

THE GNOMES OF NYMEX  
Replica Of Christopher Columbus  
*When He Set Sail At Cadiz, He Did Not Know Where He Was Going;  
When He Got There, He Did Not Know Where He Was;  
When He Returned, He Did Not Know Where He Had Been;  
Yet, He Did The Whole Thing At A Third-Party's Expense.*

**MEMORANDUM**

U.S. Natural Gas Underground Storage Levels, Weather And NYMEX  
The Gospel According To The Speculators  
On  
The New York Mercantile Exchange (NYMEX)

*This Memorandum "...gives you the illusion that has the appearance of truth.  
I give you the truth in the pleasant disguise of illusion"*  
*(Tom About The Stage Magician In The Glass Menagerie – Tennessee Williams)*

Since the beginning of the run-up in natural gas futures prices on NYMEX in early 2000, we have been searching far and wide for a culprit or culprits. In our search, we have left few stones unturned. We have listened to many learned persons and read many of their missives, but have not come across a convincing, coherent explanation for the run-up in futures prices. At the BP Amoco webcast-presentation on June 27, 2001, its Chief Economist, Professor Peter Daviés was unable to lay his fingers on a culprit.

Given these conditions, we did what usually works best, namely, going "ad fontes", i.e. our visit to NYMEX; after-hours mock-trading in the gas pit and extensive discussions with about 15 speculators (Gnomes), licensed to trade in the gas pit.

As often is the case, an answer to a simple question about the reason(s) for the run-up in gas futures prices is very simple too. We have identified the Gnomes as the culprit(s), and have attempted to support this conclusion in this memorandum and its attachments.

We have organized the attachments as follows: Following a "bullets-page", we have included a "Summary" (Pages 1-11); followed by the Analysis proper (pages 12-44). The analysis is designed to provide depth to the respective segments in the Summary. Finally, we have a Background-section (Pages 45-63). It explains types of commodity-exchange-traded instruments; the operation of NYMEX's gas pit, and common risk-management tools, presented at Duke Energy's Trading & Risk Management Class, Houston, Texas, February 19, 2001. Finally, we managed to enclose excerpts from the most recent study of the Energy Information Administration: Natural Gas-Productive Capacity In The Lower-48 States.

We have also relied on about 17 years of consulting work for Canadian natural gas producers and large industrial users in Canada and the USA, whom we assisted in marketing, transporting and purchasing natural gas, as the case has been.

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The opinions expressed in this memorandum are solely those of the analyst, Winfried Fruehauf, and do not necessarily reflect those of NBF or its Oil & Gas team in Calgary.

# U.S. NATURAL GAS UNDERGROUND STORAGE LEVELS, WEATHER AND NYMEX

## The Gospel According to the Speculators (Gnomes) on the New York Mercantile Exchange (NYMEX)

### MEMORANDUM HIGHLIGHTS:

- The unprecedented rate of escalation of U.S. futures and physical natural gas (gas) prices in 2000 is unlikely to recur in 2001.
- We view the market-making role of the Gnomes licensed to trade in the NYMEX "gas pit," combined with the hype typical for open outcry, as the trigger and mechanism responsible for the escalation of gas futures prices.
- The Gnomes have no revenues or cost of physical gas to protect. Their objective is to "make a spread."
- By their own admission, weather reports and gas underground storage data are the two tools the Gnomes employ for making buy and sell decision for the purpose of earning a spread.
- We view the simplistic use of weather reports and storage data as entirely unreliable, susceptible to misinterpretation, and capable of manipulation.
- The Gnomes' expressions of deep concern about storage levels and weather reports, fuelled by open outcry in the gas pit, are, as amply demonstrated, capable of triggering feeding frenzies akin to those involving piranhas at a cattle crossing in a river.
- If U.S. gas producers required price levels observed in 2000 and 2001 to date, were they so inept in pricing their production, that they needed to enlist the divine intervention of the Gnomes to achieve inflationary price increases? This begs the question, whether the Gnomes are adding real economic value to the U.S. economy or just lining their pockets and causing a leakage of revenues that otherwise would accrue to gas producers?
- In 2000, NYMEX suffered its first-ever annual reduction (by about 6.7%) in the number of futures contracts traded. This may presage an erosion of the role of the NYMEX gas pit to bilateral online trading and virtual exchanges, such as EnronOnLine and, in the future, possibly Intercontinental Exchange, without the hype of NYMEX.

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# SUMMARY

## Verdict

In 2000, closing natural gas (gas) futures prices on the New York Mercantile Exchange's NYMEX Division (NYMEX) escalated from a low of US\$2.168 on Jan. 5 to a record \$9.978/mmBTU on Dec. 27, for a trough-to-peak change of about 360%. In 2000, the estimated preliminary U.S. gas usage of 22,782 bcf was 4.97% above 1999 levels. The highly disproportionate rate of futures-price escalation, relative to growth in gas usage is devoid of any logical or otherwise compelling justification. Hence, we view the unprecedented rate of futures-price escalation as evidence of the exercise of market power. In the absence of any demand/supply or cost justification, and, having regard to a virtually unlimited "money supply" (i.e. pool of cash to meet NYMEX margins requirements) for futures trading, and considering the level of physical gas demand, we view the rate of price escalation as truly inflationary (in the textbook-sense), analogous to the imbalances between money supply and available goods for the soldiers in the U.S. Civil War (the stated origin of the term "inflation") and during Germany's hyper-inflation after WW I. To the extent that indexation transmogrified futures prices into physical-gas prices, the mischief of serious inflation created by the futures market caused real and material damage to the fabric of the U.S. economy.

Given that the **actors/traders on NYMEX consist of hedgers and speculators (a.k.a. the Gnomes/Gnomes of NYMEX)**, our task was to find among them the culprit.

Before arriving at our verdict, we have agonized about it long and hard. While it was somewhat daunting and may, at first, appear daring to identify the culprit, we were obliged to sift through seemingly plausible alternatives to arrive at the one conclusion that is consistent with the facts of the matter. **It is our considered opinion that "culpability" lies with the Gnomes operating in the NYMEX gas pit.**

Our identification of the Gnomes as culprit is rooted in our visit to and presentations of the NYMEX; after-hours mock-trading of futures and options in the gas pit, followed by extensive interviews with about 15 Gnomes. Our conclusion also utilizes our knowledge from our participation in the Duke Energy's Energy Derivatives, Trading & Risk Management Class in February 2001, and many years of consulting in gas buying and selling on behalf of industrial gas users and gas producers.

