Natural Gas Storage Competition Study

July 2002

Prepared for
Enbridge Consumers Gas

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Forward

Background

Enbridge Consumers Gas (ECG) operates 10 storage pools in southwestern Ontario, and 1 small pool in the Niagara Peninsula. These pools have a total working storage capacity of 99 billion cubic feet (Bcf). The pools (with the exception of the small Niagara Peninsula pool) are not located in ECG's distribution service area, and are connected to it by the transmission system of Union Gas Limited (UGL). Of the 99 Bcf of storage it operates, ECG owns 91 Bcf and operates approximately 8 Bcf on behalf of others. [1]

ECG also contracts for 20 Bcf of additional storage capacity from UGL. The storage contract with UGL will expire within the next 3 years. ECG will negotiate renewal of this contract with UGL at market rates, or will replace it with a competitive alternative.

ECG uses its 91 Bcf of storage facilities, along with the additional 20 Bcf of storage capacity contracted from UGL, to serve its distribution customers. ECG currently provides storage services as part of its rate-regulated bundled distribution service to residential, commercial and industrial energy users in its distribution franchise areas. All of the 91 Bcf of storage capacity owned and 20 Bcf of storage contracted by ECG is used to provide service to in-franchise distribution customers.

ECG also sells market-priced storage and transportation services, primarily to marketers and ex-franchise customers, using storage and transportation capacity, which is determined to be surplus to the projected needs of its in-franchise customers. These market-priced storage and transportation services (Transactional Services) include peak storage, off-peak storage, loans, exchanges, and transportation assignments. Transactional Services are described in this Study at page 8. The net revenue derived from Transactional Services is shared between customer and the shareholder as approved by the Ontario Energy Board (OEB).[2]

ECG is proposing certain changes to its storage operations. It proposes to transfer the ownership of its storage assets to an affiliated storage company – Enbridge Gas Storage Inc. (Enbridge Storage). It would then contract with Enbridge Storage for the same storage capacity and deliverability it currently uses to serve its distribution customers. This arrangement would be similar to the arrangement ECG has with UGL to obtain the other 20 Bcf of its storage needs. It would be a long-term contract, and would be at rates that are cost-based, increasing over the term based on a pre-determined escalation factor. ECG would seek and select from among competitive storage services alternatives for any future incremental needs of its distribution customers.

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1 ECG operates a 6.7 Bcf of storage on behalf of and for use by UGL in the Dow Moore and Black Creek storage pools. It also operates an additional 1 Bcf of storage for use by St. Lawrence Gas.

2 Shareholders receive 10% of the forecast amount of net revenue from Transactional Services. They receive 25% of any favourable variance to the forecast, and are at risk for the full amount of any unfavourable variances.

Along with the change in ownership of storage assets, ECG is proposing to transfer the storage related Transactional Services business to Enbridge Storage. The result of this would be that ECG would no longer sell storage services to ex-franchise customers and marketers. It would only provide storage services as part of its distribution services.

As part of these changes, ECG and Enbridge Storage are requesting the OEB to forebear on regulation of the rate setting and contract approval elements of

a) any future incremental storage that may be developed by Enbridge Storage, and
b) storage related Transactional Services sold by Enbridge Storage.

Purpose of this Study

This study is prepared for ECG to assist the OEB in its assessment of the appropriateness of forbearance on specific storage services. The OEB has the authority to forebear from section 29 of the Ontario Energy Board Act, which says:

> *"On an application or in a proceeding, the Board shall make a determination to refrain, in whole or in part, from exercising any power or performing any duty under this Act if it finds as a question of fact that a licensee, person, product, class of products, services or class of services* ***is or will be subject to competition sufficient to protect the public interest****."*
> [Emphasis added]

The purpose of this Study is to provide information and analysis to facilitate the assessment of whether there is or will be competition sufficient to protect the public interest, as it relates to the specific storage services for which ECG and Enbridge Storage have requested the OEB to forebear. The OEB is being asked to forebear on the economic regulation (price and contract terms) of storage services, except for the storage services provided under the proposed contract between ECG and Enbridge Storage for 91 Bcf of capacity, and the 8 Bcf of storage operated on behalf of others. Enbridge Storage will own and operate the storage assets currently used to provide service to ECG's distribution customers. These distribution services are not part of the forbearance request. They will continue to be provided by ECG to its distribution customers.

This study deals with issues relating to the economic regulation of storage services. It does not deal with other aspects of storage development and operation that are also the subject of regulation. In addition to rate regulation, the Ontario Energy Board Act requires the following storage approvals:

- Designation as a gas storage area.
- Authorizations to inject into, store in, and remove from the storage pool.
- Licensing by the Ministry of Natural Resources to drill wells within the designated area.
- Leave to construct gathering pipelines.

Approach Used in this Study

In order to analyze whether there is competition sufficient to protect the public interest, this study looks to criteria used by regulatory and oversight bodies in making the same kinds of assessments. The regulatory and oversight bodies looked to are:

U.S. Federal Energy Regulatory Commission (FERC)
Canadian Radio-Television and Telecommunications Commission (CRTC)
Ontario Independent Electricity Market Operator (IMO) Market Surveillance Panel

These three bodies were chosen because they are relevant and comparable to how the OEB may consider forbearance of gas storage services.

FERC has dealt with many specific cases where applicants have sought approval to charge market rates for gas storage services. FERC has developed and used some very specific criteria for these assessments.

The CRTC has also dealt with a number of forbearance applications. Although the services it regulates are not energy services, it is a very useful comparison because it has adopted and used criteria for the assessments it has made. Its criteria were drawn from a number of sources including Canadian Competition Bureau Enforcement Guidelines, and have evolved to fit the CRTC's specific regulatory objectives.

The Market Surveillance Panel of the IMO was recently established to assist in the development of a competitive electricity market in Ontario. It is accountable to the Independent Directors of the IMO. Although it is not a regulator, it does have responsibilities, which include identification and investigation of the abuse of market power. It has identified what behaviours it considers to represent the abuse of market power. This is directly relevant to how the OEB may assess the appropriateness of forbearance since the lack of the potential for abuse of market power would be viewed as an indication that competition is sufficient to protect the public interest.

In addition to these three bodies, this Study describes the evolution of the National Energy Board's regulation of natural gas transportation capacity. (This description is provided in Section 1.4 describing the market for storage services and its evolution.) The evolution of storage services has been impacted by the NEB's decision to step back from regulation of the secondary market for transportation services. Although this was not a specific forbearance application or process, it has similar characteristics, and provides a further reference for how the OEB may consider regulation of markets which have evolved to be competitive.

Executive Summary

This study concludes, for the storage services for which ECG and Enbridge Storage are seeking forbearance, that they will not be able to exercise market power, and therefore competition is sufficient to protect the public interest. This conclusion is reached from assessments of market dynamics and competition using both the FERC criteria and the CRTC criteria, and from review of the considerations identified by the Ontario IMO Market Surveillance Panel for assessing abuse of market power.

The specific criteria used by both FERC and CRTC, and the Market Surveillance Panel's considerations, are all very similar. In addition, they all define market power to be the ability for a seller to sustain a price increase without a consequential loss of market share. This high degree of overlap indicates that these are sound criteria based on consistent regulatory and economic thinking, and that they are useful by regulators in assessing the appropriateness of forbearance applications. FERC and CRTC both have the following approach to assessing forbearance applications[3]:

1. Market Definition

Define the market that is to be assessed, in terms of the products and services, and in terms of geographic scope.

2. Market Share

Quantify market shares of each of the services providers in the market. FERC includes an additional metric (HHI) to assess concentration in the market by calculating the sum of the squares of each supplier's market share.

If the market is not highly concentrated, or the market share of the applicant is relatively low, it is concluded that there is no potential for the applicant to exercise market power.

3. Other Market Conditions

If the market is highly concentrated, and the market share of the applicant is relatively high, additional market factors are reviewed. These additional factors, to be collectively assessed, are:

a. Demand conditions (or buyer market power) such as the ability to reduce demand, or switch to available substitutes in response to price increases.

[3] The applications assessed by FERC are for approval of market-based rates for storage. This is the same as forbearance in that the regulator is being asked to refrain from regulating rates, allowing prices to be determined by market factors.

b. Supply conditions such as the availability of capacity or the ability to expand capacity in response to price increases. (The CRTC refers to "rivalrous behaviour" as evidence of competitive activity by suppliers.)

c. Ease of entry into the market, and the existence of any physical or regulatory barriers to entry.

The IMO Market Surveillance Panel indicated that it will monitor and assess market conditions for signs of market power. It describes these market conditions as demand and supply responses, and physical and regulatory constraints in the market. These are similar to the more specific market conditions assessments of the FERC and CRTC criteria.

This Study defines the market geographically to include Ontario and Michigan because of the large volume of capacity on the pipelines connecting these areas, and because storage services are actively marketed into each area from the other. Storage services sellers in Ontario compete directly with Michigan-based sellers.

The storage services product definition includes services provided by physical storage owners, as well as storage provided through the secondary market (i.e. storage services sold by marketers based on the marketers' contracts for service from a storage owner) and through other contractual arrangements as described in the Study. These are all storage services alternatives available in this market.

The storage services for which competition is assessed in this Study are wholesale storage services, not distribution storage services. ECG and Enbridge Storage are not requesting forbearance on the regulation of rates ECG charges to its distribution customers. Therefore, this Study is not an assessment of the competitiveness of storage services offered to ECG's distribution customers. Rather it looks at market dynamics and competitiveness relating to the market in which ECG would be seeking to obtain storage services on behalf of its distribution customers. It assumes that ECG would contract for storage services from Enbridge Storage, Union Gas or others, and that ECG would choose economic alternatives for any additional capacity it may need, and for replacement of currently contracted capacity as those contracts reach expiry.

The Study concludes that the applicants cannot exercise market power primarily because their combined market share is low relatively to others in the market. The market for storage working capacity has a degree of market concentration that exceeds the threshold FERC considers to represent an absence of market power potential. However, this is mitigated by the fact that ECG's market share is low relative to the other suppliers. There are four storage services providers with larger market shares. The applicants' low market share alone would be sufficient to conclude, based on either the CRTC or the FERC criteria, that there is no potential for the applicants to exercise market power.

This Study goes on to assess the other market conditions described above. This assessment further reveals what has become a competitive market for storage services. It concludes that price increases in this market lead to demand responses, which include reducing demand for

storage services and replacing them with pipeline capacity or delivered supply. Supply responses also exist, as evidenced by recent physical capacity additions, the potential for further capacity additions, and the availability of storage services supported by contractual arrangements as described in the Study. Barriers to entry are not significant as there are no structural impediments that would prevent new entrants to the market if prices were to rise.

The assessment of market dynamics in this Study includes a description of demand and supply conditions, and an overview of market changes. In order to assess the competitiveness of storage services, it is necessary to understand the market for these services and how it has evolved over the past 15 years. Storage is no longer used exclusively by distributors to manage physical constraints. New storage services have evolved and are used by many market participants to more actively manage the delivered costs of gas supply. More market participants now also provide storage services. As the markets for gas supply and transportation capacity into Ontario have changed and become more flexible and competitive, so has this market for storage services.

1 Description of Michigan-Ontario Natural Gas Storage Market

1.1 Description of Storage Services

Storage services have evolved since 1985 in parallel with the increasing competitiveness of gas supply and transportation services. Increased flexibility of transportation services contracting, particularly in the secondary market, has resulted in the creation of new uses for storage and in the development of new and competitive storage services. This evolution is described in Section 1.4 at page 16.

Storage is basically the ability to deliver gas at one point in time and receive it back at another point in time. Storage services include seasonal storage, and short-term or transactional services. Seasonal storage is the use of storage to inject gas during the summer and withdraw it in the winter. Seasonal storage services are contracted for terms of one or more years. Transactional storage services are contracted for shorter terms – generally less than one year. They include peak storage, off-peak storage, and loans. Other terms are used for certain versions of these services or combinations of them. The following section describes these different storage services.

1.1.1 Seasonal Storage

This is the most traditional storage service and is used primarily to provide withdrawal or deliverability in the high demand winter season. Its value historically was in avoiding the costs of extra transportation capacity in the high demand season.

Since the deregulation of gas supply prices, seasonal storage is also used to avoid or capture the difference in the price of gas between summer and winter. Parties store lower priced gas in the summer in anticipation of higher prices in the winter. Buyers use storage to avoid the high winter cost, and sellers use storage to obtain the higher winter price.

Seasonal storage providers are usually physical storage operators, but also include marketers holding contracts with storage companies. Seasonal storage is also provided by combining supply and transportation contracts to create "synthetic storage" as described at page 15.

Seasonal storage service provides the right to inject and withdraw a specific maximum volume of gas. The service terms include injection rights – the maximum volume of gas that can be injected in a given day, and the period of time (usually the summer) over which injections can be made. Similarly, the service terms include withdrawal rights – the maximum volume of gas that can be withdrawn in a given day, and the period of time (usually the winter) over which withdrawals can be made.

