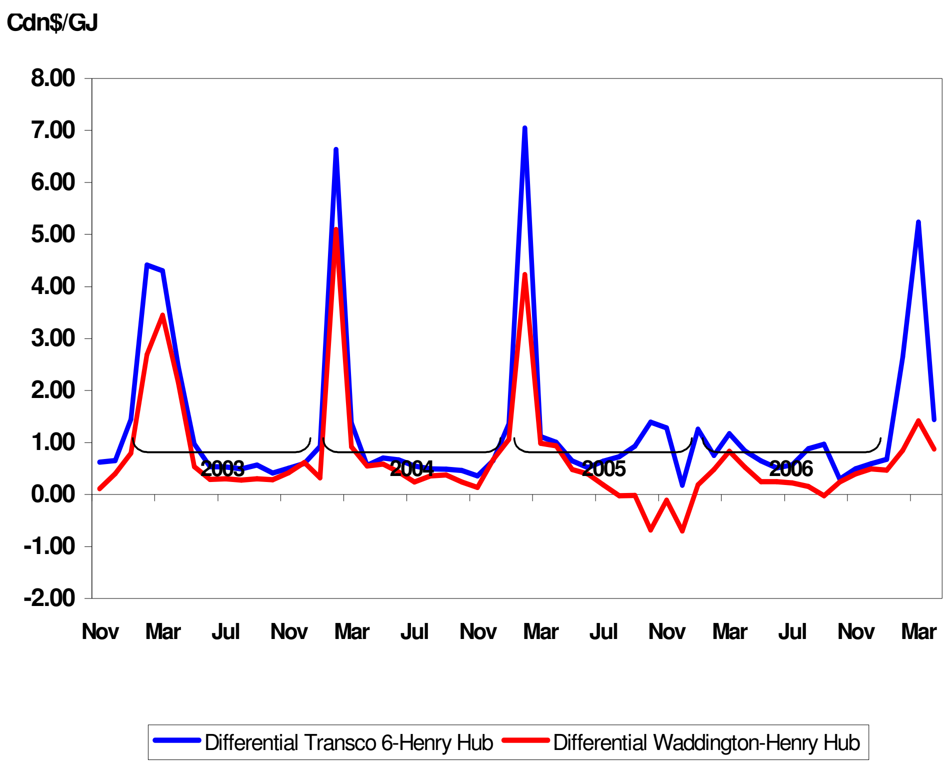
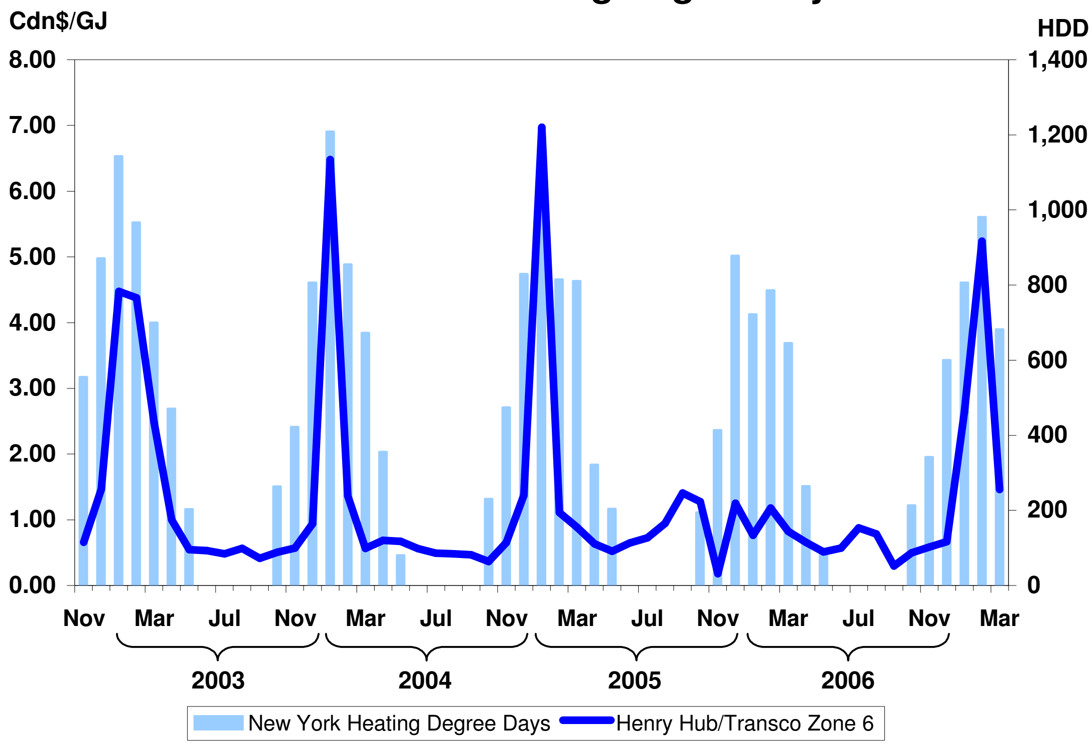


Figure 5 shows there is some correlation between the number of New York City heating degree-days (additional heating load demand) and increased Henry Hub/Transco Zone 6 pricing differentials (three of the past five winters).

Figure 5
Henry Hub / Transco Zone 6 - Price Differential and New York Heating Degree Days



There is some merit in correlating the seasonality of New York pricing to heating degree-days.

- New York has a high mix of weather sensitive load with focus on increasing residential and business market saturation via conversions. New housing[5] also contributed to demand growth and affected the load profile
- the NYISO's New York City local reliability rules require that more than 80% of the electric capacity needs of New York City be provided by "in-city" generators. Power generators are often reluctant to make necessary long-term commitments to supply and new pipeline capacity
- infrastructure challenge: i) population density in and around New York City makes it difficult to install new pipelines; and, ii) physical location i.e. surrounded by water[6] (Atlantic Ocean, Long Island Sound, East River, and Hudson River)

[5] Con Ed of New York reports that housing permits in New York City have significantly exceeded the 40-year average starting in year 2000. In fact, a new 32 year record for NYC was set in 2005
[6] a challenge, but also part of the solution - albeit an expensive solution. Most of the recent capacity increases into New York City and area have been by way of underwater pipelines

- refusal of the State of Connecticut to issue permits for Islander East pipeline which would supply eastern Long Island via underwater pipeline from Connecticut
- regional but no local underground storage - LNG tanks are prohibited in New York City.

To date, constraints accessing the New York market have directly impacted Waddington prices. Information shown on Figure 5 for the winters of 2005/06 and 2002/03 indicates there are a number of other factors at play than can partially or completely offset the impact of heating degree-days on New York pricing.