## Reasons for the Verdict

### Roles Of Hedgers And Gnomes

We believe that the Gnomes' loss of credibility (having "cried wolf" too many times), combined with the lack of gas users' capacity to absorb another round of gas-price inflation, make an encore in 2001 to gas-price escalation in 2000 unlikely.

The **hedgers** on NYMEX have essentially one objective, namely, to protect revenue and cost positions through fixed-price transactions. Futures contracts that were not closed-out, but taken through the Exchange-of-Futures-for-Physical-mechanism (EFP) into the physical gas market, amounted to 0.23% in 1999 and 0.18% in 2000. **We have concluded that the hedgers in the gas pit are the laggards.**

**NYMEX has licensed Gnomes as "market-makers"** for trading in the gas pit. As such, they provide a two-sided (bid and ask) market (i.e. acting as both buyers and sellers)

and create and increase liquidity. We view the term **market-maker as synonymous with market/price leader(s)**. A price leader is typical for and evidence of the existence of an oligopoly. Indeed, we view the gas pit, at the very least, as an oligopoloid, if not an oligopoly. However, lest someone challenge this finding, it is not so much the form and structure of a market (polypoly, oligopoly or monopoly), but the conduct of its participants that is relevant. The Gnomes are appointed to trade at the margin, and if it is true that prices are formed at the margin, then NYMEX gas futures prices are formed through the Gnomes' buy and sell actions. Hence, futures prices reflect the exercise of market power. Its exercise can and does take futures prices literally anywhere, as long as they allow the Gnomes to lock-in a spread. This is what happened in 2000.

We have concluded that the Gnomes' mandate of market-makers has positioned them, in aggregate, as the NYMEX **gas-pit price leader** and, as such, vested them with immense market power that far exceeds their numbers. In 2000, the Gnomes held 20.1% of all open-interest positions in gas futures (whereof floor traders held 30.3%), and 35.8% of gas options (whereof floor traders held 50.6%). As their mandate is divorced from the purchase and sale of the underlying gas commodity, they are single-mindedly focused on locking-in spreads. It follows that the prices at which they are trading futures and options are phantom-prices, created under phantom-market conditions. However, to the extent that phantom-futures prices translated into physical gas prices, the Gnomes' conduct created real damage and injury among gas users exposed to NYMEX-derived prices.

We view the appointment of market-makers unusual, to say the least, because it is interventionist. As such, it introduces an artificial market power/element that interferes arbitrarily with the free operation of the market represented by the gas pit that ought not to be interfered with. But since the Gnomes are licensed to act as market-makers, trading for their own account, they are introducing artificial, i.e. capricious/arbitrary and speculative forces, into the gas pit. As price leaders are acting autonomously, they are able to lead the market at any time and, perhaps within limits, at their discretion anywhere they care to, unless some renegade Gnomes decide to deploy their own agenda and, if successful, usurp the power of the incumbent price leader. This, we suggest, vests market power in the Gnomes, and its exercise was the main driver of gas futures prices in 2000.

The crux of the problem is that the Gnomes impose their own activity levels on the gas pit. One may ask, whether demand/supply conditions in the underlying physical market for gas would not ultimately rein-in the Gnomes' powers as price leader. The answer is yes, but inertia delay market reactions. If allowed to operate without the Gnomes' interference, demand for and supply of futures and options, would set prices.

### **The Gnomes' Qualifications**

The apparently only qualifications for trading in the gas pit are: 1) payment of the licence fee and 2) demonstration of the mechanical competence to trade in the gas pit. Of the 15 or so Gnomes we interviewed, nobody's mind was contaminated or corrupted by any gas-industry experience or expertise. Neither knew the difference between 1 mcf and 1 cubic metre of gas, between BTU and gigajoule or wet vs. dry measurement. For that matter, neither had ever seen gas in any form.

The fact, that the Gnomes have not soiled their minds with knowledge of the gas industry, may be a mitigating factor, when they are implicitly accusing the leaders of the U.S. gas industry of mismanagement of gas inventory levels.

### **NYMEX Trading Volumes**

From the inception of trading in gas futures in April 1990 and gas options in October 1992, their aggregate trading volumes have risen each year through 1999. However, in 2000, the futures volume fell by 6.7% and the aggregate of futures and options by 1.7%. Plausible reasons for the decline include: loss of business to online trading on the EnronOnLine virtual exchange; insolvency of funds; inability to post margin requirements in periods of extreme volatility; fear of potential backwardation, and predilection for more affordable options than futures.

### **Physical Gas Prices**

The alleged knowledge of gas prices in the USA is unheard of. Ironically, there is no such thing as "the gas price." There are hundreds of thousands, if not millions, of gas prices. There is no timely source of transaction prices. The alleged knowledge of gas prices compared to the factual ignorance of gas prices causes confusion and helps to stimulate speculative trading.

### **Gas Demand**

The USA has no timely nationwide record of daily, weekly or monthly gas demand and supply, although determined research will uncover actual and circumstantial evidence; however, this involves work, and that the Gnomes shun. It may appear to be illogical to criticize the Gnomes for their disregard of demand and supply, when timely data are not, or not readily, available. However, even if such evidence were available, the Gnomes would disregard it, because it would blunt, if not invalidate, the use of storage data and weather reports as their two tools/toys.

### **Drivers Of The Gnomes' Actions - Boiler-Room Atmosphere Of The Gas Pit; Underground Gas Storage Levels (Storage), And Weather Reports/Forecasts**

A maelstrom of some 150 traders (hedgers and Gnomes) is crowding the tiered gas pit at any time, as it operates by open outcry, an anachronism in the era of computerized, possibly online trading. They are shouting, gesturing, grimacing and positioning themselves using bodily force, if necessary. Any observer of stock exchanges and trading rooms in investment houses is keenly aware of the contagious force of acting in cramped closed quarters. Driven by the greed factor, tempers are flaring and adrenaline levels are rising, until an atmosphere of pandemonium is created. This boiler-room atmosphere stimulates the Gnomes' conduct, their activity levels and the prices they are prepared to bid.

Even if the forces of demand for and supply of gas will ultimately rein-in the Gnomes' actions in the gas pit, neither has any immediate relevance, because the Gnomes disregard demand and supply forces, as they are slaves of and preoccupied with **1) storage levels, and 2) weather reports/forecasts.**

Each week, the Gnomes are awaiting with baited breath the announcement of gas-storage levels by the American Gas Association (AGA). The Gnomes are comparing each week's storage data with those a year ago. If the former are below the latter, they routinely commence hand-wringing, followed by expressions of concern about the ability of the U.S. gas industry to meet winter- and summer-peak demands for gas. This translates into rising futures prices.