Seasonal storage is generally contracted for periods of one or more years, usually starting with the first day of the summer injection period. Marketers generally contract for periods of up to 10 years. Distribution companies often contract for longer terms.

1.1.2 Transactional Services

Storage services buyers and sellers trade in a variety of shorter term or transactional services, and a number of different names are used for these services. They can be broadly defined to include the following three services:

Peak Storage

- Short-term storage (one year or less) that allows injection in the summer and withdrawal in the following winter.
- Storage cycle may be as short as within a single month (often called "parking").

Off-Peak Storage

- Short-term storage (one year or less) that allows injections in the winter and withdrawals in the same winter or the following summer.
- Storage cycle may be as short as within a single winter month (often called "parking").

Loans

- Short-term "negative" storage that allows withdrawal of gas followed by injection (or return) at a later date.
- Can be within the year, season, or month.

Balancing

- A combination of short-term storage (or parking) and loans that allows a shipper to have positive or negative storage balances.

Transactional storage services are provided by storage companies, marketers, and pipeline companies. Any party with a long-term storage contract is likely to provide transactional services as a way to derive maximum value from that contract. Transactional service sales allow a party to generate revenue from the portions of its storage contract entitlement it does not need at any given time. Marketers are in the business of finding and capturing the value of these services, regularly buying and selling them. For example, when UGL offers storage into the market it receives bids from a number of marketers. These marketers bid a price for storage that represents the seasonal differences in prices they know they can capture from using the seasonal storage service, plus an additional premium representing the additional value they expect to capture by selling other short-term services. UGL has sold 25 Bcf to marketers over the past 5 years on this basis.

TCPL offers these transactional storage services to the market. It will allow customers to store or borrow gas for any term, anywhere on its Canadian Mainline system. TCPL has issued a

"White Paper" describing its proposal to further broaden these services by treating the entire Eastern delivery area as a single trading point.

These transactional services trade in a highly competitive market at the Dawn hub and at other nearby trading points including St. Clair, Trafalgar, and Niagara. Because the Dawn hub is the junction point for several pipelines including TCPL and Vector, and because it is connected to a large number of storage pools in Ontario and Michigan, it provides a very effective trading point for gas. This allows shippers and marketers to come together to trade in supply, transportation, and storage related services. In 2001 4,345 Bcf of gas changed hands at Dawn.[4] That is an average of almost 12 Bcf per day, and it is growing rapidly. This volume is well in excess of the physical capabilities of the transportation and storage infrastructures. This indicates that there are a great deal of transactions occurring – many buyers meeting many sellers to trade in services.

1.2 Definition of the Market for Storage Services

ECG's storage services customers are in a market that includes Michigan and Ontario. Although ECG's distribution customers are in Ontario, storage services are provided in this market from beyond the Province's borders. ECG's storage services compete directly with storage provided from Michigan.

The market includes Michigan because it is physically connected to Ontario through a number of pipelines, and it has abundant storage capacity -- the same type of physical storage facilities that are found in Ontario. Michigan storage service providers are very aware of the Ontario market, actively market into Ontario, and have successfully sold storage services to Ontario gas shippers. Gas prices in Michigan and Ontario are virtually identical indicating that gas movements between these areas make them a single market. Each of these features of the Michigan-Ontario market are described in the following sections.

Although this Study defines the market for storage services to be Michigan and Ontario, it could be argued that a broader geographic scope could be used. Ontario is well connected to New York, Ohio and Pennsylvania, and these areas also have significant storage facilities and storage service providers. For example the National Fuel Gas system in New York has connections to several storage pools. The TCPL system connects Ontario directly to National Fuel Gas at Niagara Falls. Shippers, including ECG, have used deliveries into New York to provide winter peaking service to Ontario gas users. This works by contracting with another shipper who is moving gas into New York through TCPL (via Niagara). That New York shipper agrees to drop off its gas upstream in Ontario (at Dawn or Trafalgar). The shipper will then satisfy its New York delivery needs from storage withdrawals in New York. The result is that New York storage is used to provide peaking service in Ontario.

This Study does not include New York, Ohio and Pennsylvania in the defined storage service market, because there have not been a great deal of transactions providing storage from these

[4] UGL web-site. (www.uniongas.com)

areas into Ontario. If these areas were included, the broader market would have more storage services capacity and more storage services providers. The relative market shares of each provider would be smaller and the potential for market power would be less.

1.2.1 Pipeline Connections

There are 5 pipelines with a total capacity of 3.6 billion cubic feet per day (Bcf/day) to move gas between Michigan and the Dawn market hub. This is illustrated on the map at Appendix 1. These major connecting pipelines are:

- Great Lakes Gas Transmission (GLGT)
- Vector
- CMS Panhandle
- Michigan Consolidated Gas Company (MichCon)
- Consumers Energy/Bluewater

These pipelines, in turn, connect upstream to TransCanada PipeLine and Alliance Pipeline, and supply areas. Through these connections, natural gas flows from major supply basins in North America, through Michigan, into Southwestern Ontario. The supply basins accessed by these connections include the Western Canadian Sedimentary Basin in Alberta, the Permian Basin in Oklahoma and north Texas, and the Gulf Coast Basin and Henry Hub, Louisiana.

Gas is transported to Dawn from each of the major supply basins through a number of different routes, most of which travel through Michigan. Commonly used pipeline routes leading to Dawn through Michigan include:

- From the Western Canadian Sedimentary Basin via TCPL, and Great Lakes Gas Transmission, connecting through TCPL to Dawn.
- From the Western Canadian Sedimentary Basin via Alliance and Vector to Dawn.
- From Henry Hub, Louisiana via CMS Trunkline and CMS Panhandle, connecting to the Union Gas system near Windsor.
- From the Gulf Coast Basin via ANR, and MichCon, connecting to Dawn through St. Clair, Link, or Bluewater.
- From the Permian Basin via ANR, and MichCon, connecting to Dawn through St. Clair, Link, or Bluewater.
- From the Western Canadian Sedimentary Basin via Foothills Pipe Lines, Northern Border, to Vector or ANR, and MichCon, connecting to Dawn through St. Clair, Link, or Bluewater.
- From the Western Canadian Sedimentary Basin via TCPL, Viking, ANR, and MichCon, connecting to Dawn through St. Clair, Link, or Bluewater.

These routes provide a breadth of competitive alternatives to shippers wanting gas at Dawn. The prices for delivery through each of these routes are compared and reported monthly in Canadian Gas Price Reporter[5] providing ample price transparency for shippers to analyze and compare costs.

[5] Published by Canadian Enerdata Ltd.

All gas stored in facilities at Dawn is transported through one of the routes through Michigan described above, or TCPL's Northern Ontario route.

Vector is the most recent addition to the Michigan-Ontario interconnections, adding 1 Bcf/day of capacity from Chicago through Michigan to Dawn. It began operation in December 2000 with a capacity of .7 Bcf/day, and is now operating at a capacity of 1 Bcf/day. This additional pipeline has further increased the degree of connection between Michigan and Ontario. The Vector Pipeline was marketed primarily to connect Chicago to the Dawn hub. It has had the additional effect of connecting Michigan storage to Ontario. Vector is directly connected to storage fields owned by a number of different Michigan storage operators including the 42 Bcf Washington 10 pool and MichCon's 47 Bcf pool at Belle River. Additional connections are likely to be added as the volume of gas moved through the pipeline increases. According to the Michigan Public Service Commission, Vector could "result in increased utilization of the extensive natural gas storage assets within Michigan."[6]

The transportation links described above result in a very significant flow of natural gas between storage in Michigan and Ontario. However, transportation capacity is also used as a substitute for storage services in this market under the right economic conditions. As the cost of transportation capacity declines, or when upstream markets, such as Chicago, experience significant price decreases, gas users will use deliverability from the pipeline instead of contracting for storage services. Rather than buying gas, putting it in storage and withdrawing it at a later date, a shipper or marketer can simply arrange to buy the gas and transportation capacity to deliver the gas when it is needed. The combination of relatively low supply and transportation costs can preclude the need for storage and effectively caps the price that can be charged for storage.

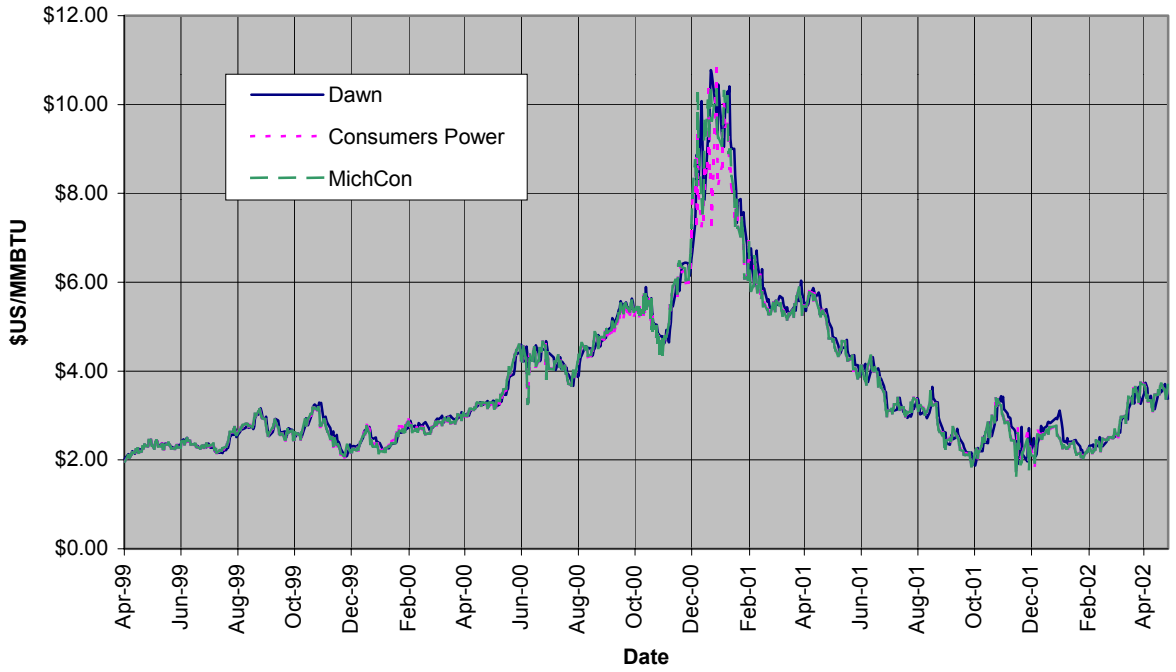
1.2.2 Price Consistency

The price of gas traded in Michigan has historically correlated very closely with the price of gas traded in Ontario. This is evidence that Ontario and Michigan effectively operate as a single market.

The following chart illustrates the correlation of prices between Michigan and Ontario. It shows the daily price of spot gas over the past 3 years at Dawn and at the two main trading points in Michigan.

6 MPSC 1999 Annual Report, March 2000

Daily Spot Prices
Dawn and Michigan
April 1/99 to April 26/02
Source: Canadian Enerdata



1.2.3 Trading Activity

Storage service buyers and sellers operate on both sides of the border. Michigan-based marketers buy and sell storage at Dawn, and Ontario-based companies look to Michigan for storage services. In fact some marketing personnel employed in Detroit-based storage service providers, have previously been employed in Ontario storage companies, such as UGL. Clearly the knowledge and market awareness of Michigan storage services providers extends into Ontario. Marketing activities also regularly cross the boarder. All of the major Michigan storage companies sell storage services at Dawn.

Both UGL and ECG have sought bids for storage services from Michigan. UGL has in the past contracted for storage from Michigan when it needed more storage capacity than it had from its own pools in order to serve its customers. ECG considers Michigan storage to be a potential option it will assess when it enters negotiations with UGL for the renewal of its long-term storage contract.

TCPL has contracted for 8 Bcf of storage in Michigan with ANR since 1998 to serve Ontario loads. This contract was entered into following a competitive bidding process. UGL and ECG

were among a number of bidders, competing to supply storage services to TCPL. Michigan storage was the successful competitor in this case.[7]

Gaz Métropolitain, the major Québec gas distribution company, is another specific example of a gas storage purchaser capable of substituting Ontario based storage with storage services from Michigan. Gaz Métropolitain has traditionally contracted for storage services in Ontario from UGL. Recently it has made storage services arrangements for some of its needs to be provided by a Michigan storage service provider. It has a contract with CoEnergy Trading Company for an exchange agreement that provides Gaz Métropolitain with 4 Bcf of storage services.[8]

Although Michigan storage has been contracted to Ontario gas loads as in the examples described above, this activity has been somewhat limited in the past since cost-based rates in Ontario have often been at or below the price of Michigan storage. This has resulted in there being limited incentive for Ontario-based buyers to seek Michigan storage or for Michigan-based providers to actively market in Ontario. If more of the Ontario market were to trade at market-based rates, it is reasonable to assume that the flow of storage services from Michigan to Ontario would increase.