Dawn Pricing Marches to a Different Beat

Figures 6 and 7 illustrate that from 2003 – 2006, Dawn was not a subset of New York pricing but was greatly influenced by Chicago pricing. *This is not surprising due to the pipeline constraints to Waddington that stranded Dawn natural gas supplies.* Figure 6 shows in the winter of 2003/04, New York pricing were peaking, while Dawn pricing was very depressed.

Figure 6
Price Differential – Dawn and New York

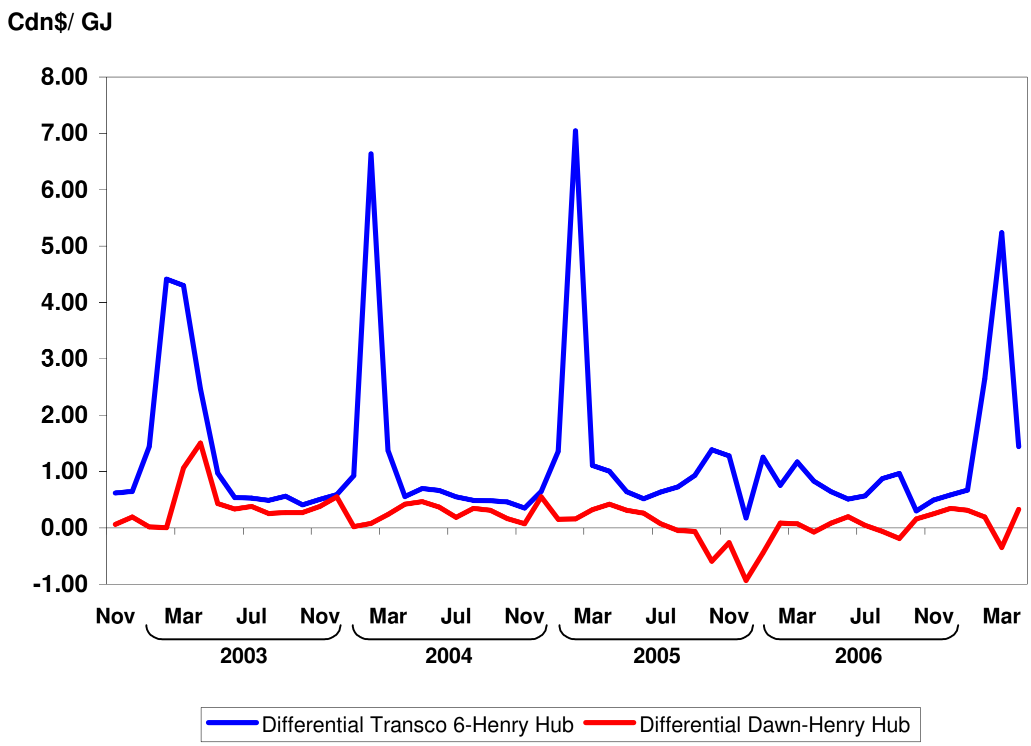
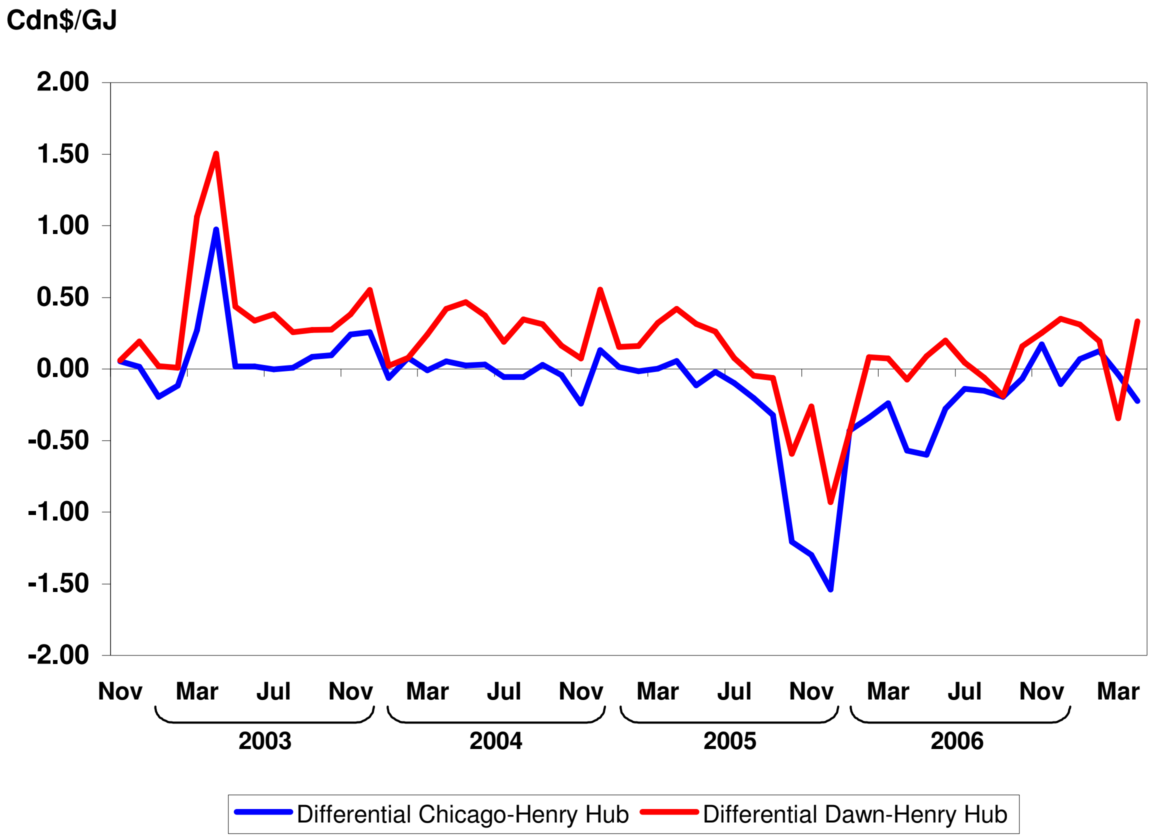


Figure 7
Price Differential
Dawn / Henry Hub and Chicago / Henry Hub



HISTORICAL VALUE OF FTSH IN THE SECONDARY MARKET

Figure 8 provides the actual average monthly value in the secondary market of the TransCanada FTSH from Dawn to Waddington from November 1, 2002 to March 31, 2007. There is a definite seasonality and volatility associated with the transportation values of the FTSH.