Next, the Gnomes are taking their cues from the weatherman. Whenever weather forecasts change, the Gnomes jump into action. Forecasts of colder weather in winter and warmer weather in summer translate into rising futures price, because in either case, the Gnomes are expecting gas shortages. As soon as a weather forecast changes, the Gnomes jump into action, by either buying or selling futures and options or decide not to act, lest it be not favourable.

Regarding storage and weather, the Gnomes neither know nor care about the potential size and timing of a change in demand. All they are concerned about is "getting the direction right".

## **Factors That The Gnomes Neither Know Nor Care About**

The Gnomes' use of storage and weather data is crude and simplistic, and not clouded by specific knowledge of them or, for that matter, the U.S. gas industry. Indeed, it appears that proper use of storage and weather data would cause consternation and likely immobility among them, because once their uninformed use of their two toys is expertly scrutinized and promptly invalidated, the Gnomes would be like beached whales. Storage and weather are to the Gnomes what a lamppost is to a drunkard. It represents a source of physical support rather than one of enlightenment. **Lost on the Gnomes is the capability of the U.S. gas industry to operate with lower-than-historical inventories of working gas.**

### **U.S. Underground Gas Storage and Its Changing Role**

Prior to restructuring of the U.S. gas industry, gas in storage was part of rate base, whereupon distributors and pipelines earned rates of return. The practice was to fill storage to the rafters by late October, because that ensured record earnings. Now that gas distributors own perhaps 20-25% of working gas in storage and producers, end-users, marketers and aggregators the rest, the rule of "just-in-time delivery applies. Storing excess gas for too long and at too high a price is now a severe threat to earnings. By comparing current storage levels with historical ones, the Gnomes assume that any decline of stored gas from historical levels is an omen of the inability of the U.S. gas industry to meet peak demand, justifying expression of concern and bidding-up of gas prices. (The Gnomes' Sleeping Beauty View)

### **Structural Changes Post-Federal Energy Regulatory Commission (FERC-Order 636)**

Order 636 of the FERC has affected the operations of the U.S. gas industry profoundly. Previously stand-alone transmission systems are now integrated, so are storage and transmission and, in many cases, storage, transmission and distribution. Through swaps, displacements, exchanges, and parking of gas, the industry is now capable of operating pipelines at improved capacity factors and requiring less storage than historically.

### **Convergence Of Gas And Electricity**

Convergence of gas and electricity has created a high degree of fungibility between the two. Depending on spark spreads, gas earmarked for conversion into electricity may be sold as gas, and purchased "economy electricity" will cover a gas-fired generator's delivery obligation. This lessens the need for storage or "stretches" working-gas inventories. **The USA can**



**displace about 6 bcf/d of gas (about 10% of average demand) with fuel oil.** This frees-up gas for gas markets and/or "stretches" working gas inventories. Again, this falls between the cracks, when the Gnomes compare current with historical inventory levels.

#### **Start-up Of Alliance Pipeline (AP) In 2000 Lessened The Need For Gas Inventories**

Just like the commencement of deliveries of gas by Maritimes & Northeast Pipeline on Dec. 31, 1999, the start-up of AP in December 2000 lessened dramatically the need for storage gas, because AP began to deliver 1.325 bcf/d of gas into the USA. Yet, the Gnomes decried inventories as inadequate, because they appeared low year-over-year, and/or based on historical averages. Surely, when a pipeline, as large as AP, starts feeding incremental firm supplies directly into the U.S. gas grid, why should any U.S. gas supplier have heeded the Gnomes' implicit call for excess inventories. Likewise, in the fall of 2000, the Gnomes berated Canadian storage levels as being inadequate; yet, at the time, AP was placing about 8 bcf of gas as line-fill (permanent inventory).

#### **As Default Suppliers, U.S. Gas Distributors Always Store Sufficient Gas For The "100-year-Winter"**

Unbeknownst to the Gnomes, U.S. gas distributors, in discharging their merchant obligation, are always filling storage to levels sufficient to meet the coldest winter in 100 years. Yet, the Gnomes preach gloom and doom every year about allegedly looming gas shortages and inadequate inventories.

As for firm gas requirements of commercial and industrial (i.e. non-utility) gas users, their suppliers of choice will only store sufficient gas (but less than historical suppliers) to meet their contractual supply obligations. Should such suppliers be unable to discharge their delivery obligation, they must "keep" their customers "whole," by supplying gas from sources other than those specified in the sales and purchase contract. In any event, the Gnomes would be totally unaware of a supplier's default, and so would be the gas purchaser (as long as gas shows-up), because gas has no DNA. Moreover, in the event of a curtailment/interruption, the gas supplier would discharge the delivery obligation by supplying sufficient alternate fuel, e.g. fuel oil, while keeping the gas purchaser whole in terms of costs. Moreover, for multi-fuel gas users, their suppliers may beg them to consent to an interruption and burn a substitute fuel. To entice a gas user for consent, the supplier will make it worth the user's while to be interrupted by sharing with the him/her the proceeds from the sale of "the user's gas" into the lucrative gas-peaking market. The result is that the gas supplier would more or less double the calorific equivalent of the gas sold that was contractually earmarked for use by his customer. It is incongruous why the Gnomes would worry about gas storage levels under private contracts between a gas supplier and user. Yet, they do.

#### **Typical Reaction To Weather Forecasts**

The increase in gas-fired electricity generation has given the Gnomes another opportunity for preaching phantom-market conditions. During the summers 1999 and 2000, in particular, the Gnomes cranked up their propaganda-machine. They began to allege that increased use of electricity produced by gas-fired generating stations in summer is inhibiting the ability of the U.S. gas industry to fill underground storage, thereby presaging gas shortages and, hence, curtailments and/or interruptions of gas supply in winter. Whenever weather

reports call for increases in temperatures, the Gnomes are breaking into a frenzy, bidding-up gas-futures prices. To the extent that physical gas prices are NYMEX-based/related, they are increasing in sympathy with futures prices.