1.3 Storage Supply

The Michigan-Ontario market has a large physical storage capacity derived from underground reef formations. The geological feature, which provides storage in this area, is known as the Michigan Basin and includes pinnacle reef structures, which have been developed into working storage pools on both sides of the Michigan-Ontario border. Total storage working capacity in the area is currently over 800 Bcf, with maximum deliverability of almost 17 Bcf per day. New storage pools continue to be developed. In addition to physical storage assets, storage services are provided in this market through transportation and supply contracting arrangements often referred to as "synthetic storage", as described further in this section.

1.3.1 Physical Storage in Ontario

Storage development has been taking place in Ontario since 1942. There are currently over 230 Bcf of storage capacity in Ontario in more than 30 different storage pools. Most of these pools are in the Sarnia area and are directly connected to the Dawn market hub.

In addition to underground reef formation storage, there is a very small amount of Liquefied Natural Gas (LNG) storage in Northern Ontario. LNG storage has different operating characteristics than underground storage. It provides very fast "needle peaking" deliverability, but has more limited storage and recycling capacity, and is more expensive to operate.

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7 The storage service contracted for by TCPL was needed to provide service to UGL and ECG when they converted their FST service contracts to FT service. FST service had a more variable delivery pattern than FT service. TCPL used storage service in combination with balancing and transportation arrangements to meet the FT delivery requirements. These storage arrangements were reviewed and approved by the NEB in RH-1-97.

8 Under this arrangement, Gaz Métropolitain delivers 4 Bcf of gas to CoEnergy during the summer and CoEnergy provides the same volume to Gaz Métropolitain during the winter. R3444-2000.

Salt cavern storage is used in other areas of North America, particularly where reef formations are non-existent. It can provide storage capacity with very high deliverability. However it can be expensive to develop and often faces environmental challenges relating to brine disposal. Its potential in Ontario remains un-tapped.

Underground reef storage continues to be developed in Ontario. In the past three years UGL has added over 14 Bcf of working capacity in the Dawn area. This storage capacity was added in response to market-based prices, and comes from 5 pools known as the Century Pools Development. These developments came into service in 1999 (Century Pools Phase I) and 2000 (Century Pools Phase II).[9] UGL is planning to increase its storage capacity by another 1.5 Bcf through further development of its Sombra pool later in 2002.[10] ECG has also been active in the development of storage pools in Ontario. It has added 8 Bcf of new capacity since 1997 through development of the Ladysmith, Black Creek, and Coveny pools.

A critical element in the development and operation of storage facilities in Ontario is storage rights – the contractual agreements with landowners. These storage rights are bought and sold among gas and oil producers, developers, and storage companies. There are no restrictions to who can own these rights.

It is not only the regulated distribution companies in Ontario who can and have developed storage pools. In 1998 the OEB approved an application by CanEnerco Limited – a non-regulated oil and gas producer and marketer – to develop a small storage pool in Kent County[11]. Although CanEnerco is no longer in business as the result of difficulties unrelated to its storage business, this case demonstrates that there are not significant barriers to entry by new storage developers. It demonstrates that a party can become a storage developer, owner and operator by applying to the OEB and meeting the same approval requirements that exist for others.

Exploration and development activity continues to take place in Ontario using the latest technologies including 3D seismic imaging. In January 2000 Manti Resources, Inc. announced that it was in partnership with other companies to drill exploratory wells in Southwestern Ontario to verify potential reef structures that may contain significant native gas reserves. Manti Resources is a private exploration, development and production company with operations in Texas and Louisiana.[12] UGL expects to continue to economically develop new storage to meet more than its expected in-franchise needs.[13]

UGL commissioned a study by Sproule Associates Limited in January 2001 to obtain independent assessment of the potential for further storage development in Southwestern Ontario. Sproule's report indicates that it has worked for a number of clients in recent years to assess storage development potential in this area, and that it "has reviewed the exploration and development programs of several companies active within the Silurian pinnacle and patch reef

9 RP-1999-0047, March 30, 2000
10 Sombra Horizontal Wells project. RP-2001-0056.
11 EBO 201/EBLO 263, February 4, 1998.
12 www.mantires.com
13 RP-2001-0063, Appendix 4, page 2.

belt which crosses southwestern Ontario."[14] Sproule concludes its report with an estimate of a further 120 Bcf of storage capacity to be developed in Southwestern Ontario. This report clearly points to the existence of many parties interested in and exploring further storage development opportunities. Even if only a portion of Sproule's estimate has the potential to become commercially developable new storage capacity, it represents significant new market entry and expansion.

1.3.2 Physical Storage in Michigan

There is currently almost 600 Bcf of working storage capacity in Michigan. Michigan has more storage that any other state. Storage development has been taking place in Michigan since 1941. There are more than 50 storage field, virtually all of which are depleted natural gas production fields. There is also a small amount of salt cavern storage in Michigan.

Since storage pools are developed from depleted natural gas production fields, the continued production of natural gas in Michigan bodes well for the continued development of new storage pools. Natural gas production is still very active in Michigan. In 2001, 229 Bcf of natural gas was produced, and 366 new well connection permits were issued.[15]

The reef structures that make up storage fields in Michigan have a high porosity, which makes them among the best in North America.[16] This high porosity allows for a greater portion of the stored gas to be withdrawn in a single day. The deliverability[17] from Michigan storage is an average of 2.1%. This is higher than Ontario storage, which is an average of 1.5%

Storage in Michigan is owned and operated by distribution utilities, which are regulated by the Michigan Public Services Commission, as well as by interstate transmission pipeline and storage companies, which are FERC regulated. There are a combination of cost and market-based rates in effect.

The most recent significant storage addition in Michigan was the Washington 10 pool, which came into service in November 1999 with a working capacity of 42 Bcf. This pool is a specifically named delivery and receipt point on the new Vector Pipeline.

1.3.3 Synthetic Storage

Storage services are frequently provided in ways that bear little or no connection to actual storage assets. Combinations of supply and transportation arrangements contracted by the service provider underpin such services. "Synthetic storage" has become a common term in the gas industry in the Michigan-Ontario market for such arrangements, which provide a storage service without the use of physical storage facilities. The following is an example of how this is

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14 RP-2001-0063, Appendix B.

15 Michigan Public Service Commission, Gas Division, Storage web page.

16 Ibid.

17 Deliverability is measured by the percentage of working capacity, which can be withdrawn from storage in a day. It is a function of the geographic characteristics of the pool (porosity), as well as compression and pipeline capacity to withdraw and transport gas.

arranged. A storage service customer receives contractual rights to deliver gas in the current month and receive it back at some later date -- just like it would if it were contracting storage service from a physical storage facility. The service provider (often a marketer) moves the gas delivered in the current month to some other point or immediately sells it at the delivery point to another party. The service provider then repurchases the same quantity of gas at the later date when it is to be redelivered to the customer. This can all be done without the gas ever being put into physical storage facilities. Because of the availability of financial derivatives and futures contracts these transactions can all be priced in advance so that the margins to the service provider are established when the transaction is made. Alternatively, the service provider can elect to leave some of the transaction pricing open to changing market prices. Large marketers are providing this type of service in the Michigan-Ontario market area.

Another method of creating additional storage service capability is for one party to loan gas to another party for redelivery at a later date. This loan is effectively "negative storage" in that the party receiving the loan takes gas before it delivers gas. The party receiving the loan needs immediate supply or deliverability and is willing to pay for it. The party providing the loan provides the gas out of storage it has for its own account or manages for another party. This frees-up storage space, thereby creating the ability to sell more storage.

Fuel switching, or self-curtailment is another contractual method of providing the equivalent of a storage service. A gas user, such as a dual-fueled industrial operation, or a gas-fired power plant, has the ability to stop using gas (either by switching to an alternative fuel or by simply shutting down temporarily) when it sees the market value of delivered supply go up. It can choose to sell the supply it had arranged to be delivered for its own consumption, to another party in need of peak supply. This creates a peaking service to the market, which displaces or competes with the peak storage service sold by a more traditional storage service provider. Gas-fired power plants are often developed and operated based on the relative costs of gas and power. The term "spark-spread" is commonly used to refer to the difference at any given time between the price of power in the market and the cost of the gas required to generate it. Gas-fired power plants regularly monitor this spark-spread to determine if it is more economic to produce and sell electricity or to re-market their delivered gas supply. In this way, power plants become providers of short-term peaking service.

ECG has and continues to contract with power plants in New York for peaking services, which are a direct alternative to ECG's use of storage. Without these peaking services ECG would require more storage. ECG evaluates this peaking service relative to the cost of storage and has determined it to be an economic alternative. This is a source of storage service, which does not come from physical storage facilities.

1.4 Storage Demand

Traditionally gas distribution companies have used storage to ensure gas supply was available in the winter. Before 1985 in Canada gas supply prices were regulated. Storage was developed and used simply to avoid the cost of the transportation capacity that would otherwise be required to meet the full winter peak demand. The value of storage was in its physical ability to allow

distributors to serve winter demands. Distribution companies had an incentive to develop storage not only to avoid higher transportation costs, but to increase the regulated rate base on which they earned a return.

When gas supply prices in Canada were deregulated prices began to show seasonal variability. This seasonal variability introduced a new use for storage – to inject gas during the summer with the expectation of receiving (or avoiding) higher prices for it in the winter. This created a market value for storage – the seasonal difference in gas supply prices. As competitive supply markets evolved, financial instruments (futures and swaps) came on to the market. These financial tools allowed market participants to manage the expected seasonal value of storage. They could hedge their storage injection by purchasing futures contracts to lock in the price they would receive on withdrawal. The financial instruments also provided a broadly available market price for the value of storage. The difference between the winter futures price of gas and the summer price of gas could be used as a reference for the seasonal value of storage. This was the beginning of a real marketplace for storage services.

Following the deregulation of gas supply, the transportation services markets began to evolve. In 1988, the National Energy Board (NEB) approved changes to the regulation of TCPL and other regulated transmission companies, which increased the flexibility of the use of these services. These changes included removing the restrictions on diversions[18] and backhauls[19], and allowing transportation services assignments[20] and brokering. These changes allowed shippers to move gas to different points on the TCPL system at relatively low cost, and allowed trading of short-term capacity among shippers. This promoted more efficient use of transportation capacity because shippers could make near-term changes to how they used capacity. It also gave shippers new tools to manage short-term changes in their supply and demand. It created a secondary market for transportation capacity – a source other than TCPL from which to obtain capacity, and the ability to shed unneeded capacity and receive some value for it. Significantly, it introduced short-term capacity contracts into the market. Prior to this only a few very large shippers (distribution companies and major marketers) held capacity since it required commitment to very long terms (typically 10 years). In the secondary market terms are much shorter making it attractive for more shippers to participate.

In 1994 the NEB saw that this secondary market for TCPL capacity had developed and questioned what its role should be in regulating it. Up to this point the NEB was imposing a rate cap on the price at which parties could buy or sell capacity in the secondary market. It was also considering putting in place requirements for posting all bidding activity for secondary market capacity on electronic bulletin boards. It sought input from interested parties on these issues. In seeking input the NEB described two principles:

1. All shippers should have equal opportunity to obtain capacity released into the secondary market; and

[18] Diversions are the ability to have gas delivered to a different point than had been contracted.

[19] Backhauls are the ability to drop off gas at a point upstream of the original delivery point.

[20] Assignments are the transfer of capacity rights by a party with a contract for TCPL capacity to another party.

2. Available capacity should be traded in a manner that allows for the optimization of the use of the pipeline and allows the capacity to be allotted to those shippers who most highly value it.[21]

The NEB's consideration of these issues was relatively informal. Although this was not a forbearance application, it has similarities to forbearance in that the NEB was considering stepping back from rate regulation of transportation services traded in the secondary market. In its considerations it addressed the issue of possible market power abuse. The NEB determined that there was a sufficiently competitive market to prevent abuse by a dominant shipper.

The conclusions the NEB reached regarding the secondary market for transportation services were:

a) It should remove the price cap, and
b) It should not require that bidding be posted on electronic bulletin boards.

"…the Board [NEB] is of the view that, as the secondary market appears to be working well, a minimum of regulatory oversight is required."[22]

Along with the development of secondary markets for transportation capacity, additional uses for storage evolved. The increased flexibility in transportation contracting allowed more efficient use of storage and storage-related services.