Figure 8
Actual Value for Dawn/Waddington
(excluding required fuel gas and Waddington pressure charge)

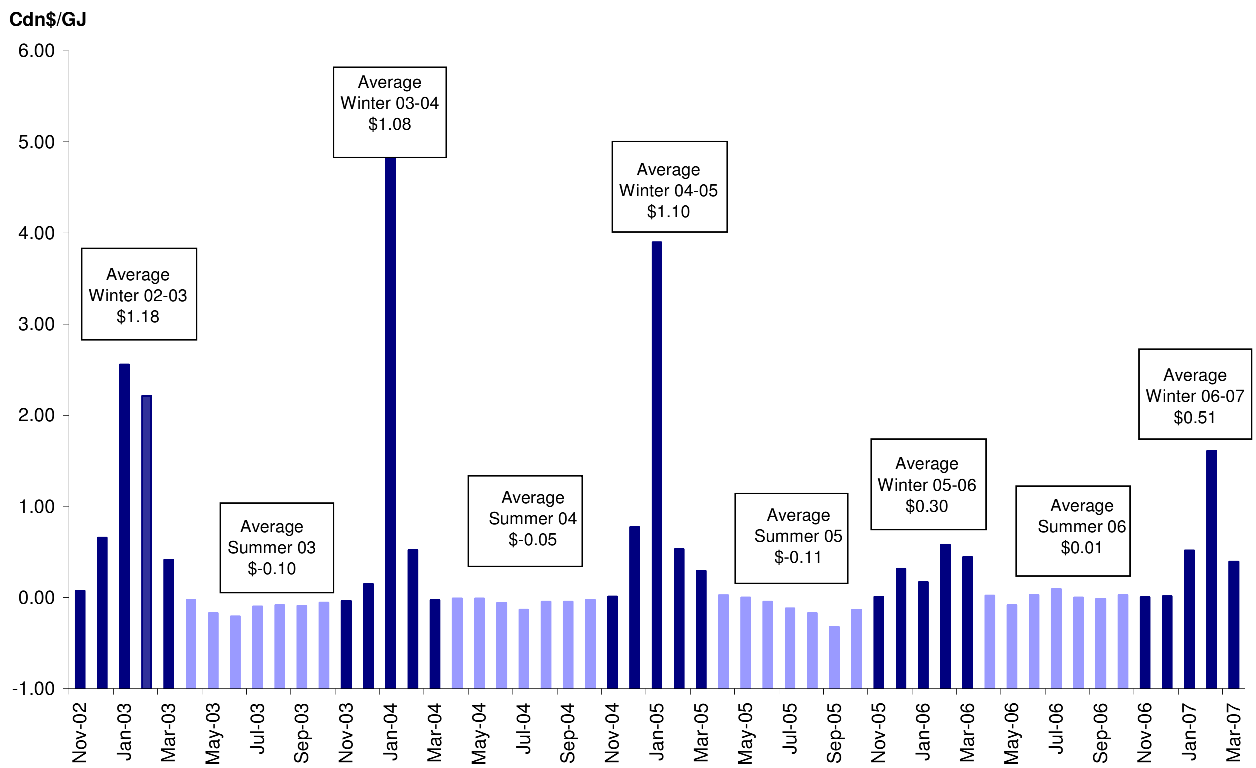


Table 2 summarizes by seasons the average market value of FTSH shown in Figure 8. The premium relative to the FTSH toll to Montréal is highlighted. ***Note*** *- there was very little FTSH premium at Waddington during the winter of 2005/06 when FTSH was sold on a daily basis in the secondary market.*

In August 2005, hurricanes Rita and /Katrina took 8 Bcf/d of Gulf of Mexico gas production off-line and the U.S. markets turned to Canada for additional gas supply. The New York/Henry Hub gas basis in September 2005 was twice the normal summer average as New York paid a premium to attract natural gas supply. The throughput on TransCanada increased by 1 Bcf/d (significant pipeline capacity available – Dawn to Waddington) and deliveries at Waddington were at Iroquois' receipt capacity. The value of Dawn to Waddington FTSH was negative – an indication that absent pipeline constraints between two points, any premium the downstream market is willing to pay will simply flow to the upstream supply and pricing point – not to the holder of FTSH.

Table 2
Dawn/ Montréal FTSH Premium (Cdn$/GJ)

Average Market Value of FTSH				100% Load Factor Toll	Winter Premium
Summer Season		Winter Season			
2003	-0.10	2002/03	1.19	0.357	0.83
2004	-0.04	2003/04	1.09	0.364	0.73
2005	-0.11	2004/05	1.10	0.352	0.75
2006	0.00	2005/06	0.31	0.295	0.02
		2006/07	0.51	0.28	0.23

Summer Season FTSH Value

The market value of FTSH is negative during the summer season because the gas price differential between Waddington and Dawn does not cover the variable cost of compressor fuel.

This negative value is not surprising. All markets east of Toronto/North Bay have a similar profile – demand is high in the winter with the annual average day demand being significantly lower than the winter peak day demand. The Canadian market and other smaller export markets redirect their available supplies to underground storage in the Dawn region. The available system capacity is therefore underutilized as shown on Table 3. The 37.5% (1 – 62.5%) underutilization corresponds to approximately 1,000 TJ/d.

Table 3
Demand East of Toronto/North Bay

	Winter Peak Day Demand (TJ/d)	Capacity Utilization Winter Season (%)	Capacity Utilization Summer Season (%)
Exports to Iroquois at Waddington	1,235	Near 100	97.9
Canadian market and other exports	2,706	85.5	62.5
TOTAL	**3,941**		

Winter Season FTSH Value

The high value of FTSH in the winters of 2002/03, 2003/04 and to some extent 2004/05 needs to be put into perspective. ***It cannot be used to establish the longer term value of FTSH from Dawn to Waddington in the secondary market*** because:

1. As shown in Table 4, contracted short-haul services from Dawn were relatively low in 2002 and 2003 – most of these services were for markets at Niagara and Toronto. There was little FTSH contracted to the domestic markets located East of Toronto (the TransCanada EDA market).

Table 4
TransCanada Short-haul Services Contracted from St. Clair/Dawn in Southwestern Ontario (TJ/d)

Year	Total	Canadian EDA only
Base Year 2002	510	0
Base year 2003	902	31
Base Year 2004	1,497	186
Base Year 2005	1,767	192
Test Year 2006	1,853	247
Test Year 2007	2,055	367

2. The Union Gas system was constrained to the point that on days when storage withdrawals were high at Dawn, pipeline deliveries from Chicago and/or Western Canada to Dawn via Great Lakes had to be backed off. Pricing at Dawn was depressed relative to Chicago and AECO because available Dawn supplies were stranded due to transportation constraints, which in turn prompted shippers to migrate from long-haul to short-haul service.