The Gnomes are unaware or have chosen to be unaware that gas-fired base-load generation operates under long-term gas supply, transportation and storage contracts. Hence their gas requirements cannot possibly be influenced by weather, regardless of temperatures. To the extent that gas-fired generating units are serving the peak-demand market for electricity, **they only operate, if spark-spreads are favourable.** It is rare for a merchant generator of electricity to wait with the arrangement of gas supply for the peaking market, until weather forecasts are calling for increases in temperatures. Typically, generators serving the peaking market for electricity are locking-in a spark spread and are selling electricity forward. To that extent, there is no incremental gas demand, when temperatures are rising.

Even if, from time to time, a merchant generator would wait for weather forecasts predicting rising temperatures before lining-up gas supply, most, if not all, other gas-fired generators would already be operating at design capacity. This simply means that virtually the entire gas-fired U.S. electricity industry operates during the summer months at or slightly above design capacity. Surely, capacity operation cannot possibly fuel incremental gas demand. Only if some generating units operate below capacity, they are able to respond to rising temperatures; however, not necessarily by burning gas. Instead, fuels other than gas (e.g. and fuel oil) may be supplying the electricity peaking market. Yet, the Gnomes are insisting with a straight face that futures prices of gas will have to increase. The only minor problem the Gnomes have is to adduce evidence in support of their allegation. So far, they have been unable to do so. Moreover, in addition to gas supply, electric generators, serving the peaking market only, must also have both gas and electric transmission capacity available. This often is a problem. Also, rising temperatures do not guarantee adequate spark spreads. Unless and until these requirements are met, forecasts of high temperatures, in and by themselves, do not allow any definite conclusions about increases in gas demand. This simply means that rising temperatures do not necessarily translate into increases in gas demand. Even if they do, we would view the impact as de minimis. This, of course, does not prevent the Gnomes from whipping-up frenzied increases in gas futures prices.

#### **Liquefied Natural Gas (LNG)**

LNG is undergoing a renaissance in the U.S.A. as a source of peaking gas. By 2002, the design capacity of LNG terminals is scheduled to be met or exceeded. Yet, LNG does not show-up on the Gnome's radar screens.

# The Gnomes

*(their perceived psyche)*

**Diagnosis Of The Gnomes: Steeped in History And Being Deeply Concerned –**  
*have they missed their calling to be historians?*

If one can trust financial new services and the **Gnomes'** occasional public utterances, the consensus is that they **are worrywarts**, because they operate in a state of chronic concern about gas inventories and weather. To fathom the inner driving forces of the Gnome's antics is akin to diving in a bathyscaphe into the depths of their psyche, employing Freudian tools and methods. What complicates the analysis is the Gnomes' addiction to "**schadenfreude**" (finding pleasure in mankind's misery).

The Romans used to say "fama crescit eundo" (a rumour grows as it is going around). Information pouring into the gas pit is both sophisticated (electronic bulletin boards) and haphazard. Heeding the adage "buy on rumour, sell on news," planting a rumour is an excellent technique to create a basis for "making a spread". A shout into the gas pit, e.g. "tropical storm", will galvanize the Gnomes and hedgers into buying- and selling-frenzies of gas futures and less-costly gas options. Should an inquisitive Gnome, a rarity, dare to inquire into the storm's venue, perhaps 30 minutes later, the answer may well be "South China Sea." Unless this provides an incentive for renewed Gnostic action, no trader will try to correct the reaction to the rumour.

It appears that the litany of Gnostic concern about storage levels and weather, although very effective, is nothing more than a smokescreen for whipping-up action, a.k.a. creating **volatility**. After all, as designated market-makers, "stirring the pot" is their task. However, behind it is a hidden agenda, namely, the Gnome's own *raison d'être*, i.e. to "feed the greed" by "making a spread" in the most simple form, i.e. by "buying low and selling high". Without volatility, especially extreme one, it is difficult, if not impossible, to make a spread in a predictable flat market. To deploy their tools "current vs. historical inventories" and "weather reports/forecasts" effectively, the Gnomes must breathe life into them, because life begets action, it begets volatility and it begets profits. There is no better way than to wave the flag of concern.

Chronic concern combined with the streak of "schadenfreude" evidences itself in many ways, including the following. The development of a tropical depression off West Africa is music to the Gnomes' ears. Its sound intensifies as it crosses the Atlantic and, hopefully, evolves into a hurricane, ideally high on the Richter scale. The crescendo of frantic trading in gas futures and options intensifies, as a hurricane hones in on the offshore petroleum and gas platforms in the Gulf of Mexico. The Gnomes are becoming delirious, if the hurricane damages as many platforms as possible, ideally accompanied by fatalities of qualified platform personnel that is difficult to replace.

The Gnomes' good-news wish list then includes a backhoe cutting into pipelines feeding Henry Hub, causing a pipeline rupture, followed by an explosion that knocks the gas lines out of service for extended periods of time and causes fatalities. Analogous to a seismograph, the futures-price ticker in the gas pit keeps-on rising, as the Gnomes break into a feeding frenzy, analogous to piranhas at a cattle crossing, gorging themselves with all of the "good news," and dropping the odd offering of thanks on the altar of the God of Greed.

At the other end of the spectrum is bad news. A quiet hurricane season, calm seas, mild seasonal summer and winter weather, uninterrupted production of petroleum and gas, and high gas inventories are the worst-possible disaster scenario the Gnomes could think of.

**Causes of Concern** – *why and what are Gnomes fretting about, and is the concern for real?*

Assuming the outpour of concern is genuine instead of a cleverly-executed charade, one is tempted to conclude that it is the manifestation of chronic suffering of the Gnomes from what might constitute psychosomatic anxiety attacks, reinforced possibly by the forces of neurological and fatigue-related disorders; atrial fibrillation and perhaps bipolar disorders.

How, one may ask, can the Gnomes find relief? First, a two-pronged assistance consisting of compassion and counselling may help. Next, one might be tempted to suggest that each futures and options contract ought to be accompanied by a pouch containing suitable tranquilizers or antidepressants, such as tricyclics. Potentially, orally active, small molecules, such as CEP 1347, may help. They are designed to enhance the survival of neurons, thereby intervening in the progression of neuro-degenerative diseases. For fatigue-related disorders, Provigil might offer relief.

Additionally, a potentially calming influence may flow from the Gnomes' enrolment in accredited courses about the gas industry, followed by periodic re-testing under the aegis of the AGA. If NYMEX would collect a fee ranging from \$0.01 to 0.001/mmBTU per futures and option contract, this would be adequate for a facility for continuous improvement of the Gnomes' state of industry knowledge. If these courses would educate the Gnomes in gas-storage management and the influence of weather, they may themselves recognize that there is nothing to be concerned about. If successful, concern about storage and weather would drop out of the Gnomes' minds like scales off their eyes.