This market development in storage services was further assisted in 1998 by changes to the Ontario Energy Board Act. Prior to 1998 only gas utilities were allowed to sell natural gas. Although direct purchase transactions took place, they were only allowed where gas commodity sales occurred outside of Ontario or went through a distribution utility. This restricted the ability of market participants to buy and sell gas in Ontario storage. Through a consultative process referred to as the Ten Year Market Review, the OEB concluded in December of 1997 that it should not regulate markets that were subject to full competition, and it recommended the Minister of Energy Science and Technology make changes in legislation. One of the important changes that resulted from this was to enable gas commodity title transfers in Ontario. This change allowed marketers and gas users to transact directly with each other for gas and storage related services.

Storage is now used to hedge gas price increases, to park extra gas resulting from short-term demand shortfalls, to hold gas for short-term demand surges, and to speculate on future gas price swings both within and across seasons. Marketers, producers, and large energy users undertake these activities.

Like the way secondary market transportation services evolved to be a competitive market, the transactional storage services market has become competitive. The secondary market for transportation services became competitive because shippers who held capacity contracts with TCPL in the primary market could resell portions of their capacity rights at market prices.

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21 NEB discussion paper on Possible Changes to the Secondary Market for Natural Gas Transportation Services, July 5, 1994.

22 NEB letter dated February 2, 1995.

Similarly, any party holding storage capacity with a storage provider can resell portions of its storage space, injection or withdrawal rights to others at market rates. As with the evolution of the secondary market for transportation, changes in marketing and contracting practices have allowed shippers and marketers to use storage much more efficiently, and for the trade in storage services to become highly competitive. Gas distribution companies still use storage to provide winter deliverability, but they are no longer the only storage users.

There has been an increase in the number of storage services being offered. Although firm storage service, with summer injection and winter withdrawal rights, is still the major storage offering, a number of others are now also very common. They include interruptible storage, off-peak storage, peaking storage, balancing services, parking and loans. There are also a growing number of market hub services that can include the use of storage.

The anticipated growth in natural gas powered electric generation in Eastern Canada and the U.S. Northeast will create demand for high deliverability storage. However, it will also create a form of competition for traditional winter storage withdrawals and peaking services. Many of these power generation facilities are designed for peaking capacity and will have variable daily and hourly demand patterns. They will have the ability and profit incentive, to discontinue electric production during winter gas demand peaks in favour of selling their contracted gas deliveries into a higher priced gas market, as described in the previous section of this Study.

1.5 Storage Market Changes

Further change is underway in the storage market place in Ontario. In addition to the continued changes in the services offered in competitive wholesale markets, as described in the previous sections, changes are beginning to occur in the way storage services are offered to retail distribution customers.

1.5.1 Distribution Services Unbundling

ECG's storage services are currently provided as part of its bundled distribution service for the majority of its customers. Unbundled delivery service without storage is offered to large volume customers under certain terms that are not available to most customers.[23] The limited availability of unbundled delivery service offering restricts the ability of end-use customers to switch from existing ECG-provided storage.

If delivery services were unbundled for all customer groups, customers would be able to switch storage suppliers freely. The smaller residential and commercial customers would not likely do this themselves, since they would likely not have the knowledge or expertise to effectively identify and assess alternative storage providers. Rather, they would rely on agents or marketers to do this on their behalf in the same way many of them currently do to purchase gas supply.

[23] ECG's rate 125, 300, and 305 provide distribution services excluding storage to customers. Storage services can be contracted separately under rate 315.

UGL has proposed to unbundle its in-franchise storage services.[24] This unbundling proposal was the subject of a settlement agreement between UGL and its stakeholders, and was accepted by the OEB on June 12, 2000. Marketers currently operating in Ontario have expressed significant interest in the UGL unbundling proposal because it will allow them to aggregate storage on behalf of end-use customers, and to manage supply, transportation, and storage on a more integrated basis.

ECG has also initiated stakeholder discussions on rates and services restructuring, which includes a proposal to unbundled storage services for its distribution customers.

Storage unbundling will spread the effective control of storage over more market participants. To the extent that distribution customers (or marketers/agents on their behalf) can contract for and manage their storage services separately from other distribution services, they may be able to use it differently. For example, they may be able to combine supply, transportation and storage in combinations, which are different than the way these are included in distribution services currently. Distribution customers and their agents may be able to assign or re-sell storage services to each other. It may also be possible for non-regulated storage providers to aggregate and manage storage across groups of distribution customers in order to create efficiencies relative to individual customer storage use. Marketers may also be able to re-bundle storage services with transportation and supply and sell them at market prices. The effects of storage unbundling are not clear at this time. However, storage unbundling will not diminish the degree of competition in storage services; rather it will likely increase it.

1.5.2 Storage Contracting on behalf of Distribution Customers

ECG currently provides storage to its customers using a combination of its own storage assets and through contracts with UGL. Almost 20% of its working storage capacity is from UGL contracted service. ECG's storage operations are physically connected to UGL and like UGL are centered at the Dawn market hub[25].

If ECG were to transfer its current storage assets and operations to Enbridge Storage, it's storage services would be supported entirely by contractual arrangements with outside storage entities. ECG would be free to select storage providers based on economic factors. It would select storage from Enbridge Storage, UGL, Michigan providers, or other storage services providers. ECG would make storage supply choices on behalf of its customers. Presumably it would use some form of competitive bidding process to seek and select storage options, and it would be subject to OEB oversight of the costs it incurs for these distribution related activities.

[24] RP-1999-0017, Exhibit B, Tab 1, December 10, 1999

[25] There is one minor exception to ECG's storage operation connections to Dawn. Its Crowland storage pool in the Niagara Penninsula is directly connected to its distribution system in that area.

2 FERC Criteria and Assessment

The U.S. experience in the movement towards "light-handed" regulation demonstrates that, in markets in which applicants do not possess market power, market-based rates are appropriate. The Federal Regulatory Commission (FERC) has devised a systematic approach to determine whether an applicant has market power in connection with gas storage services. This section of the Study reviews the FERC policy towards market-based rates for storage services and evaluates whether ECG would qualify for market-based rates for storage facilities based upon the FERC standards.

2.1 Summary

This analysis of storage services in the relevant geographic market follows FERC's guidelines for analysis of market power in connection with applications for market-based rates.[26] Also, FERC has issued subsequent orders regarding market-based rates for storage services, which further clarify FERC's requirements for market-based rates.

This study is of market share and concentration statistics for storage services in Ontario and Michigan based on peak day deliverability and working gas capacity measures. Using the same analysis and approach relied on in FERC decisions, this analysis shows that the market is moderately concentrated (HHIs slightly above 1,800 for storage deliverability). However, there is no concern that ECG has market power because its market share is relatively low and because of potential new entry. The analysis includes all of ECG's currently owned storage capacity even though all of that capacity will be committed under a long-term contract to serve its distribution customers. These market share and HHI numbers do not reflect the fact that ECG's current storage is committed under long-term contract and is therefore not under ECG's control. This effectively overstates ECG's market share. Despite this conservative analysis, ECG would have to add over 90 percent more working gas capacity (or 89 Bcf) and over 130 percent of its current deliverability (or 2,000 MMcf/day) before its market share would trigger concerns about market power, assuming there is no development of new storage facilities by others.

2.2 Requirements for Market-Based Rate Authority

In 1996 the Commission issued its Policy Statement providing guidelines about the standards for approving market-based rates. Also, the Commission has issued several decisions regarding market-based rates for storage services. These cases provide further guidance on the Commission's requirements for market-based rate authority.

[26] Federal Energy Regulatory Commission, "Statement of Policy and Request for Comments – Alternatives to Traditional Cost-of-Service Ratemaking for Natural Gas Pipelines and Regulation of Negotiated Transportation Services of Natural Gas Pipelines," 74 FERC ¶ 61,076 (1996). Hereinafter referred to as "Policy Statement."

2.2.1 FERC's Policy Statement

The purpose of the Policy Statement was to develop a framework for analyzing proposals involving alternative pricing methods for natural gas pipelines to encourage development of the natural gas infrastructure necessary to support the use of natural gas in connection with the growing electric generation market. The foundation of FERC's guidelines is drawn from basic antitrust market power analysis used by FERC and others. Notably, FERC reviewed three other industries (railroads, telecommunications and airlines) to determine whether there were lessons to be learned.

U.S. courts have held that non-cost factors can be a legitimate reason to depart from cost-based rates. Departures from cost-based rates have been found to be justified under the following conditions: 1) the changing characteristics of the industry make advisable or necessary a new approach; 2) the deviations from costs are not unreasonable or inconsistent with statutory responsibilities; and 3) the regulatory scheme acts as a monitor to determine whether competition will keep prices within a zone of reasonableness or to check rates, if it does not.[27] FERC's authority to approve market-based rates under appropriate circumstances was affirmed in Elizabethtown Gas Co. v. FERC.[28]

Since 1988, FERC has approved many applications from electric utilities to sell electricity in wholesale transactions at negotiated market-based rates. In connection with a request for market-based rates from an electricity marketer affiliated with a traditional public utility, FERC stated its position:

> …allows market-based rates if the seller (and each of its affiliates) does not have, or has adequately mitigated, market power in generation and transmission and cannot erect barriers to entry. In addition, the Commission considers whether there is evidence of affiliate abuse or reciprocal dealing.[29]

In 1988, FERC began its acceptance of "light-handed" regulation of some aspects of natural gas markets. This began with the implementation of market-based gas inventory charges (GIC) for pipeline sales service. In determining whether an applicant could implement a GIC mechanism, FERC looked at four factors: 1) market definition; 2) the availability of divertible gas supplies; 3) measures of market concentration; and 4) whether transportation of alternative supplies would be on a comparable basis to the terms and conditions of transportation service provided for gas purchased under the GIC. In July 1990, the court of appeals specifically instructed FERC to consider whether the applicant had potential market power when granting permission to charge market-based rates.[30]

FERC also granted market-based rates to oil pipelines, beginning in 1990. Buckeye Pipe Line Company, L.P. received authority to charge market-based rates in 1990 and Williams Pipe Line

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27 Farmers Union Central Exchange, Inc. v. FERC, 734 F.2d (D.C. Cir 1984).

28 10 F.3d 866 (D.C. Cir. 1993).

29 Heartland Energy Services, 68 FERC ¶ 61,183 (1994).

30 Tejas Power Corp. v. FERC 908 F.2d 98 (D.C. Cir. 1990).

Company received authority in 1994. In both cases, FERC determined that the pipeline lacked market power in markets for which each was allowed to charge market-based rates.[31]

Starting with FERC's order in Richfield Gas Storage System[32] in June 1992, FERC considered and approved applications for market-based rates for storage service. The early requests dealt with storage facilities in the production area. In 1994, Avoca was successful in obtaining approval for market-based storage services in the market area, despite evidence of a highly concentrated market. These cases will be discussed in greater detail later.

The Policy Statement formalized the FERC assessment of market power for gas pipelines and storage services. Market power is defined as the ability of a gas provider of services to profitably maintain prices above competitive levels. FERC's framework for evaluating whether the applicant can exercise market power addressed two principle purposes: 1) whether the applicant can withhold or restrict services and, as a result, increase price by a significant amount for a significant period of time; and 2) whether the applicant can discriminate unduly in price or terms and conditions of service (in favor of its affiliate). In order to grant an application for market-based rates, FERC must that there is a lack of market power or, if there is potential market power, the applicant has mitigated the potential market power.

In order to assess the potential exercise of market power, the Policy Statement requires that the analysis must properly identify the relevant product and geographic market for the proposed service. In addition, the number and type of alternatives available to potential customers of the proposed service must be identified. The size of the market must be measured and market shares of participants in the market must be calculated to assess the likely presence of market power. In addition, FERC requires that the applicant considers and evaluates other factors.

The applicant must define the relevant product by identifying the specific products or services that provide good alternatives to the applicant's ability to exercise market power. A good alternative must be available soon enough, must have a price that is low enough and must have a quality high enough to permit the customer to substitute the alternative for the applicant's service. In terms of timeliness, FERC noted that Staff suggested that one year may not be appropriate for long-term firm transportation because capacity on competitors would typically need to be available simultaneously to offer a viable alternative to customers. Therefore, the Policy Statement declined to define a specific time period within which a product must become available in order to be a substitute. FERC considered the price threshold to be no more than a 10 percent price differential.

Applicants must define the relevant geographic area. The relevant geographic area consists of the area encompassing all sellers of the relevant product between the same origin and destination markets. The relevant geographic market encompasses all actual and potential customers of the applicant.

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31 Buckeye Pipe Line Company, L.P., 53 FERC ¶ 61,473 (1990); and Williams Pipe Line Company, 69 FERC ¶ 61,136 (1994).

32 59 FERC ¶ 61,316 (1992).