3. The Waddington incremental demand was served using long-haul service from Western Canada and AECO pricing reacted to the higher Waddington prices.

4. Market players on both sides of the border reacted to the high value of the FTSH causing the premium to disappear.

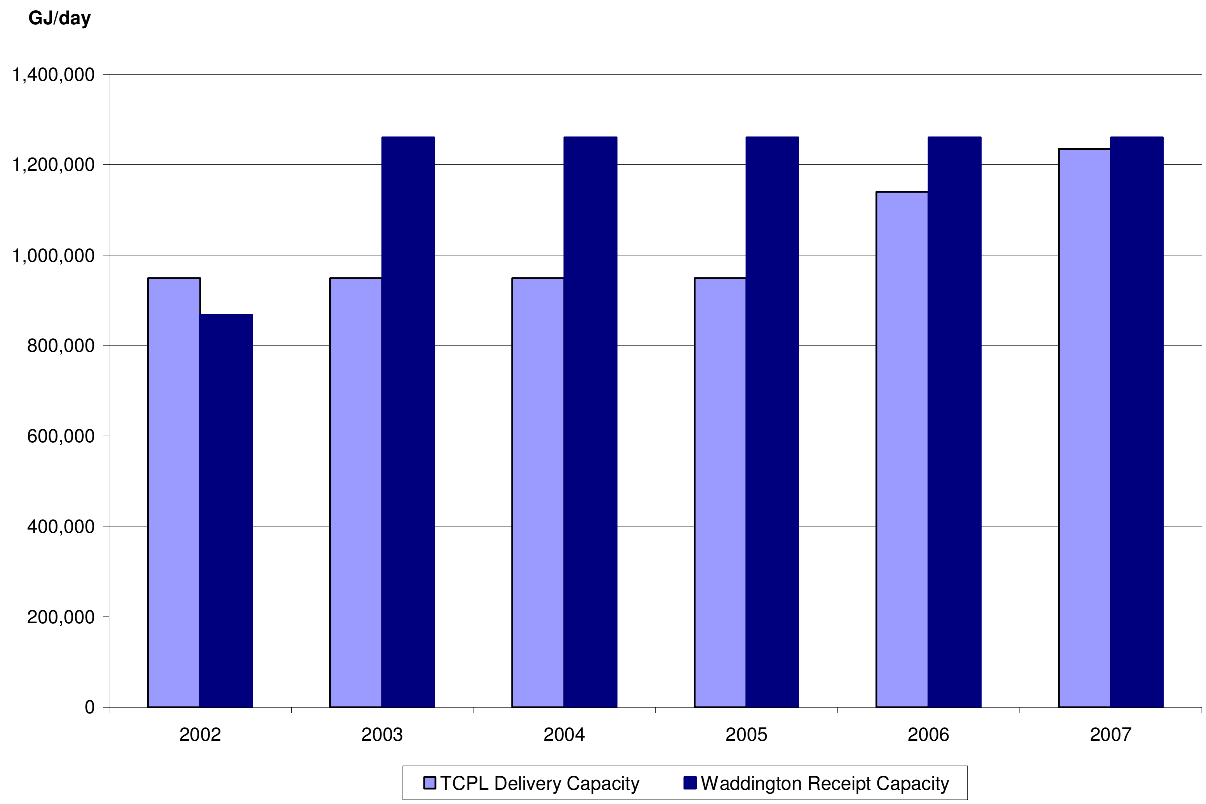
EVOLUTION OF DAWN TO WADDINGTON PIPELINE CONSTRAINTS

The transition from long-haul service from Western Canada to short-haul service from Dawn required pipeline infrastructure to adopt a new regional gas flow pattern.

The FTSH premium for 2002/03 and 2003/04 (set by the price differential between Dawn and Waddington) was an economic signal to remove pipeline constraints between Dawn and Waddington. Figure 9 shows Union Gas and TransCanada have reacted to this signal by adding new pipeline capacity.

As seen in Figure 8, short-haul values will likely be dampened by the November, 2006 capacity addition of 191 TJ/d and the 95 TJ/d addition planned for November, 2007.

Figure 9
Pipeline Capacity Growth



Others Reacting to High New York Gas Basis

Iroquois completed its new line to interconnect with Con Ed of New York at Eastchester near New York City in February 2004. Iroquois' direct link to New York/Long Island and the high winter prices in New York, increased market interest for access to the Iroquois pipeline from points other than Waddington.

Access is challenging because Iroquois operates at a much higher pipeline pressure than other regional pipelines. This makes it impossible for gas from these other regional systems to free flow into Iroquois. Consequently, Waddington has been the only physical gas receipt point on Iroquois.

However, this situation is changing. The *Everett LNG* import terminal in Boston increased its regasification capacity in 2003, and in 2005 acquired additional long-term LNG supplies from Trinidad. Iroquois delivers large quantities of gas into the Tennessee pipeline in upstate New York near Albany which then flows east to Boston.

When natural gas prices in New York are significantly higher than Boston, arrangements can be made by the markets players whereby:

- Waddington supplies scheduled to be delivered by Iroquois into the Tennessee system near Albany, NY to serve the Boston market can flow to Long Island/New York City on Iroquois; while
- supplies from the Everett LNG terminal or other Eastern gas sources compensate in Boston for the reduced gas deliveries from the Tennessee system.

This Boston or eastern supply enters the Iroquois system by displacement and competes with incremental supplies at Waddington.

These types of transactions will continue to grow as supplies from the *Canaport LNG* terminal in New Brunswick[7] comes on-line, and as new offshore Boston LNG interconnects[8] are constructed. These new Eastern supply sources will further stabilize gas prices in Boston relative to New York City pricing, creating more displacement opportunities or physical flows onto Iroquois. In addition, Iroquois intends to add compression facilities at its interconnect with Algonquin pipeline in Connecticut to receive additional physical supplies.

Bottom line: Canadian pipelines are not the only ones reacting to the high New York City gas basis and attempting to gain access to this market by way of the Iroquois pipeline (physically or via displacement). ***This will also contribute to eliminating the Dawn to Waddington FTSH premium in the winter.***

Factors That Have Influenced the Value of FTSH

1. New York City/Long Island have the highest natural gas prices in North America

2. Volatility of pricing in the New York City market resulting from the lack of pipeline infrastructure, high heating load mix, and significant power demand (but a reluctance of generators to contractually support new gas transportation infrastructure).

3. Iroquois' direct Waddington to New York City link causes Waddington prices to track New York pricing.

4. At present, Waddington is the only physical receipt point on Iroquois and operates at a higher pressure relative to other U.S. interstate pipelines interconnecting with Iroquois downstream of Waddington.