The only potential problem is that curing the Gnomes from suffering from concerns may deprive them of the very toys they deploy to "make a spread."

This may be beneficial to the gas industry, because it would, effectively, remove the Gnomes from the gas pit and leave hedgers there. The improving rationality of trading in the gas pit may be beneficial to the entire U.S. gas industry, because price spiking and inflation on the scale observed in 2000 and early 2001 would unlikely repeat itself.

This may also deliver the answer to the question whether the presence of the Gnomes adds real economic value to the U.S. economy.

However, if, by chance, the Gnomes use storage and weather data merely as a pretext, without relying on them at all, then it would appear that the Gnomes' activities resemble in pith and substance Machiavellian charades. Hence the conclusion that the Gnome's role would be that of a casino gambler, and the question whether the Gnomes are adding real value.

**The Future Role Of NYMEX**

We believe that the electronic trading will likely replace the system of open outcry. It appears that NYMEX Access<sup>SM</sup> and enymex<sup>SM</sup> may be foreshadowing the end of open outcry. Whatever the reasons for the fall in the volume of NYMEX gas futures in 2000, we believe that virtual exchanges, such as EnronOnLine and the International Commodity Exchange are capable of eroding the gas pit, as constituted at present. They require neither concern nor hype.

We are convinced that it is utterly irrelevant how current gas inventories compare with historical ones for the purpose of judging the adequacy or the lack thereof of gas inventories. Likewise, simplistic reliance on weather reports/forecasts for the purpose of trading and pricing futures and options is misguided.

We are suggesting that the gas pit requires no market makers. The number of futures and options has grown enormously, providing in aggregate sufficient liquidity, making the role of the Gnomes redundant.

NYMEX ought to consider restricting trading in the gas pit to hedgers, because they own or control the underlying commodity, whose costs/revenues require protection.

**Calling The Gnomes' And Their Economics 101's Bluff – *revenge of fundamentals***

Equity markets have demonstrated time and again that fundamentals may be suppressed for extended time periods. However, ultimately, they will re-emerge, re-assert themselves and cure markets from excesses on the up- or downside. This lesson the Gnomes had to learn in January 2001, when some of the excesses of futures prices were unravelling. Unfortunately, unlike equity markets, there is no mechanism that indicates and measures when futures prices have reached excessive levels. Hence, physical markets must provide the cure. Revenge from physical markets came late, but it came, calling the Gnomes' bluff in early 2001, when even the most diehard Gnomes could no longer, with a straight face, claim impending gas shortages by or before the end of March 2001, given the persuasive weight of physical gas markets.

The kindest comment one can make on the Gnomes' attempt to make a spread is, that they are not burdened and besmirched by any knowledge of gas markets, and that they are misinterpreting weather and storage data, and forecasting their direction akin to a motorist looking "ahead" from below the dash board through the rear view mirror at stale storage data.

The Gnomes are unaware of their redundancy, because physical gas markets left to their own devices will, through the price mechanism, generate supply and demand responses nullifying the Gnomes' predictions of gas-supply shortages. It has not occurred to them that futures-price escalation triggered by their own gyrations did and does not only discourage demand for gas, but also stimulates the use of substitute fuels/feedstocks. It is a riddle to understand how the Gnomes can credibly wring their hands about alleged gas inventory shortfalls by bidding-up futures prices that, when translated into physical gas prices, will strangle demand for gas.

**While postulating that the USA would run out of stored gas by or before the end of March 2001, the Gnomes' very own actions, to the extent that they affected physical gas markets, created and mobilized demand responses that enabled the USA to sustain gas demand on seemingly low inventory levels. In other words, the higher futures and physical gas prices rose, the easier it became to sustain winter demand on optically (and historically) low inventories.**

The Gnomes ought to do the honourable thing and fold their tents, vanish and acknowledge the contradiction between their motivations and actions, and the ensuing results, which are inherently diametrically opposed.

**The Gnomes view gas demand as totally inelastic, implying that, the higher the price, markets will urge for and use more gas until its supply is exhausted, and still crave for more, thereby fuelling and sustaining the escalation of futures and physical prices. In other words, the Gnomes' Economics 101 are based on the notion that speculation-infected futures markets will never reach equilibrium. Unless neutralized somehow, the Gnomes' actions in futures markets are actually interfering in the interplay of market forces, if, and to the extent that futures prices translate into physical spot and term prices.**

**What are practical alternatives for hapless users of physical gas? To curl-up, rollover, pay ransom prices, and become comatose, or to de-mask the Gnomes, tear off the covers of what resemble a charade, and begin trading gas bilaterally online. The alternative is for NYMEX to restrict trading in gas futures and options to the amounts of underlying physical demand and supply.**

**The Ultimate Irony Of Certain Phenomena, When Related To The Gas Pit** – *“It... gives you the illusion that has the appearance of truth” (Tennessee Williams, The Glass Menagerie) – The Emperor’s New Clothes (The Brothers Grimm) – The Sorcerer’s Apprentice (Johann Wolfgang von Goethe) - mundus vult decipi, ergo decipiatur (Sebastian Brant)*

Ironically, an aura of ‘surreal realism’ permeates the actions in the gas pit. Traders in the pit speak of “support” and “resistance.” Not unlike the sages in Rome and Athens, who threaded and slid their fingers through mounds of glistening sheep’s entrails, in search of kinks and twists to presage the future, the Gnomes and hedgers alike are dusting-off old trading data and compare current prices with so-called support and resistance levels to determine, how and when to position themselves in the market.

We doubt the validity of the concepts of support and resistance and believe that, all it means is that, at the end of a trading day, there were no more transactions left to complete and/or buyers and sellers had no time to complete transactions. The next day presented entirely new market conditions.

This is the confluence of realism and surrealism. If enough traders “conspire” by believing in the validity of “support” and “resistance” and act accordingly, then trading based thereon, seemingly magically, becomes a self-fulfilling prophecy. This is, as though the traders had pulled themselves-up by their own bootstraps. Call this consensus or what, belief cures and kills.

A similar phenomenon is involved in weather charts. The traders in the gas pit are poring over hurricane charts to predict the likelihood and timing of the evolution of a tropical depression off West Africa into a tropical storm or a fully-fledged hurricane in the Gulf of Mexico. Other charts are used to predict its potential force, landfall and path. Armed with an armful of data, the traders then proceed to buy and sell futures and options. Again, call it herd-instinct or lemming mentality, consensus is the issue. This is “The Emperor’s New Clothes”-phenomenon. It works until someone calls the bluff.