Market shares of all suppliers of the relevant product are then used as screens to determine the level of concentration in the market by calculating the Herfindahl-Hirschman Index ("HHI").[33] As indicated in the Policy Statement, a small HHI indicates that sellers cannot exercise market power because customers have sufficiently diverse sources of supply in the relevant market and that no one firm or group of firms acting together could profitably raise market prices. The Commission has indicated that it will use 0.18 HHI (or 1,800 HHI) or larger as an indication that closer scrutiny is warranted because the index indicates that the market is more concentrated and the applicant may have significant market power. In addition, the analysis requires an examination of the ease of entry of potential competitors. This is especially important because a firm will not be able to sustain a price increase of 10 percent or more over a two-year period if competitors can easily enter the market in reaction to price increases above competitive market levels.

FERC has indicated that if the HHI is above 1,800, the Commission will consider and evaluate other relevant factors. If the HHI is 1,800 or larger or if the applicant's market share is large (above a 20 percent threshold), other factors to be considered in connection with granting market-based rate authority are: ease of entry, excess capacity held by competing sellers and buyer market power.[34]

FERC has granted market-based rates in markets where the HHI is above 1,800. The rationale for granting the applicant market-based rates in concentrated markets was that the applicant was a new entrant, its market share was low, cost-based rates of other storage providers will keep the applicant's rates low and the advent of new storage projects indicates that market entry is relatively easy. The intent of the granting of market-based rates, even in highly concentrated markets, is to ensure that there are incentives available to developers of new storage capacity in order to meet growing natural gas demand from electric generators. In an Order issued February 14, 2002, FERC stated: "The applications seek the necessary certificate authorization for Seneca Lake to construct and operate a natural gas facility…, to provide storage services at market-based rates…. We find Seneca Lake's proposal will serve the public interest by providing high deliverability storage service, which is in demand in the Northeast market…. Moreover, this high deliverability storage will further the development of the natural gas infrastructure necessary to support the use of natural gas in connection with the growing electric generation market." Seneca Lake Storage, Inc., 98 FERC ¶ 61,163 (2002).

2.3 Market-Based Rates for Storage Services in Market-Areas

2.3.1 Approved Applications

There have been eight applications approved by FERC for storage services in market areas: Avoca in New York[35]; Steuben in New York[36]; New York State Electric & Gas (NYSEG) in New

[33] The HHI statistic is calculated by summing the squares of the market shares of the individual participants in the relevant market.

[34] FERC Staff Paper, "Market-Based Rates for Natural Gas Companies, 70 FERC ¶ 61,139 (1995).

[35] Avoca Natural Gas Storage, 68 FERC ¶ 61,045 (1994).

[36] Steuben Gas Storage Company, 72 FERC ¶ 61,102 (1995).

York[37]; NE Hub in Pennsylvania[38]; Honeoye in New York[39], Stagecoach Storage Field Project in New York[40] Seneca Lake Storage, Inc in New York[41] and Louisville Gas and Electric Company in Kentucky[42]. FERC found that storage services in the New York/ Pennsylvania market and the Kentucky market to be highly concentrated—HHIs of well over the 1,800 threshold. However, FERC considered other factors in these cases in its authorization of market-based rates. FERC emphasized that the applicants had a relatively low market share in a market where the two dominant providers of storage service controlled 88 percent of the market. Most of the applicants, except NYSEG, were new entrants. In addition, FERC relied on the fact that the majority of storage providers were providing storage services at regulated, cost-of-service rates and this would act as a competitive ceiling to the new entrant. The final factor considered by FERC was the plans of new storage providers to enter the market, indicating that entry was relatively easy.

1. Avoca

Avoca was the first market area storage facility to receive permission from FERC to charge market-based rates. Avoca is located in New York and the geographic market was defined as New York and Pennsylvania for conventional storage and additionally New England to provide short-term peak day storage as an alternative to LNG storage. Avoca is a salt storage facility and FERC noted that such facilities are distinguished by a high ratio of deliverability to working gas capacity.

FERC determined that Avoca provided storage services for three types of demand for storage: 1) base load; 2) winter addition to base load; and 3) short-term peaks. During the summer, the base load is the total demand for gas. Other demands are added during the rest of the year. The winter addition to base load consists of the average increase in demand for gas that occurs throughout the winter heating season. Short-term peaks consist of further increases in gas demand that occur over a period of days or even hours, i.e. needle peaks.

In *Avoca*, FERC determined that there are two relevant storage products. The first is conventional storage services, that can be used to satisfy the demand for base load and longer-lasting short-term peaks. The second is storage to satisfy short-term peak demand, that includes salt caverns and liquefied natural gas ("LNG").

In *Avoca*, FERC determined that the storage market to be concentrated with an HHI for working gas of 4,900 and an HHI for peak day deliverability of 4,100. Avoca's market shares were 3.0 percent and 9.6 percent, respectively. In the short-term peak demand market, the market was found to be moderately concentrated with an HHI of 1,100. Avoca's market share of the short-term peak demand market was 19.1 percent.

37 New York State Electric & Gas Corporation, 81 FERC ¶ 61,020 (1997).
38 NE Hub Partners, L.P., 83 FERC ¶ 61,043 (1998).
39 Honeoye Storage, 91 FERC ¶ 62,165 (2000).
40 Central New York Oil and Gas Company, 94 FERC ¶ 61,194 (2001).
41 Seneca Lake Storage, Inc., 98 FERC ¶ 61,163 (2002).
42 Louisville gas and Electric Company, 99 FERC ¶ 62,040 (2002).

FERC granted Avoca market-based rate authority based on three conclusions. First, Avoca's market share is small compared to the alternatives available to its customers, and therefore, Avoca can charge no more than the prevailing market price for storage. Second, entry by other small competitors will prevent Avoca from exercising market power. Furthermore, FERC concluded that even if Avoca's market share was high, that if entry is easy, Avoca may lack market power, especially if there exists excess capacity. Third, the rates of existing storage providers are regulated under just and reasonable rates and therefore, even if the market concentration is high, existing storage providers cannot exercise market power.

One point of concern by FERC in consideration of the Avoca application was that it is affiliated with Equitrans, a gas pipeline providing gas transportation services. Even though Equitrans is subject to rate regulation, FERC was concerned that the affiliation may pose market power concerns. FERC was concerned that even though Equitrans is restrained by rate regulation, Avoca may be able to tie the unregulated storage service to the regulated transportation service. However, in this case, Avoca is not interconnected to Equitrans, but to Tennessee Gas Pipeline, and therefore unlikely to be able to leverage storage service and transportation services.

2. Steuben

Steuben was the second market area storage facility to receive permission from FERC to charge market-based rates. Like Avoca, Steuben is also located in New York and the geographic market was also defined as New York and Pennsylvania.

Steuben stated that four factors demonstrated that it lacked market power. First, the open season process ensures that it cannot withhold capacity from the market. Second, if Steuben increased prices above competitive levels, holders of storage capacity would increase the amount of capacity offered in the capacity release, thereby preventing Steuben from sustaining any price increase. Third, the price of conventional storage is importantly linked to the price of swing gas, as an alternative to Steuben customers. Finally, Steuben noted that entry into the storage market is relatively easy.

FERC concluded that the HHI for working gas capacity was 4,000 and the HHI peak day deliverability was 3,600. Although the market is highly concentrated, FERC concluded that Steuben is too small (market shares of 1.66-3.5 percent) to exercise market power. The Commission determined that the market has more than 28 times the capacity and deliverability of the Steuben storage facility. Therefore, FERC concluded that Steuben represents a very small part of the market and would not be in a position to control the market.

3. NYSEG

In 1997, NYSEG sought to change the jurisdictional status of its New York Seneca storage facility to interstate jurisdictional and to request authority to charge market-based rates for storage services. The New York Public Service Commission supported NYSEG's application to change the jurisdictional status of the Seneca storage facility.

Consistent with Avoca, NYSEG analyzed the underground storage market in New York and Pennsylvania. The Seneca storage facility is a salt cavern and as such is high deliverability. NYSEG determined that the market is highly concentrated with HHIs of 4,082 and 4,678 for deliverability and capacity, respectively. For both measures, NYSEG's market share is below 1.5 percent. NYSEG concluded that the concentration in the market is due to the high market shares of CNG and that NYSEG could not have market power with such low market shares. In addition, NYSEG presented evidence that there was excess storage capacity available to potential storage customers, in addition to the 3.3 Bcf of turn-back storage capacity anticipated to be release to the market. It also concluded that there are low barriers to entry.

FERC approved NYSEG's request for market-based rates and that NYSEG's application to place the storage facilities under interstate jurisdiction would increase competition in the interstate gas storage market and would also increase the utilization of NYSEG's intrastate facilities.

4. NE Hub

In 1998, NE Hub requested market-based rates for its newly constructed storage facility in Pennsylvania. The NE Hub storage facility is a high deliverability salt storage facility. Consistent with Avoca, NE Hub analyzed the underground storage market in New York and Pennsylvania.

In its April 20, 1998 Order the Commission found that economic concentration in the conventional storage market, as measured by the HHI was high (an HHI of 4,692 for working gas capacity and an HHI of 4,196 for peak day deliverability), thus meriting closer market-power scrutiny. However, the Commission did not find the high level of market concentration to preclude NE Hub's being allowed to charge market-based rates for storage services. The Commission cited three reasons for this determination.

First, NE Hub's shares of the relevant markets were small (1.2 percent for working gas capacity, 5.0 percent for peak day deliverability and 11.7 percent of high deliverability/LNG) compared to the alternatives available to customers of the Tioga facility. The Commission went on to point out that NE Hub was a new entrant that could survive only by offering customers prices lower than the prevailing prices for comparable service. The Commission stated that all existing capacity provides alternatives to customers considering using Tioga, because existing storage users would have to consider giving up their existing storage provider if they were to use NE Hub's services instead.

Second, the reason for the high concentration of the relevant markets, (high HHIs), was due to control of 80 percent of both working gas capacity and peak day deliverability by CNG Transmission ("CNG") and National Fuel Gas ("National Fuel"). Both firms were viewed as having the capability to expand their facilities such that any attempt by NE Hub to exercise market power would be thwarted. More fundamentally, in a situation where two companies had such a large joint share, the Commission concluded that NE Hub would provide desirable competition to the dominant storage operators.

Third, the rates of the incumbent interstate storage providers, with whom NE Hub would have to compete, were subject to cost-based regulation. They were, therefore, legally, just and reasonable

rates. CNG, National Fuel and the other providers, the Commission pointed out, could not exercise market power to increase prices above the cost-base rate cap, because of their regulatory status. Because these suppliers with cost-based regulated rates compete with NE Hub, these regulated prices provide a constraint on prices NE Hub could charge.

5. Honeoye

In 2000, Honeoye petitioned FERC for authority to charge market-based rates for storage services from its New York facilities. Consistent with other approved market-based rate applications, Honeoye defined the relevant market as New York and Pennsylvania. Honeoye's market study showed that the market was concentrated. FERC agreed that the market is concentrated and noted that together, National Fuel and CNG have over 88 percent of the capacity and approximately 80 percent of the deliverability. FERC approved Honeoye's application based on the fact that it will not be able to exercise market power because its market share is small (under 1.5 percent) and that the regulated rates of other storage providers will keep Honeoye's rates at competitive levels.

6. Stagecoach Storage Field Project

In December 1999, Central New York Oil and Gas Company (CNYOG) filed an application with FERC for permission to charge market-based rates for storage services at its new high-performance Stagecoach storage field in Tioga County, New York and Bradford County, Pennsylvania. CNYOG submitted three market power studies. The first study was based on overall storage capacity and peak deliverability in the market area of New York and Pennsylvania. The second study included a broader market area consisting of New York, Pennsylvania, Maryland, West Virginia and Ohio (the Northeast/Appalachian market). The third study included only high deliverability storage facilities and LNG facilities in the Northeast/Appalachian market based on peak deliverability. The Commission staff prepared its own market power study using data from Avoca, Steuben, NYSEG, NE Hub, and Honeoye based on capacity and peak deliverability and determined that CNYOG will not be able to exercise market power in the New York and Pennsylvania region. This conclusion tracked the findings in the above-cited cases: small market share, highly concentrated market dominated by several large storage providers and mitigation of any attempt to price above market levels by regulated rates of other providers.

7. Seneca Lake Storage

In August 2001, Seneca Lake storage Company petitioned the Commission to approve market-based rates for storage services for its newly constructed high deliverability storage facility in New York. Seneca Lake submitted a market power study that was similar to that relied upon in the CNYOG decision. The Commission approved the Seneca application based on the same factors cited in the CNYOG decision.

8. Louisville Gas and Electric

In January 2002, Louisville Gas and Electric Company (LG&E) filed an application with FERC for permission to charge market-based rates for storage services at its existing facilities in Kentucky. LG&E offers bundled natural gas distribution storage and distribution services on the retail market. Occasionally, LG&E has storage capacity available and was seeking authority to charge market-based rates for storage services sold to the interstate market. LG&E submitted a market power study indicating that the Kentucky storage market was dominated by Columbia Gas Transmission Corporation and Texas Gas. LG&E's market shares are 5.63 and 4.40 percent and HHIs are 2,461 and 2,783 for peak deliverability and working gas capacity, respectively. The Commission concluded that LG&E's market share was too small to attract or keep customers at prices above regulated rates. Furthermore, as a new market entrant with neither an existing rate base nor captive customers, there is no potential for subsidization by existing customers. Based on these factors, the Commission granted LG&E application.