5. Initially few Dawn to Montréal/Waddington short-haul services were contracted and contracts for long-haul service from Western Canada have not yet expired.

[7] expected to be in-service by November 2008

[8] Neptune LNG and Northeast Gateway involve special LNG tankers that can vaporize the LNG, compress it and inject the LNG into the pipeline. Algonquin pipeline is constructing underwater laterals off of its existing offshore HubLine

Pipeline infrastructure in Canada then had to adapt to new gas flow pattern as markets moved from long-haul service to more short-haul service from Dawn. Supplies at Dawn were available but not 100% accessible, due to Dawn to Waddington pipe constraints. Consequently, Dawn supplies were stranded depressing the Dawn price.

6. Iroquois expanded its pipeline capacity but its shippers did not contract capacity upstream on TransCanada. Shippers knew TransCanada has significant excess capacity in view of markets lost to Alliance/Vector, *but not to points east of Toronto*. Iroquois shippers then desperately bid for supplies at Waddington, increasing the demand and driving up gas prices.

The difference between the high Waddington prices and the depressed Dawn prices was a ***clear signal that additional pipeline capacity was needed between Dawn and Waddington.***

Natural gas markets on both sides of the border reacted to the price signal:

- Union Gas and TransCanada constructed new capacity in November 2006 and additional capacity has been approved for November 2007
- other supplies (2008) accessing Iroquois' link to New York downstream of Waddington.

Ziff Energy believes the value of FTSH during this transition period required the market to react to the pricing signal, and is not representative of the longer term value of Dawn to Montréal FTSH.

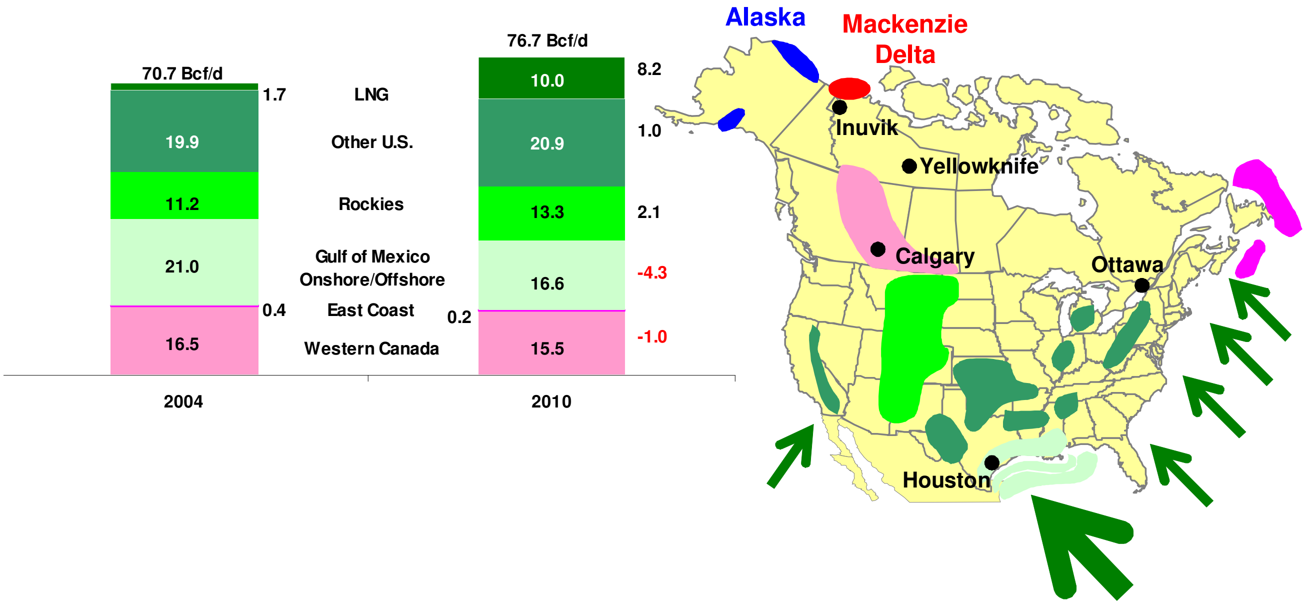
CHANGING NORTH AMERICAN SUPPLY AFFECTS FTSH VALUE

LNG Supplies Needed

Figure 10 summarizes how the North American natural gas supply sources will change by 2010.

- gas production from the traditional North American basins is flat and declining except for the U.S. Rockies production.
- imported LNG is required to fill the supply gap.

Figure 10
Gas Supply Growth by 2010



The current weak link between the U.S. Rockies and the North American pipeline grid is being addressed. The new Rockies Express pipeline will move 1,300 TJ/d of supply to the U.S. Midwest in 2008 and the Northeast in 2009/2010.

New infrastructure is being pursued to deal with this supply change. North American and U.S. Northeast flow patterns will be altered, and Waddington supplies will need to compete with other supplies for the New York market.

Imported LNG will in-fill current pipeline capacities from the Gulf of Mexico as production from the Gulf declines. A number of LNG terminals have been approved in the Gulf and 4 are currently under construction – all underpinned by long-term supply contracts.