The point with respect to the practices of Gnomes and hedgers is that one can challenge decision-making, merely based on history, any time. However, one has, to some degree, to acknowledge the power of consensus. Here is the trick. Those who bet on history blindly will be either right or wrong. This is the Gnomes’ usual fate. The hedgers, however, willing to bet on history too, tend to be more sophisticated than the Gnomes. They tend to buy or sell futures; although, just in case history does not repeat itself, may sell or purchase an offsetting option.

There is also an almost eerie resemblance between the, sometimes teen-age, “dot.comers” and the Gnomes. Both factions thought they had the world “by the tail.” Events to date have demonstrated that both lost their credibility. What separates them is innocence. To give the “dot.comers” the benefit of doubt, they may still have it, while the Gnomes lost it, the day they crossed NYMEX’s threshold. This is the “mundus-vult-decipi” phenomenon referred to in the prologue.

Still, the fundamental question remains whether there is a bonafide role for Gnomes to play. By relying on historical storage data and weather forecasts, they are exuding the image of truth. The pity or dreadful irony is that, if the Gnomes are able to attract sufficiently many disciples from the physical gas market, that adopt futures prices for physical transactions, they can, and did in 2000, force an entire nation’s gas users onto their knees. This is the “Sorcerer’s Apprentice” phenomenon.

Hence the question: Did and do the Gnomes create real economic value, or are they merely redistributing otherwise disposable income and corporate cash that line the Gnomes', the hedgers' and the producers' pockets, but inflict untold damage on a nation's economy, with very little increase in gas reserves and supply.

Looking at a Gnome's face is just like looking into that of a teenage dot.comer in March 2000 – wide-eyed, with greed gleaming in their eyes and without even the slightest smidgen of clue about the fundamentals of the business.

However, if through fundamental analysis, one is able to uncover and expose the flimsy and threadbare weave of the Gnomes' veil and reach through it, one is struck by the fact that the illusions they are weaving have the appearance of truth – The Glass Menagerie phenomenon.

## **U. S. Natural Gas Underground Storage Levels, Weather and NYMEX**

**The Gospel According to the Speculators (Gnomes) on the  
New York Mercantile Exchange (NYMEX):**

***Disaster Has Smitten U.S. Wholesale And Retail Markets Of Natural Gas (Gas),  
The Fuel Of Choice, And Is Here To Stay, Moderated Up Or Down By Two Gnomish  
Diagnostic Telltale Signs:***

***(1) Weekly Comparisons Of Current Gas Storage Levels With Those Of A Year Ago,  
And (2) Interpretation Of Weather Reports And Forecasts***

***Focussing On These Two Factors Only Is Akin To Driving A Whimsical Gnomish  
Vehicle With The Head Below The Dashboard, Guided Solely By Weekly Glimpses  
Into The Rear View Mirror (Reflecting Last Year's Storage Data), Reinforced By  
Listening Through Headphones To Current Weather Reports/Forecasts***

***Did This Create A Gas-Price Charade In Disguise, With Devastating  
Consequences?***

## **PROLOGUE**

*This study is rooted in a visit to and presentations by officials of the NYMEX Division of the New York Mercantile Exchange (NYMEX); after-hours mock-trading of gas futures and options in the "gas pit," followed by extensive interviews with about 15 speculators (a.k.a. the Gnomes of NYMEX or Gnomes) in futures and options. In a sharp departure from an earlier study, we have now concluded that the gyrations of gas futures prices since 1990, notably their unprecedented escalation in 2000 and, to a lesser extent, 2001, have been primarily, if not solely, the result of the actions of the Gnomes rather than the hedgers for whom NYMEX was originally designed. We believe that it is difficult not to conclude that this price escalation was akin to a charade that slipped out of the Gnomes' Pandora's box. Fortunately, as in the case of the mythological Pandora's box, someone locked the door, preventing hope from slipping out, hope that 2000 and 2001 will be a painful memory forever.*

*Before arriving hesitantly at this, arguably rebuttable conclusion, we have agonized about it, especially since our earlier study concluded that the Gnomes are performing at least a somewhat, useful role. It has been argued that in competitive markets, price formation occurs at the margin. NYMEX's gas pit, in our view, is or acts as an oligopoly in gas futures. One of an oligopoly's characteristics is the emergence and operation of a price leader. Arguably, the Gnomes are acting collectively as a price leader. As NYMEX views the Gnomes as market-makers for the NYMEX futures and options, and as they, as such, operate at the margin, where prices are formed, we believe that they are wielding enormous and more market power over gas-futures pricing than the hedgers on NYMEX. We have wrestled with several plausible explanations that might explain the actions in the NYMEX gas pit and their fallout; however, in the end, we have found no other conclusion consistent with the facts. As too large a money supply chased the first ever annual reduction in NYMEX-gas futures in 2000, the USA has witnessed a textbook-version of inflation in the gas pit. To the extent that gas-futures prices translated into physical gas prices, it follows that they also were highly inflationary. If one were to ask, how a respected organization, such as NYMEX, unwittingly became entangled in the net of a "handful" of Gnomes, one need not look any farther than at the techno-mania that gripped stock exchanges globally in 1999 and, to an extent, in early 2000; at drilling funds in the 1970s and early 1980s; at MURB in about the same time frame; at Macadamia nut farms in Hawaii, at chinchilla farms in North America and Europe in the 1950s and 1960s, and at the Dutch tulip mania. As Sebastian Brant said: "mundus vult decipi, ergo decipiatur" – the world loves to be fooled, therefore let it be fooled.*