2.3.2 Application Denied

1. CNG Transmission Corporation

In 1997, CNG Transmission Corporation (CNG) applied to FERC for approval of market-based rates for storage services, as well as for transportation services. CNG filed a report at FERC claiming that with the exception of the Quantico, Virginia point, the whole CNG system is competitive for its services and calculated an HHI below the 1,800 threshold for market power concerns. FERC rejected CNG's market-based rate proposal because it was inconsistent with prior FERC findings that the market is concentrated and that CNG hold a dominant share of the market.[43] FERC criticized CNG for not showing that this market power is somehow mitigated. FERC found that CNG's study contained serious fatal defects. In particular, CNG utilized the aggregate of all delivery and receipts points within a region to calculate concentration, rather than each receipt and delivery point. FERC stated that CNG failed to provide information to demonstrate that there are sufficient storage alternatives to CNG customers. FERC indicated to CNG that it has never approved market-based rates when the HHI indicates a highly concentrated market and when the applicant has a significant market share. FERC stated that a critical element in the analysis of market-based rate proposal is a study of the market price of the proposed service and whether the applicant can raise the price of the service 10 percent or more without losing significant market share. CNG did not provide information of using alternatives and did not show that it could not raise rates 10 percent without losing significant market share. Apparently, CNG was requesting to raise total firm storage rates by 26 percent, yet showed no change in its billing determinants as a result of this increase. To FERC, the fact that CNG could raise rates by over 25 percent and not lose customers or market share was found to be evidence of market power.

2. Northwest Natural Gas Company

In March 2000, Northwest Natural Gas Company (Northwest Natural) filed an application to charge market-based rates for storage services from its existing facilities in Mist, Oregon.

[43] CNG Transmission Corporation, 80 FERC ¶ 61,137 (1997).

Northwest Natural sells and transports natural gas in its retail market areas in Northwest Oregon and Washington. It operates separate distribution systems in Oregon and Washington. Northwest Natural intends to expand its Mist storage facilities and is asking for market-based rate authority to sell storage services to the interstate market. Currently, it provides its core retail customers with bundled firm sales, transportation and storage service at Mist at a bundled rate. Northwest Natural submitted a market power study to FERC quantifying eleven other storage alternatives in a market defined as Oregon, Washington, British Columbia (BC) Pacific Northwest, Idaho, Nevada and Utah. The Commission rejected Northwest Natural's market study because it did not reasonably measure good storage alternatives to LDCs or interstate shippers potentially using the Mist facility. The Northwest Natural study included six Canadian storage fields in Alberta and BC. The Canadian storage fields are in the production area and the Mist facility is located in the market area. Storage fields located in the production area operate differently than market area storage fields and therefore, are not comparable to the Mist facility. Second, potential customers at Mist would have to pay almost twice as much in transportation to reach the Canadian storage alternatives. In addition, both pipelines to the Canadian storage alternatives, Northwestern and PG&E Gas Transportation are fully subscribed on a firm basis and there is no transportation available to shippers to use the Canadian storage. Staff presented its own market power study and excluded the Canadian storage facilities and only included conventional underground storage at Jackson Prairie, Washington, Clay Basin, Utah as well as Northwest Natural's storage at Plymouth, Oregon. The revised study showed that Northwest Natural's market shares are 3.66 and 9.73 percent and the HHIs are 4,815 and 1,993 for working gas capacity and peak deliverability, respectively. The Commission stated that these results are consistent with others in obtaining market-based rates in highly concentrated market areas, but rejected the application because there is no excess storage capacity in the relevant market. The Commission concluded that potential customers at the Mist facility do not have good alternatives to the Mist facility. Given that there is currently no excess storage capacity in the market area, Northwest Natural's market share is 100 percent of the available storage or a market with an HHI concentration of 10,000. Under these circumstances, cost-based rates of nearby storage providers would be an irrelevant pricing constraint for the foreseeable future. The Commission also rejected Northwest Natural's contention that there is ease of entry in storage. Many of the cited projects offered as support were rejected by the Commission because they were described as purely speculative.

2.4 FERC Standards Applied to ECG: Market Analysis

If FERC standards were adopted by the Ontario Energy Board (OEB), what would such an analysis show? The following analysis undertakes a standard FERC market power analysis to determine the critical question whether ECG has market power and can raise prices by 10 percent, without a loss in market share.[44]

2.4.1 Product Definition

ECG provides traditional seasonal and short-term ("transactional") storage service (as opposed to capability for high deliverability for needle peaking). Similar storage facilities in the U.S. include

[44] The standard applied in the CNG application.

Steuben and Honeoye. Consistent with Steuben, the relevant product includes other conventional storage facilities and swing gas supply. This product definition has been upheld by the U.S. regulators.

2.4.2 Geographic Market Definition

FERC requires that the geographic market encompass all potential suppliers that compete with the storage services offered by ECG. The Ontario market is extensively interconnected to the Michigan markets by a number of pipelines including the new Vector Pipeline. Section 1.2.1 at page 10 of this Study provides further details of the linkage of these markets.

2.4.3 Market Shares and Concentration

Appendix 2 of this Study shows the working gas capacity and deliverability of all storage facilities in the Ontario/Michigan market. There are fourteen owners of storage facilities in the relevant market consisting of a total of 816,290 MMcf of working gas capacity and 15,518 MMcf/day of deliverability.

In terms of looking at the working gas measure, the largest holders of working gas capacity are: ANR with 28.1 percent; MCN Group with 20.9 percent; and CMS Energy Group with 18.8 percent of the working gas capacity in the marketplace. Together these three owners control 68 percent of the working gas capacity. ECG's market share is only 11.2 percent. Calculation of the HHI based on working gas capacity measure indicates that the market is moderately concentrated with an HHI of 1,709. This analysis would indicate that there is no market power concerns based on FERC criteria because the HHI is below the 1,800 threshold and because ECG's market share is relatively low.

With respect to the deliverability measure, the largest storage owners with the highest deliverability are: ANR with 27.9 percent; MCN Group with 24.1 percent; and CMS Energy Group with 22.1 percent of the deliverability in the marketplace. Together these three owners control over 74 percent of gas deliverability in the marketplace. ECG's market share is only 9.7 percent. Calculation of the HHI based on the deliverability measure indicates the market is moderately concentrated with an HHI of 1,945. This analysis would indicate that there might be market power concerns based on FERC's criteria because the HHI is above the 1,800 threshold. However, as FERC has concluded in other applications, there is no concern that ECG has market power because its market share is relatively low and because of the potential for new entry.

ECG is asking for market-based rates (or forbearance) for incremental storage that it may develop in the future. Since the extent of this future development is unknown, one should look at the threshold that would be required to cause regulators some concern. FERC has generally stated that it views a market share above 20 percent by an applicant as a trigger to look more closely at potential market power (although it has granted market-based rates to electric generators with market shares well above the 20 percent threshold). ECG would have to add over 89 Bcf of working gas capacity, or over 90 percent of its current capacity, and 2,000 MMcf/day of peak day deliverability, or over 130 percent of its current deliverability levels to trigger a concern about its market share. This calculation assumes no new storage development

by others. There should be no concern about granting Enbridge Storage forbearance, especially in light of the fact that ECG's existing storage capacity will be dedicated under long-term contract and therefore will not be under ECG's or Enbridge Storage's control.

2.4.4 Ease of Entry

The Commission concluded in *Avoca* that: "Even with a large market share, however, an applicant may lack market power if entry is easy or there are other competitive forces at work in the market [i.e., excess capacity]." As described in Section 1.2 of this Study, new capacity has been added recently, and furthered capacity additions are being pursued. Therefore, it can be concluded that entry is relatively easy.

2.5 Other Competitive Factors

The proposed transfer of the ECG storage assets to Enbridge Storage and the long-term contract between ECG and Enbridge Storage at a pre-determined rate to cover franchise storage needs is consistent with the LG&E situation. In both cases, the franchise need for storage is covered by regulated rates or pre-determined rates approved by regulators. The remaining available short-term or transaction storage could be sold at market-based rates because Enbridge Storage's market share is relatively small. As a new market entrant with no captive customers, there is no potential for subsidization by existing customers. Therefore, the incremental storage capacity should be priced at market-based rates.

In addition to ease of new entry, FERC considers other factors that would mitigate potential market power. One such factor is excess capacity in the conventional storage market. Based on a conversation with Michael Kidd, Director of the Gas Division of the Michigan Public Service Commission (MPSC), the MPSC is allowing the Washington 10 and Lee 8 storage facilities to sell storage at market-based rates because of the significant amounts of excess capacity remaining unsold at these facilities. The MPSC did not require any market power analysis in granting these facilities market-based rates because with the excess capacity, it was obvious that these operators do not have market power.

As noted in prior FERC decisions, it is evident that ECG could not exercise market power by raising rates because of the availability of storage capacity at regulated rates and in this market the presence of excess capacity. Consideration of these other factors confirms that ECG does not have market power.

2.6 Conclusion

This examination of the market power conditions in the relevant markets served by ECG reveals that based on the FERC criteria for evaluating whether an applicant has market power in providing storage services, ECG would meet FERC's requirement to charge market-based rates.

3 CRTC Criteria and Assessment

3.1 Introduction

The purpose of this section is to review the criteria used by the Canadian Radio-television and Telecommunications Commission (CRTC) to assess whether or not a market is sufficiently competitive to warrant rate regulation forbearance.

The CRTC's authority to forbear derives from section 34 of the Telecommunications Act:

> *34. (1) The Commission may make a determination to refrain, in whole or in part and conditionally or unconditionally, from the exercise of any power or the performance of any duty under sections 24, 25, 27, 29 and 31 in relation to a telecommunications service or class of services provided by a Canadian carrier, where the Commission finds as a question of fact that to refrain would be consistent with the Canadian telecommunications policy objectives.*
>
> *(2) Where the Commission finds as a question of fact that a telecommunications service or class of services provided by a Canadian carrier is or will be subject to competition sufficient to protect the interests of users, the Commission shall make a determination to refrain, to the extent that it considers appropriate, conditionally or unconditionally, from the exercise of any power or the performance of any duty under sections 24, 25, 27, 29 and 31 in relation to the service or class of services.*
>
> *(3) The Commission shall not make a determination to refrain under this section in relation to a telecommunications service or class of services if the Commission finds as a question of fact that to refrain would be likely to impair unduly the establishment or continuance of a competitive market for that service or class of services.*
>
> *(4) The Commission shall declare that sections 24, 25, 27, 29 and 31 do not apply to a Canadian carrier to the extent that those sections are inconsistent with a determination of the Commission under this section.*

The Telecommunications Act was proclaimed into law on October 25, 1993 and since then the CRTC has issued more than sixty decisions and orders concerning forbearance of telecommunications carriers' activities. In exercising its authority, pursuant to section 34 of the Telecommunications Act, the CRTC uses the analytical framework developed in Telecom Decision CRTC 94-19 (Decision 94-19)[45]. The proceeding leading to Decision 94-19 examined alternative forms of regulation and the changes necessary to the regulatory framework to reflect an increasingly competitive telecommunications market. Among other things, the Commission developed an analytical framework to assess competitiveness and

[45] Telecom Decision CRTC 94-19, Review Of Regulatory Framework, September 16, 1994

determine whether or not "…a telecommunications service or class of services provided by a Canadian carrier is or will be subject to competition to protect the interests of users…".[46]

Over the last eight years and the sixty forbearance decisions and orders the CRTC has issued, the analytical framework has been refined but continues to be used by the CRTC in telecommunications forbearance proceedings.

3.2 CRTC's Analytical Framework

The analytical framework used by the CRTC is described in the following sections.

3.2.1 Definition of the Relevant Market:

The first step employed by the CRTC to assess competitiveness is to define the smallest group of products and geographic area in which a firm with market power can profitably impose a sustainable price increase.[47] The definition of the relevant market also entails the identification of services which are practical substitutes for the service under review.[48] The presence of substitutable services is an indication of competition.

In Decision 98-9[49], the CRTC determined that:

> "it is not appropriate to define the market for telecommunications services with reference to technology. Instead service attributes should be the focus of analysis."