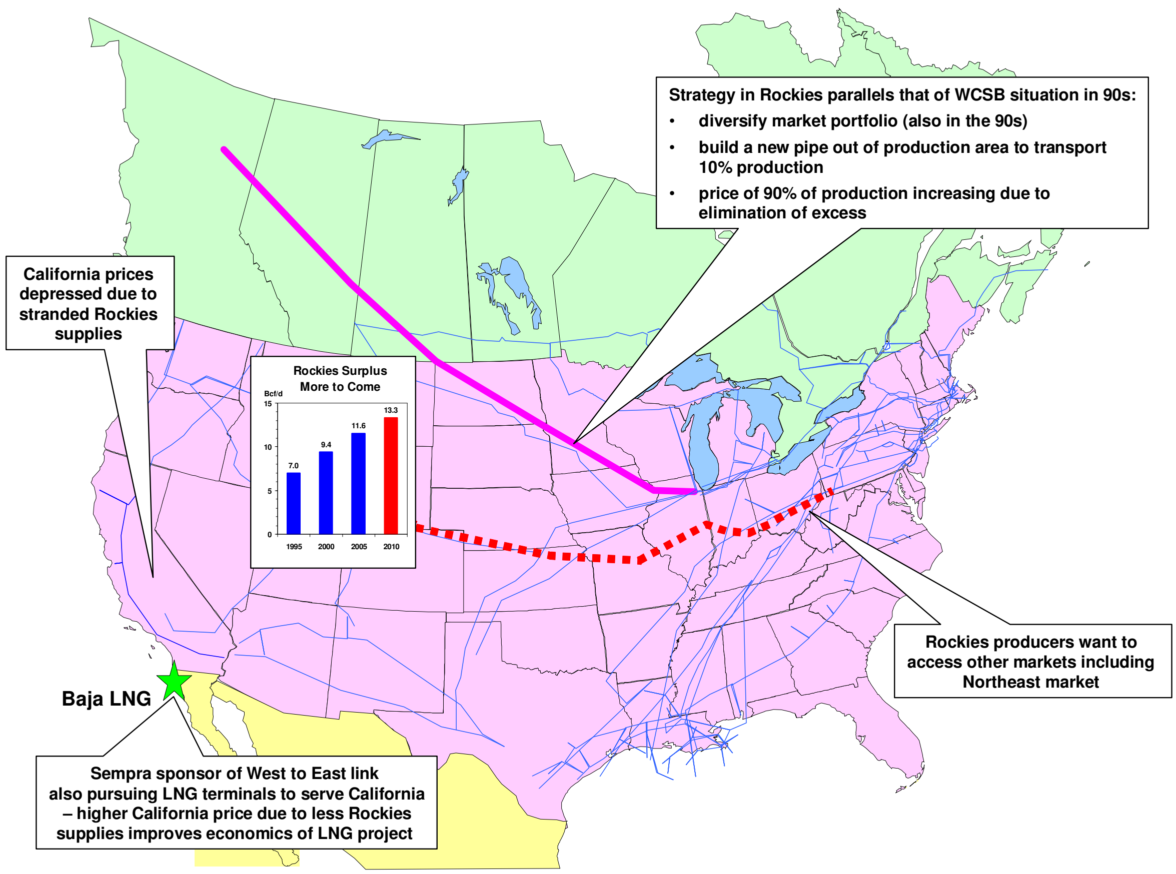
Other LNG and Pipeline Infrastructure Needed

Additional imported LNG and new pipeline infrastructure will also be required in other regions to meet market growth and offset declining Western Canada and GOM gas production. The U.S. Rockies growing gas production also needs direct access to other regions of North America in need of supply. Stranded Rockies gas supply have depressed natural gas prices in the U.S. Western region - another demonstration of the market sending a price signal to provide more access to key markets (new pipeline infrastructure).

Figure 11 shows a major new pipeline, the *Rockies Express*, is being developed to move gas from the U.S. Rockies production area to the doorstep of the U.S. Northeast. The first phase of the project is operational, a second phase to move gas to the U.S. Midwest is under construction (planned operation January, 2008), and a final segment to the Northeast planned for operation in June 2009.

The Rockies Express is expected to deliver 1,300 TJ/d to the Northeast and will act as an insurance policy against less than expected LNG to the Gulf of Mexico[9]. It will not lower gas prices in New York City in high demand situations, but will moderate prices in the surrounding markets. This will maintain interest for U.S. and Eastern supplies to access Iroquois via interconnects with U.S. interstate pipelines to reach New York and keep the pressure off Waddington.

Figure 11
Rockies Express Pipeline



[9] natural gas from the Gulf of Mexico remains the primary source of supplies for the U.S. Northeast

Northeast LNG Developments

Each of the LNG developments listed below are positioned to directly or indirectly provide more gas supply to Iroquois pipeline and the New York market and help mitigate prices.

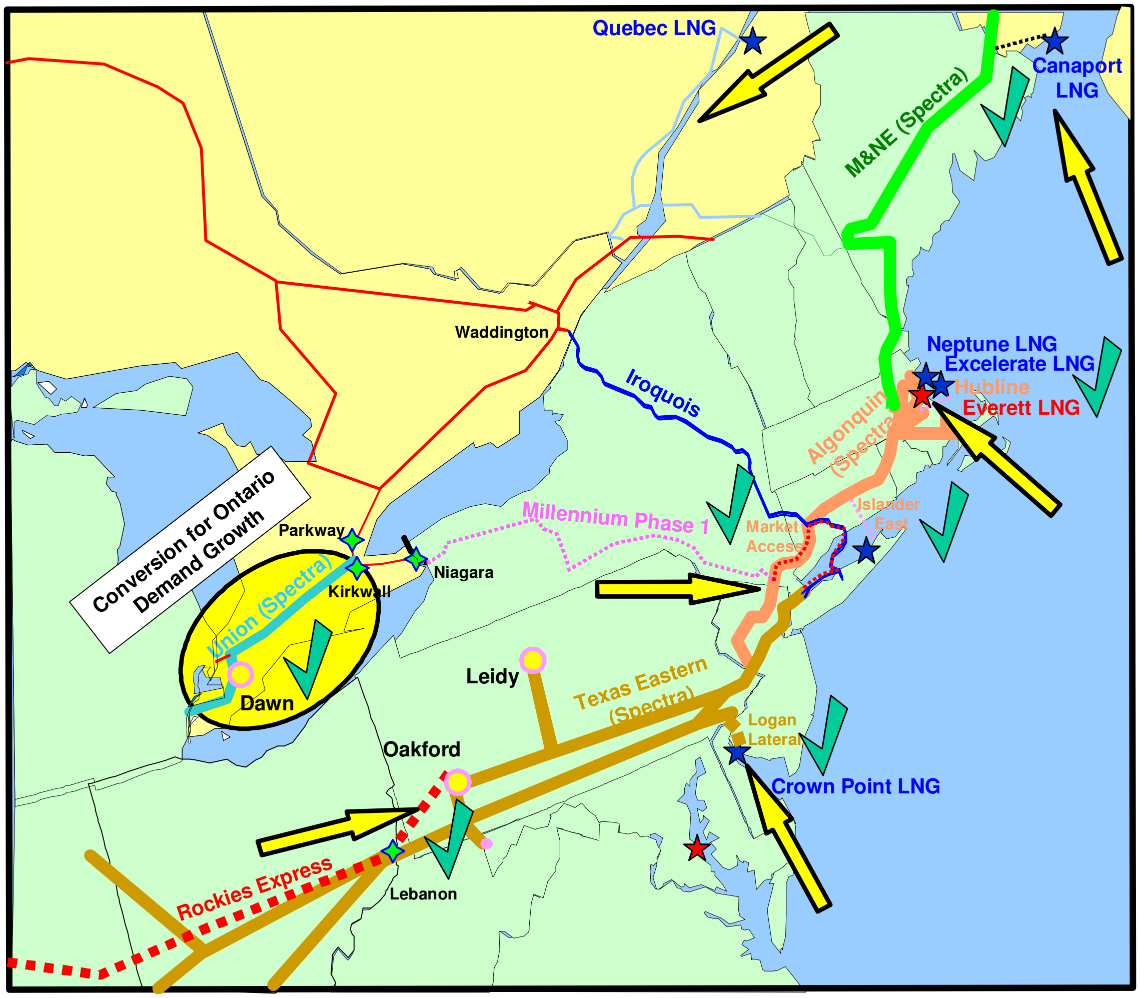
- the *Canaport LNG* import terminal in New Brunswick and related M&NE pipeline expansion to Boston area of 400 TJ/d is expected to be in-service in 2008
- Eastern supplies which *Neptune* and *Northeast Gateway* are proposed terminals (2009) that connect LNG tankers to offshore underwater pipelines (Boston area) - each capable of delivering 400 to 800 TJ/d with connections to Algonquin pipeline. Supply from these terminals are likely when regional prices are high or to needed offset potential market power of deliveries from Canaport LNG
- expansion of the *Cove Point* terminal in Maryland (along with a direct link to Leidy underground storage in Pennsylvania) is planned for the Fall, 2008
- the proposed *Broadwater* terminal (Long Island Sound, 1000 TJ/d) and BP's *Crown Landing* in New Jersey (1200 TJ/d) have planned in-service dates post 2010.