# GAS PRICES IN PHYSICAL AND FINANCIAL MARKETS IN THE USA

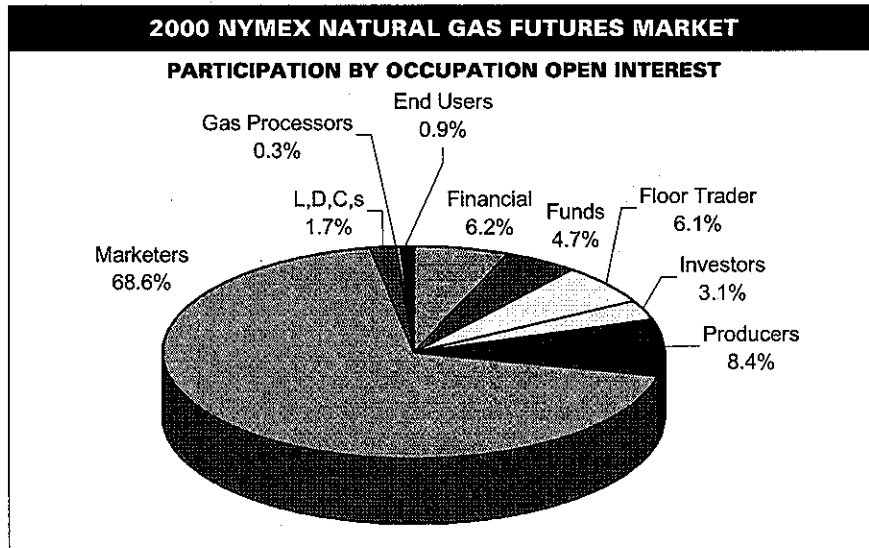
**NYMEX Gas Pit – Arena For Trading In Gas Futures and Option Contracts – a sight to be seen and heard to be believed**

On each trading day, NYMEX treats observers to a spectacle. At 9.30 a.m. EST, the start of open outcry in the supposedly respectable, albeit not necessarily venerable, “gas ring/pit,” a maelstrom of human bodies swings into noisy action, engaging in conduct that, in another forum, may be viewed as a shouting match, conducive to, if not encouraging, assault causing potential bodily harm. The atmosphere reminds of a conductor trying to intonate a stately sarabande, but being drowned out by a cacophony of unruly renegade musicians, Gnomes, bent on doing the “Gangsta Rap.” Invariably, they get their way for trading gas futures and option contracts. Open outcry ends at 3.10 p.m. (Monday through Thursday), followed by NYMEX ACCESS<sup>SM</sup>. It trades from 4 p.m. until 9 a.m. the next day. On Sundays, it opens at 7 p.m. and ends at 8 a.m. on Mondays.

We believe that crowding in the casino atmosphere of the gas pit is contagious to the conduct of gas traders, intensifying its chaotic overtones, and fuelling speculative fervour, and that conversion of open outcry to electronic trading would calm the tension-laden trading process and lead to more rational conduct.

With respect to gas, NYMEX trades gas futures contracts (futures contracts) and gas options (options). Futures contracts facilitate price discovery and offer expanded risk-management opportunities for hedgers. Hedgers are traders with the specific intent of protecting an existing or anticipated physical-market exposure from unexpected and/or adverse price fluctuations. Gas hedges initiate positions in futures and options, intended to act as a temporary substitute for the sale/purchase of gas. Hedges work akin to fixed-price transactions, by locking-in a price level. A simple long hedge involves the purchase of futures contracts against the future market-price purchase or a fixed-price forward sale of a gas to protect against price increases. A short or selling hedge involves the sale of a futures contract to protect against possible gas-price reductions. In addition to hedgers, there is the traders’ category of speculators (a.k.a. the Gnomes). As such, they are expecting to profit from specific directional price move of a futures or options contract, or the commodity itself through locking-in of a futures or options spread. A futures spread involves the simultaneous purchase and sale of a futures contract for different months, different commodities, or different grades of the same commodity. Gas options are another risk management tool. They offer a hedger price protection, while retaining the ability to participate in favourable price moves. The opportunity cost is limited to the premium paid for options. The options contract complements the gas futures contract. It protects against the risk of loss of property. An options trader buys an “insurance policy” up front, paying an up-front premium. If the risk materializes, the options holder is reimbursed. If the risk does not occur, the holder is only out the premium. Option spreads involve the purchase and sale of options of varying types (put or call), strike prices, expiration dates, or both. Option spreads also include a purchase or sale of option contracts and the simultaneous sale and purchase of a futures contract for the same underlying commodity.

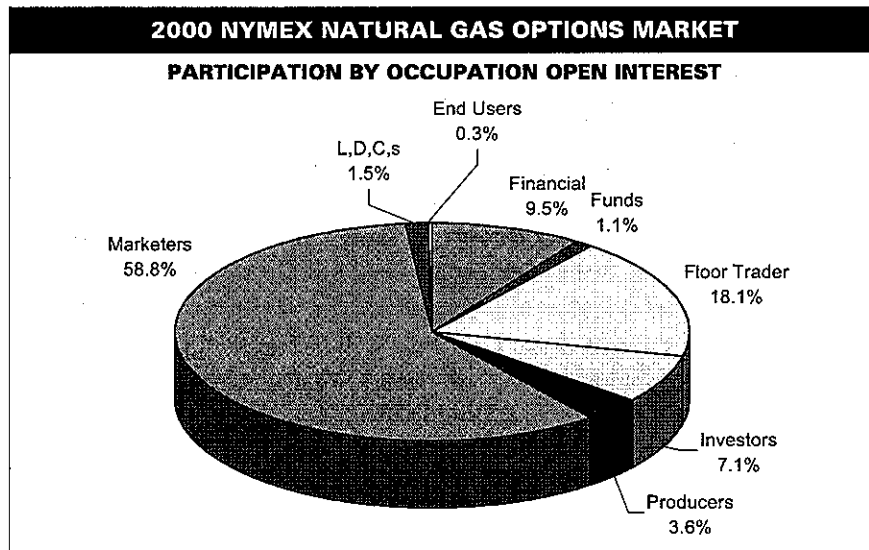
**In 2000, a breakdown of gas-futures market participation, by occupation, shows that the Gnomes held 20.1% of all open-interest positions in the gas pit. Of the Gnomes, floor traders accounted for 30.3%. For gas options, open-interest positions by the Gnomes amounted to 35.8%, whereof floor traders accounted for about 50.6%.**



Source: NYMEX

Chart 1

Open interest is the number of open or outstanding contracts for which a person is obligated to NYMEX for not having made an offsetting sale or purchase, an actual contract delivery, or, in the case of options, exercised the option.