This finding was made in the context of a proceeding to determine whether or not certain telecommunications services, including high-speed Internet services, offered by cable companies should be rate regulated. In defining the relevant market for Internet services, the Commission defined the retail Internet services market to include "all ISs (Internet services), independent of speed, and the facilities over which the services are carried".[50]

Applying this assessment to the services for which ECG is seeking forbearance, requires defining the services and the geographic market in which an assessment of potential market power can be made. In Section 1.2 of this Study, the market for storage services is defined to encompass the areas within Ontario and Michigan that are connected to Dawn. Because of this high degree of connection it is appropriate to include Michigan in the definition of the market, since service providers in Ontario could not profitably impose price increases without Michigan competitors bidding them down.

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46 The Telecommunications Act, section 34(2)

47 Decision 94-19, p. 66

48 Telecom Order CRTC 99-592, Forbearance From Retail Internet Services, June 25, 1999

49 Telecom Decision CRTC 98-9, Regulation Under The Telecommunications Act Of Certain Telecommunications Services Offered By "Broadcast Carriers", July 9, 1998

50 Decision 98-9, paragraph 16

Applying the CRTC approach to defining the services to be included in the scope of an assessment of competition results in the inclusion of substitutes for storage services. As described in Sections 1.3.3 there are a number of non-physical or "synthetic" forms of storage services. In Section 1.2.1 it is described that transportation services can also substitutes for more traditional storage service. All of these substitutes should be included with the physical storage in defining the storage services competing in the market.

3.2.2 Market Share:

The second step in the analytical framework involves "determining the market share held by the largest firm, as well as the market shares of other firms in the market".[51] During the proceeding leading to Decision 94-19, one intervener argued that large market share is a major determinant of market power.[52] However, the Commission concluded, "it would be inappropriate to adhere to a particular market share as a basis for determining whether to forbear". The CRTC also acknowledged that a large market share is a necessary but not a sufficient condition for market power.[53] A precise definition of a large market share is not available from the CRTC but in approving forbearance applications, the CRTC has taken note of the following:

- Wireless competitors in NBTel's service area had 24 to 30% of the cellular market share, leaving NBTel with 70 to 76% market share. The CRTC found that the cellular market was "sufficiently competitive" and forbore from regulating NBTel's cellular services.[54]

- The incumbent telephone companies had approximately 70% of the combined toll and toll free markets on the basis of minutes of traffic, as of year-end 1996[55] and the CRTC found that the " the toll and toll free markets are subject to a level of competition sufficient to protect the interests of users of toll and toll free services".[56]

In these cases, where the market share of the incumbent telephone companies was 70% or greater the CRTC decided to exercise its forbearance powers.

With respect to ECG's forbearance request, in Appendix 2 of this Study, it is noted that ECG has a market share of only 11% for storage working capacity, and 9 % for storage deliverability. These market shares are very low relative to some of the forbearance requests approved by the CRTC. ECG's forbearance request is not for all of this storage but only for new incremental storage and for storage related transactional services. This market share would be even less than those calculated in Appendix 2.

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51 Decision 98-9, paragraph 17

52 Decision 94-19, p. 67

53 Decision 94-19, p. 64

54 Telecom Decision CRTC 98-18, NBTel Inc. - Forbearance From Regulating Cellular and Personal Communications Services, October 2, 1998, paragraph 33

55 Telecom Decision CRTC 97-19, Forbearance - Regulation Of Toll Services Provided By Incumbent Telephone Companies, December 18, 1997, paragraph27

56 Decision 97-19, paragraph 63

In assessing market power, the Commission has identified five factors that should be evaluated if the supplier has a large market share:

1. Demand conditions,
2. Supply conditions,
3. Likelihood of entry into the market,
4. Barriers to entry, and
5. Evidence of rivalrous behaviour.

Each of these factors is described below.

3.2.3 Demand Conditions:

In assessing demand conditions in a market, the CRTC will consider some or all of the following factors[57]:

1. The ability and willingness of customers to switch to another supplier or to reduce consumption in response to a price increase by the dominant supplier;

2. The availability of economically feasible and practical substitutes;

3. Costs to customers of switching suppliers; and

4. Whether the service is an essential input.[58]

In a decision, issued in response to an application filed by Telesat Canada for forbearance of satellite services provided to broadcasters for distribution of television signals, the CRTC noted intervenors' arguments that competitive entry by another satellite provider would be difficult because there is a "natural incentive for broadcasting signal providers to remain on a satellite that is already functioning and reaches a large population through equipment already in place by broadcasters.

Applying these considerations to ECG's storage situation, we need to consider whether storage services customers are willing and able to switch, reduce or substitute for the use of storage, and whether storage is essential to them. As described in Section 1.5.2 ECG's distribution customers are provided storage service by ECG and this would continue under the proposed changes. These distribution customers are not able to switch storage service providers easily, but ECG, acting in their interests can switch. There are clear substitutes in the market, and storage services buyers have a liquid and competitive trading place at Dawn to facilitate substitution and switching (See also Section 1.1.2). It would not appear that there is an impediment to switching like there was in the CRTC Telesat Canada case referred to above.

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57 Decision 97-19, paragraph 29

58 To be considered essential, the CRTC requires that the facility or service meet all of the following criteria: 1) it is monopoly controlled; 2) a competitor requires it as an input to provide services; and 3) a competitor cannot duplicate it economically or technically.

Storage services do not appear to be an essential input to the use of gas, since gas could be used without storage. However, they do appear to be very import to meeting winter demand for distribution customers, as described in Section 1.4. Based on the CRTC approach to assessing competitiveness, this may be an issue with respect to the ability of ECG, on behalf of its distribution customers, to reduce demand for storage services in response to price increases. However, this is mitigated by the fact that ECG can select alternative suppliers, and can substitute pipeline capacity and peaking services for storage.

3.2.4 Supply Conditions:

In Decision 97-19, the CRTC described the relationship between market competitiveness and supply conditions as follows:

> *Supply expansion responses of firms to price increases or other developments affecting the relevant market are a further factor considered to evaluate market power. The easier it is for rivals to expand output in response to a price increase by the dominant firm in the market, the lower is the dominant firm's market power.*[59]

In a subsequent decision, in response to an application from Teleglobe Canada requesting that the CRTC forbear from regulating rates for international long distance services sold to the other service providers, the CRTC said that supply conditions are favourable for forbearance if, for example, "competitors could accommodate a substantial number of new customers in a reasonable period of time, if the dominant firm raised prices".[60]

The CRTC's assessment may also consider whether the service can be provided by leasing capacity from the dominant supplier. In Decision 97-19, the CRTC forbore from regulating most of the incumbent telephone companies' long distance services because, among other things, the CRTC found that new entrants into the long distance market could lease additional transmission capacity from the incumbent telephone companies. In this way, the new entrants could provide additional long distance services in response to a price increase by the incumbents.

Section 1.3 describes the expansion in storage that has occurred over the recent past and plans that are under development for further expansion. This would indicate that there is the ability of increased supply to prevent sustained price increases by storage providers. In addition, Section 1.1.2 describes that other parties provide additional service response using capacity contracted from incumbent storage providers. This is comparable to the CRTC Decision referred to above.

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59 Decision 97-19, paragraph 34.

60 Decision 98-17, paragraph 158. The CRTC denied Teleglobe's application because it did not provide the kind of specific evidence or arguments that the Decision 94-19 analysis would require in support of a finding that competition is sufficient to warrant forbearance pursuant to section 34(2) of the Telecommunications Act.

3.2.5 Market Entry:

The CRTC looks for market entry and the likelihood of market entry as indicators of market competitiveness, including evidence of any of the following:

1. Whether entry occurred in the past;
2. Whether current attempts are being made to enter; and
3. Whether firms marketing related products or firms from other geographic markets have considered expanding into the relevant market.

The Commission has not specified a specific level of entry and has approved forbearance applications in markets where there have been numerous competitors and in markets where the incumbent has only one competitor. On the one hand, the CRTC observed in Order 99-1016[61], approving Bell's application for forbearance of inside wiring, that:

> *"Based on the evidence provided by Bell, including the decline in Bell's service order activity per NAS, and the entry of numerous competitors providing Single Line Inside Wire services in Bell's territory in a relatively short period of time, the Commission is of the view that the market for inside wiring services in Bell's territory is sufficiently competitive to protect the interests of users. Further, the Commission concludes that the market is easy to enter, since there are no regulatory, institutional, technological or financial barriers to entry into the provision and maintenance of inside wiring. Customers also may install their own inside wiring, and, as the Commission noted in Order 98-856, the required parts and materials are widely available."*

The finding that there was entry by numerous competitors in a relatively short period of time was an important factor leading the CRTC to approve Bell Canada's forbearance application. However, the entry of numerous competitors has not been a necessary condition for forbearance. In Decision 94-20, the CRTC decided to forbear from rate regulation of certain of the incumbents' interexchange private line (IXPL) services.[62] IXPL services are route specific and the CRTC determined that each route, or city-pair, should be considered as a separate market for the purposes of forbearance analysis.[63] The incumbents were granted forbearance on each route where one or more of the incumbents' competitors were providing private line service to at least one customer over facilities from a company other than an incumbent.[64] In a follow-up proceeding, AT&T Canada argued that the presence of only one competitor as a basis for forbearance was inconsistent with the principles of Decision 94-19 but the CRTC rejected the argument and upheld its earlier decision to grant forbearance in IXPL markets where the incumbent has only one competitor.[65]

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61 Telecom Order CRTC 99-1016, Bell Canada - Forbearance from Regulation of Single Line Inside Wiring Services, October 22, 1999, paragraph 18

62 An interexchange private line is a service that connects two or more customer locations over dedicated facilities for the purpose of transmitting data, voice or image.

63 Telecom Decision CRTC 97-20, Stentor Resource Centre Inc. - Forbearance From Regulation Of Interexchange Private Line Services, December 18, 1997, paragraph 66

64 Decision 97-20, paragraph 66

65 Telecom Order CRTC 99-434, May 12, 1999, paragraph 13

Section 1.3.1 provides examples of new storage additions in the recent past and development activities underway in Ontario. Section 1.3.2 identifies recent developments in Michigan. Section 1.3.3 describes additional new entrants in the recent past in the form of storage services provided through contractual arrangements known as synthetic storage.

3.2.6 Barriers to Entry:

Barriers to entry are an impediment to the creation of a competitive market. The CRTC identified the presence of essential bottleneck facilities that competitors cannot duplicate, regulations or policies preventing or limiting entry by competitors, lengthy construction periods, and high sunk costs as possible barriers.[66]

In a proceeding to examine whether or not the incumbents' digital network access (DNA) services[67] should be granted forbearance, the CRTC denied the application for a number of reasons including the presence of barriers to entry. The CRTC noted the difficulties confronted by new entrants to obtain rights of way from municipal authorities, access to buildings on reasonable terms and conditions from building owners, and connection to wiring inside buildings owned by the incumbents for building owners.[68] The CRTC decided that it would not be appropriate to forbear from regulation of DNA services until further progress was made in resolving issues that impede new entrants' ability to expand their networks for DNA services.[69]

There are no significant barriers to entry in providing storage services. There are significant capital requirements and regulatory processes required to develop new storage in Ontario, although Section 1.3.1 describes a recent new entrant. Significantly, there is also the ability for new entry from storage services providers who are not physical operators, and obtain contracted capacity to support their service offers as described at Section 1.1.2.

3.2.7 Rivalrous Behaviour:

Evidence of falling prices, vigorous and aggressive marketing activities or an expanding scope of activities by competitors in terms of products, services and geographic boundaries are indicators of a market's competitiveness.[70] Evidence of rivalrous behaviour is the fifth criterion used by the CRTC in its forbearance assessment.

In Decision 97-20, the Commission said it considers that "a measure of the degree of rivalrous behaviour is the frequency of price changes".[71] Frequent price changes, both increases and decreases, are an indication of market rivalry.

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66 Decision 97-19, paragraph 49

67 Digital Network Access (DNA) services provide a digital point or multipoint transport capability between a customer's premises and a carrier's central office in the same wire centre.

68 Order CRTC 2000-653, Commission denies forbearance for digital network access services, July 14, 2000, paragraph 54

69 Order 2000-653, paragraph 54

70 Decision 97-19, paragraph 54

71 Decision 97-20, paragraph 89

Storage service providers have been aggressively marketing services in Ontario. Section 1.2.3 describes some of these marketing efforts and successes. This section provides an example of a Canadian gas distributor substituting Ontario based storage with storage services from Michigan, and a Michigan storage provider winning against Ontario storage providers in bidding to provide storage services to TCPL.

4 Ontario Electricity Market Surveillance Considerations

The Market Surveillances Panel (MSP) of the Ontario Electricity IMO was established to assist in the development of an efficient, competitive and reliable wholesale electricity market. Its members are appointed by and report to the IMO's Committee of Independent Directors. It is not a regulator. It will make recommendations to the OEB, the IMO, and the Competition Bureau.