The U.S Northeast is also reinforcing its link to the Dawn area including access to the underground storage in Michigan – storage becoming a much needed "strategic reserve" as North America's dependence on imported LNG increases. This is one component of the ***NE'07 Pipeline Project*** (November 2008) and will directly impact Waddington. The NE'07 Pipeline Project consists of:

- an Empire State Pipeline expansion from Niagara Falls and extension to the new Millennium Pipeline Phase 1 project
- a Millennium's Phase I expansion (181.7 miles of new pipeline traversing the Southern Tier and lower Hudson Valley of New York) transporting gas from Empire and U.S. storage to its interconnect with Algonquin Gas Transmission
- an Algonquin capacity expansion to the Iroquois pipeline
- a new Iroquois compressor station at the Algonquin interconnect in Connecticut to physically transfer gas into its system to Con Ed in New York.

Figure 12 depicts the imported LNG projects and pipeline projects in the Northeast such as NE'0. They all represent sources of alternative supplies for Iroquois, represent competition for current Waddington supplies and will impact current gas flow patterns.

Figure 12
US Northeast – Pipelines and LNG



These new supplies in New Brunswick and offshore Boston are likely to displace current exports into the PNGTS pipeline at the Québec/New Hampshire border. This would free-up capacity to Waddington.

These supplies and imported LNG along the St Lawrence River would also alleviate West-to-East flows near Waddington.

Local and regional pricing is becoming even more dependent on other North American and global factors.

Key Factors Influencing the Future Value of FTSH

1. The *NE'07 Pipeline Project* (Empire, Millennium, Algonquin, Iroquois) provides a new transportation path from Dawn to New York City (supplements current Dawn to Waddington path but also acts as a competitor) and will ***firm-up Dawn pricing***.
2. *East Coast LNG* (New Brunswick, offshore Boston, Québec and Long Island) to reduce West-to-East flows along the Dawn to Waddington path and most importantly, ***provides access for the Iroquois New York City link downstream of Waddington*** (more competition for current Waddington supplies).
3. *Rockies Express pipeline* will ***deliver significant new supply to the Northeast market region, stabilizing supply and prices in this region***. Also acts as an insurance policy against delays or interruptions in LNG supplies.
4. Northeast markets and imported LNG accessing Dawn and Michigan storage will also firm-up Dawn prices.

Weak links in North American pipeline infrastructure are being reinforced allowing more gas supply to become even more fully integrated***. Ziff Energy believes natural gas prices across North America will converge relative to gas prices over the past several years (see Figure 3).***

OVERVIEW OF ZIFF ENERGY

Ziff Energy Group, founded in 1982, is a leading international energy consulting firm providing sophisticated industry and operational business analysis specialized consulting, and learning services to the world wide energy industry. We have offices in Houston and Calgary, the two principal oil and gas centers in North America. Our staff of 55^+ includes **many senior industry specialists**, with **15 - 25^+ years of domestic and international experience**.

The firm focuses its efforts principally in two areas:

- **Gas Services**; Ziff Energy Group is recognized for its in-depth analysis of North American as well as regional gas markets, gas and liquids supply, transportation, midstream, storage, regulatory affairs, and gas pricing forecasts.

- **E & P**; more than 100 North American upstream producers have been involved in field level operating cost and finding and development cost studies that cover most North America onshore and offshore production basins, and a growing number in foreign countries.

Gas Consulting Services

We are a major provider of natural gas customized consulting services to our growing list of clients. We undertake Gas Consulting assignments that address specific client needs in the areas of operations, strategies, and regulatory matters. Some specifics include:

- comprehensive advice on emerging gas industry issues and developments within North America and elsewhere internationally. Our technical knowledge and detailed analysis are particularly strong
- unbiased opinions on complex natural gas industry issues, supported by an understanding of your business challenges; our candid view of industry trends and developments
- expert testimony regarding gas pricing, supply, transportation, storage, and pipeline tolls
- early reporting on changing business conditions; strong competitive intelligence, especially on "frontier gas"
- clearly written, focused research that can help you identify business opportunities and threats; efficient delivery of knowledge.

Ziff Energy Team

Paul H. Ziff – CEO, has three decades of assessment experience for the oil and natural gas industry. He founded the Ziff Energy Group in 1982, which now has offices in Calgary and Houston, the two energy capitals of North America. As a specialist on natural gas industry strategies and corporate performance of North American exploration and producing companies, Mr. Ziff conceived and directed a wide range of benchmarking studies and consulting projects in upstream corporate performance, now undertaken in 15 countries worldwide. His prior focus was directing energy research for a major investment firm, and gas pricing analysis for a key Alberta government agency. Also, he is a specialist in natural gas supply, markets & industry strategies, and his firm is a member of *LNG Solutions*, along with the major Norwegian firm, Det Norske Veritas (DNV), and the noted Washington law firm, Sutherland Asbill Brennan. Ziff Energy Group is also a sponsor of the World Petroleum Congress. Mr. Ziff is an honors graduate of Harvard University, and attended the Université de Paris (Sorbonne) and the Institut d'Études Politiques. As a featured guest speaker at many energy industry events, conferences, and corporate directors meetings in North America and abroad, Mr. Ziff is extensively quoted in business and trade media.