Its mandate is to monitor the activities and conduct of IMO market participants. It fulfills this mandate with the support of the IMO's Market Assessment Unit, which provides monitoring and reporting of market activities. The MSP is, among other things, responsible for identifying "inappropriate or anomalous behaviour, including deliberately exploiting a loophole in market rules or procedures (also known as "gaming"), and abuse of market power".[72]

The MSP's approach to identifying abuse of market power is useful in the consideration of whether competition is sufficient to protect the public interest. If it is determined that there is abuse of market power, competition is not effective. If, on the other hand, there is no potential for abuse of market power, and that there are no structural impediments to competition, it can be assumed that there is an effectively functioning competitive marketplace.

The Ontario electricity marketplace has only very recently been opened to competition, and there is not yet a track record of the MSP's monitoring for abuse of market power. However, the MSP has described the areas on which it will focus.

4.1 Energy Price Movements

The MSP has indicated that it will look at real-time energy price movements as one way of identifying and understanding market behaviours.

> *"Energy prices will fluctuate more in a competitive market than in a regulated marketplace. As well, there is no reason to expect that the underlying level of a competitively determined electricity price will be identical to the current regulated price, or indeed stable over extended periods of time. Price movements are in fact healthy: they send essential signals to market participants about the need to use resources most efficiently by adjusting demand and supply"*[73]

Price fluctuations are not considered to be an indication of a non-competitive market. What the MSP will look for as an indication of an effective market is whether price changes reflect "scarcity values" in order to signal supply and demand responses. It is the constraint of any such responses that the MSP will take as an indication that the marketplace is not effectively competitive.

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[72] The Market Surveillance Panel In Ontario's Electricity Market:: Monitoring, Investigating and Reporting – Backgrounder, April 2002, page 4.

[73] Ibid, page 7.

In the marketplace for natural gas storage services, we have seen that storage services providers such as UGL can obtain bids for storage services, which are higher than historical rates. UGL has developed new storage capacity because of these bids. Applying the MSP consideration of price movements would lead to the conclusion that these price increases are the result of an effectively functioning marketplace, because the price signal resulted in a supply response to serve the market.

4.2 Market Outcomes

The MSP (through the IMO Market Assessment Unit) will monitor and model market indicators and variables including prices, costs, outages, loads, exports, and imports. The purpose of this modeling will be to understand why the market operates as it does. The MSP is careful to point out that it does not intend to "second-guess" the market or determine how it should perform. It's monitoring and modeling is to understand how the market performs so it can assess whether it is effectively competitive.

Similar to FERC and CRTC criteria, the MSP will look for abuse of market power.

> *"Even in a competitive market, participants may at times be able to take actions that force prices up. However, when competition is effective, demand and supply will respond so that price increases become unsustainable. These responses can take the form of reductions in demand, the use of substitute products, or entry by new producers.*
>
> *The mandate of the MSP is to investigate the* abuse *of market power, not simply the* exercise *of market power."*[74]

As we have described in previous sections of this Study dealing with FERC and CRTC criteria, we believe that the storage services market in which ECG operates is not subject to potential market power abuse.

4.3 Regulations, Policies and Procedures

The MSP is also concerned with the effectiveness of regulations, policies or procedures that could impede supply and demand responses in the marketplace. They describe conditions that could exist to prevent effective competition even without the abuse of market power. These circumstances are regulatory or structural problems in the market, which do not allow supply or demand to change in response to price signals.

The demand side constraint example they describe are that retail customers may not have affordable hourly consumption meters, and therefore will not be able to obtain information needed to respond to variable prices. This may be a constraint to their ability to change their demand patterns in response to differences in prices throughout the day. The MSP intends to

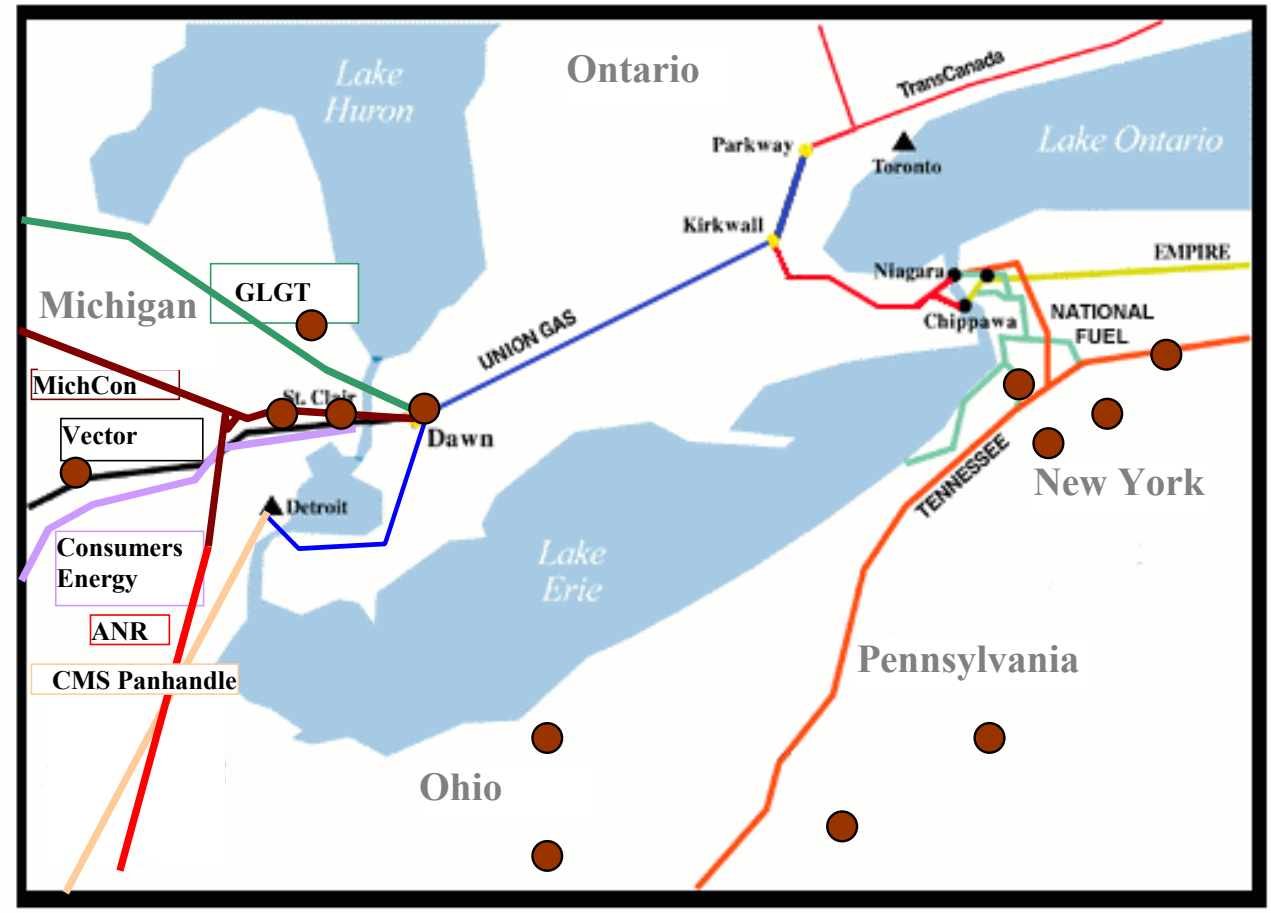
[74] Ibid, page 10.

monitor this and assess whether it impedes market effectiveness. If they determine it does, they will recommend changes.

The supply side constraint examples described by the MSP are the possibility that delays in authorizing new generation, or bottlenecks in the transmission system could impede the increase of supply in response to price signals. Again the MSP intends to monitor these situations, and make any recommendations they determine are appropriate to improve the market's effectiveness.

Both FERC and the CRTC include in their considerations of competition the assessment of supply and demand responses. They also consider the possibility of other institutional barriers that could limit competition. These issues are described in the previous sections of this Study, along with comparisons to the gas storage services market.

Appendix 1 – Ontario and Michigan Market Map



● Represents significant storage fields

Appendix 2 – Natural Gas Storage – Ontario and Michigan Market

Operator	Field	County/Location	Working Capacity (MMcf)	Max Delivery (MMcf/d)
Michigan				
ANR Pipeline	Austin	Mecosta	7,000	800
ANR Pipeline	Capac	St. Clair	13,600	270
ANR Pipeline	Central Charlton	Ostego	12,400	220
ANR Pipeline	Goodwell	Newaygo	19,300	380
ANR Pipeline	Lincoln-Freeman	Clare	13,000	405
ANR Pipeline	Loreed	Osceola	22,000	500
ANR Pipeline	Muttonville	Macomb	8,200	320
ANR Pipeline	Reed City	Osceola	12,200	400
ANR Pipeline	South Chester	Ostego	12,800	212
ANR Pipeline	Winfield	Montcalm	5,800	73
ANR Storage	Cold Springs 12	Kalkaska	25,257	300
ANR Storage	Cold Spirngs 31	Kalkaska	4,555	100
ANR Storage	Eccelsior 6	Kalkaska	10,810	100
ANR Storage	Rapid River 35	Kalkaska	15,051	250
ANR Storage/Blue Lake Storage Co.	Blue Lake 18	Kalkaska	47,806	657
		ANR Total	**229,779**	**4,330**
		Market Share	**28.15%**	**27.90%**
		HHI	**792.38**	**778.58**
Consumers Energy	Four Corners	St Clair	2,390	12
Consumers Energy	Hessen	St Clair	10,070	150
Consumers Energy	Ira	St Clair	3,250	350
Consumers Energy	Lennox	Macomb	1,500	120
Consumers Energy	Lyon 34	Oakland	700	30
Consumers Energy	Northville	Wayne	700	150
Consumers Energy	Overisel	Allegan	22,000	200
Consumers Energy	Puttygut	St Clair	7,020	250
Consumers Energy	Ray	Macomb	42,500	1,200
Consumers Energy	Salem	Allegan	12,000	100
Consumers Energy	Swan Creek	St Clair	420	12
		CE Total	**102,550**	**2,574**
MGS (Michigan Gas Storage)	Cranberry Lake	Clare	9,700	120
MGS (Michigan Gas Storage)	Riverside	Missaukee	1,500	15
MGS (Michigan Gas Storage)	Winterfield	Clare	22,800	360
		MGS Total	**34,000**	**495**

Operator	Field	County/Location	Working Capacity (MMcf)	Max Delivery (MMcf/d)
Southwest Gas Storage	Hawell	Livingston	**16,500**	**360**
		CMS Energy Group Total	**153,050**	**3,429**
		Market Share	**18.75%**	**22.10%**
		HHI	**351.54**	**488.27**
Michigan Consolidated	Belle River	St Clair	46,900	1,500
Michigan Consolidated	Columbus	St Clair	15,000	500
Michigan Consolidated	Taggart	Mecosta	40,000	750
Michigan Consolidated	West Columbus	St Clair	22,000	550
		Michigan Consolidated Total	**123,900**	**3,300**
MCNIC	Washington 10	Macomb	41,600	400
MCNIC	Washington 28	Macomb	4,850	45
		MCNIC Total	**46,450**	**445**
		MCN Group Total	**170,350**	**3,745**
		Market Share	**20.87%**	**24.13%**
		HHI	**435.51**	**582.41**
Eaton Rapids	Eaton Rapids 36	Ingham	**13,534**	**116**
		Market Share	**1.66%**	**0.75%**
		HHI	**2.75**	**0.56**
Michigan Gas Utilities	Cartwright	Calhoun	2,112	38
Michigan Gas Utilities	Lee 8	Calhoun	1,850	15
Michigan Gas Utilities	Partello	Calhoun	1,508	12
		Michigan Gas Utilities Total	**5,470**	**65**
		Market Share	**0.67%**	**0.42%**
		HHI	**0.45**	**0.18**

Operator	Field	County/Location	Working Capacity (MMcf)	Max Delivery (MMcf/d)
SEMCO	Collin	St Clair	1,468	25
SEMCO	Lacey	Barry	182	25
SEMCO	Lee 11	Calhoun	607	10
SEMCO	Lee 2	Calhoun	571	8
SEMCO	Morton 16	St Clair	181	60
SEMCO	Morton 17-21A	St Clair	1,761	60
		SEMCO Total	**4,770**	**188**
		Market Share	**0.58%**	**1.21%**
		HHI	**0.34**	**1.47**
WPS Energy Services	Port Huron	St Clair	**2,870**	**80**
		Market Share	**0.35%**	**0.52%**
		HHI	**0.12**	**0.27**
Ontario				
Enbridge Consumers Gas		**Enbridge Total**	**91,467**	**1,500**
		Market Share	**11.21%**	**9.67%**
		HHI	**125.56**	**93.44**
Union Gas Limited	Dawn	**Union Total**	**145,000**	**2,065**
		Market Share	**17.76%**	**13.31%**
		HHI	**315.53**	**177.08**
		Total Market Size	**816,290**	**15,518**
		HHI	**1708.82**	**1945.31**