W.P. (Bill) Gwozd, P.Eng. – Vice President, Gas Services, has a quarter century of natural gas experience. Mr. Gwozd prepared and implemented gas supply contractual purchases and gas storage strategies, directed gas control functions for transportation contractual arrangements, and prepared written regulatory applications. Other experience included transportation planning of natural gas liquids pipelines and storage facilities with a leading international integrated producer. Mr. Gwozd oversees the North American Gas Strategies Retainer Service, which focuses on forecast assessments, semi-annual client debriefings, and provides direction of Ziff Energy's widely attended gas conferences. Customized consulting assignments include: long-term natural gas price outlooks, pipeline acquisitions, regional changes in gas markets, North American gas supply and demand forecasts, gas storage development, transportation alternatives, and gas price outlooks for regional Multi-client assessments. Mr. Gwozd has led numerous client on-site presentations and moderates technical panels at Ziff Energy Gas Conferences. He (co) authors monthly client-confidential reports and analyses. Mr. Gwozd is a frequent guest contributor to various TV stations, radio, newspapers, and magazines.

Bernie Otis, P.Eng. – Senior Associate, has over three-decades of experience including: management and executive level positions in the gas pipeline and gas utility industry; detailed gas supply planning and analysis, daily gas supply operations, tolls and tariff development and analysis for major North American pipeline companies; and gas supply planning and gas purchasing/contracting for a gas utility. Mr. Otis is well versed in the natural gas and power markets, gas transportation alternatives, and the key players in the U.S. Northeast and Eastern Canada.

David Vetsch, P.Eng. – Senior Associate, has a quarter century of natural gas industry experience, including numerous management positions with a major North American utility, as well as natural gas consulting services to small and large corporations. Mr. Vetsch's experience includes planning and procurement of natural gas supplies for major utilities, managing and marketing transportation capacity, storage optimization studies and marketing for a major storage field, advising clients on deregulation of gas retail markets, and managing all functions for junior oil and gas companies through high growth periods culminating in successful company sale. Consulting assignments have included identifying direct purchase options and current rates/regulatory status of retail market deregulation, recommending legislative changes, and regulatory interventions for same, plus advising oil and gas clients on hedging strategies, negotiating sales and transportation contracts, and economic evaluations of oil and gas opportunities.

Dennis Elias – Director, Gas Consulting has over fifteen years of experience in gas gathering and processing, transportation, and distribution. Mr. Elias has undertaken consulting assignments for industry (identification and summary of pipeline business issues) and governments (expert analysis of a gas pipeline rate application). Prior, he held several progressively more responsible management and executive roles with a major North American natural gas pipeline, gathering and processing company. Mr. Elias's experience includes: managing and directing natural gas supply and demand forecasts, strategic planning, gas commodity risk management, stakeholder relations, land management, and regulatory affairs. As an expert witness, Mr. Elias has testified before the National Energy Board supporting new pipeline and midstream facility applications. He has also appeared before the British Columbia Utilities Commission. Other experience includes: developing transmission rate applications, negotiating and implementing formal relationship agreements with First Nation communities, and managing business transition activities of a corporate acquisition.

Simon Mauger, P.Geol. – Manager, Gas Services, has a quarter century of experience in the upstream oil and gas industry as an exploration and development geologist in the Western Canadian Sedimentary Basin and other locations. Mr. Mauger planned, evaluated and economically modeled gas resources for a leading international exploration and production company; prepared and optimized long term gas supply plans for growing gas markets; and developed the regional exploration component of the North American integrated natural gas strategy. As a contributing member of the Canadian Gas Potential Committee, Mr. Mauger evaluated several geological plays for the rigorous assessment of Canadian gas resources potential. Mr. Mauger develops a gas supply outlook for each North American gas producing region, authors technical research reports on supply, demand, and transport, issues, and provides an independent assessment of reports prepared by others.

Cameron Gingrich, B.Sc., B.A. – Lead Project Analyst, Gas Services, has half a dozen years of natural gas experience at Ziff Energy. Primarily responsible for analytical support and in-depth customized data analysis, trending, and modeling for the Gas Services team, Mr. Gingrich brings a wealth of insight, creativity, and economic knowledge. His efforts toward the North American Gas Strategies Retainer Service, multi-client studies, and custom consulting projects include: topic paper authoring, analysis of pipeline tolls, gas supply/storage load duration modeling, and gas price modeling. Recently, Mr. Gingrich has been the lead analyst on the Northern Gas and Evolution of Dawn Multi-client studies, and authored papers on: 2006 Summer Gas Storage Analysis, Canadian Gas Exports to 2014, Natural Gas Price Forecast to 2012, and LNG Outlook to 2012. In addition to the Canadian

Securities Course, Cameron has two degrees: a Bachelor of Science from the University of Alberta and a Bachelor in Arts in Economics from the University of Calgary where his studies focused on strategic energy and financial markets. Mr. Gingrich previously worked in the financial and transportation industries.

Dana Bozbiciu, B.Sc. – Senior Analyst, responsible for analytical support to three growing gas service businesses: custom consulting, multi-client assessments, and the North American Gas Strategies Retainer Service. Professional background includes experience in gas, water, thermal pipeline installations, seismic operations, and statistical analysis for oil and gas companies focused on gas transportation in Romania. Dana was the lead author on the assessment of gas storage cost versus the winter/summer gas price differentials, revenues and costs for gas storage operators, along with a technical review on gas storage withdrawals and injections for seven North American regions. As an added dimension for growth in international assignments, Dana is also fluent with several European languages. Ms. Bozbiciu obtained her five-year Degree in Geologic and Geophysical Engineering from Babes-Bolyai University, Romania (1993), and has completed further Management Training.

Alex Sabey, B.A. – Analyst, Gas Services, joined Ziff Energy Group in 2005. Mr. Sabey's assignments include data collection, maintenance, and initial analysis of annual proven gas reserves as well as for the North American Gas Strategies Retainer clients as well as capital spending for the annual Western Canada Reserve Replacement (F&D) Cost Study. Recent analysis is focused on Western Canadian gas drilling outlooks. Alex has a Bachelor of Arts in Economics from the University of Calgary with studies focused on the Applied Energy Economics Concentration.

Mellisa Mei, M.A., B.A. – Analyst, Gas Services, joined the dynamic team at Ziff Energy Group in 2006. Her initial assignments have included work on custom consulting reports for Ziff Energy's blue chip clients. Ms. Mei's responsibility and focus includes analytical assessment for Ziff Energy's monthly North American Gas Strategies Retainer Service topic reports and maintaining data sets. Ms. Mei obtained her Master of Arts degree in Economics from McMaster University in August 2006, where she published two energy related research papers. Mellisa was also awarded a Bachelor of Arts degree in Economics with an Econometrics specialization from the University of Waterloo in April 2005.