Source: NYMEX

Chart 2

## NYMEX Trading Volumes

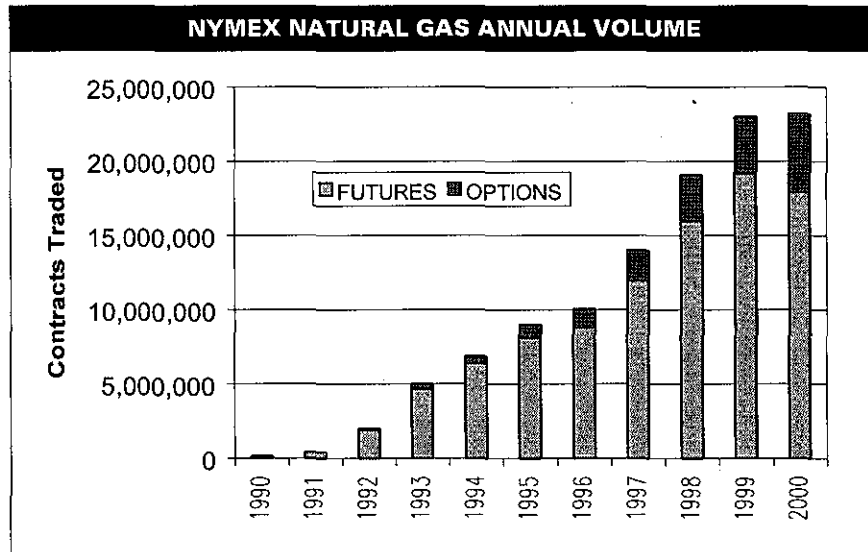
### NYMEX DIVISION (Number of Contracts)

	1998	1999	2000	2001*
<b>Total</b>				
Futures	64,392,578	75,769,318	N/A	N/A
Options	12,090,417	13,420,610	N/A	N/A
<b>Total</b>	<b>76,482,995</b>	<b>89,189,928</b>	<b>N/A</b>	<b>N/A</b>
<b>Gas Trading</b>				
Futures	15,978,286	19,165,096	17,875,013	4,365,446
Options	3,115,765	3,849,454	5,335,800	1,342,020
<b>Total</b>	<b>19,094,051</b>	<b>23,614,550</b>	<b>23,210,813</b>	<b>5,707,466</b>

Note: \*January through April 2001

Since their inception on April 3, 1990, gas-futures trading has been setting annually sequential records through 1999. However, in 2000, the number of contracts fell for the first time (by about 6.7%). In each of the first four months of 2001, the number of futures contracts traded was lower than a year ago. In the first four months of 2000, a total of 5,544,092 gas futures contracts was traded, compared with 4,365,446 in 2001. For gas options, the totals are 1,412,049 for 2000 and 1,342,020 for 2001.

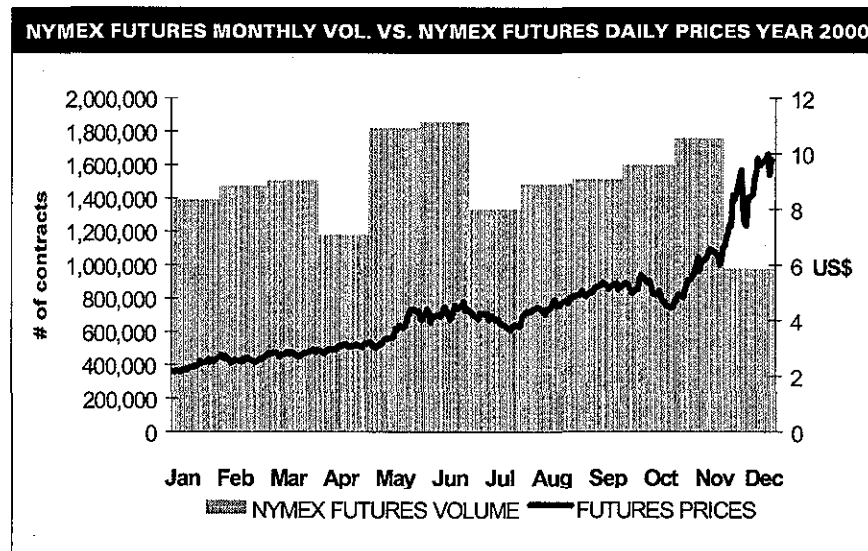
**Chart 3** illustrates the evolution of futures and option contracts since their inception through April 2001.



Source: NYMEX

Chart 3

From 1991, the first full year of futures trading, the annual number of futures traded rose from 418,410 to 17,875,013. However, the peak year was 1999, when 19,165,096 futures were traded. For options, from 1993, the first full year of trading, the annual number of options traded rose from 345,814 to 5,335,800. **Chart 4** illustrates for 2000 the development of the number of monthly futures traded and daily futures closing prices. While, in some months, there is a co-variation between volumes and prices, overall the co-variation is weak. Noteworthy is the collapse of the futures trading volume in December 2000.

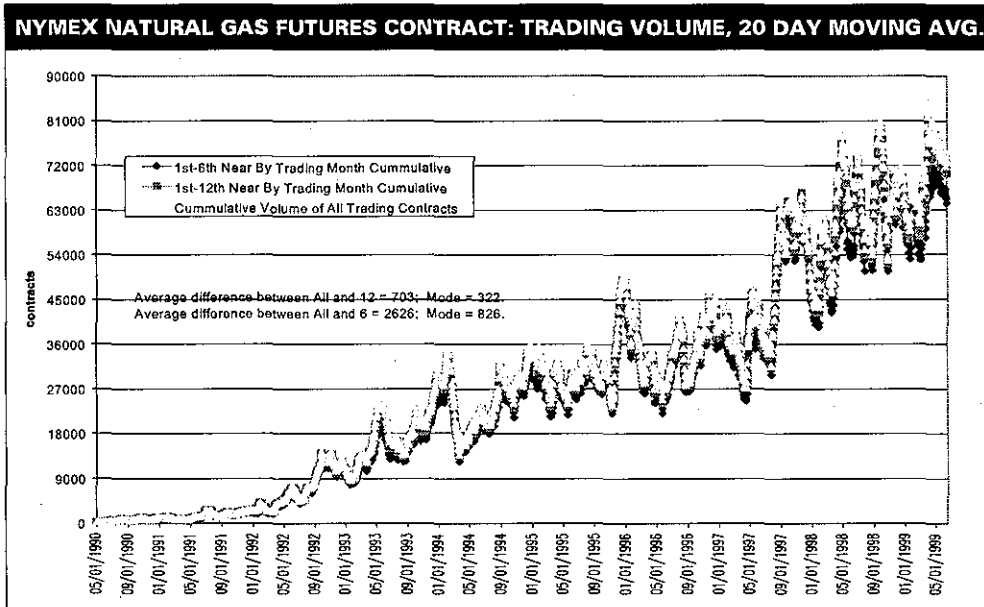


Source: NYMEX

Chart 4

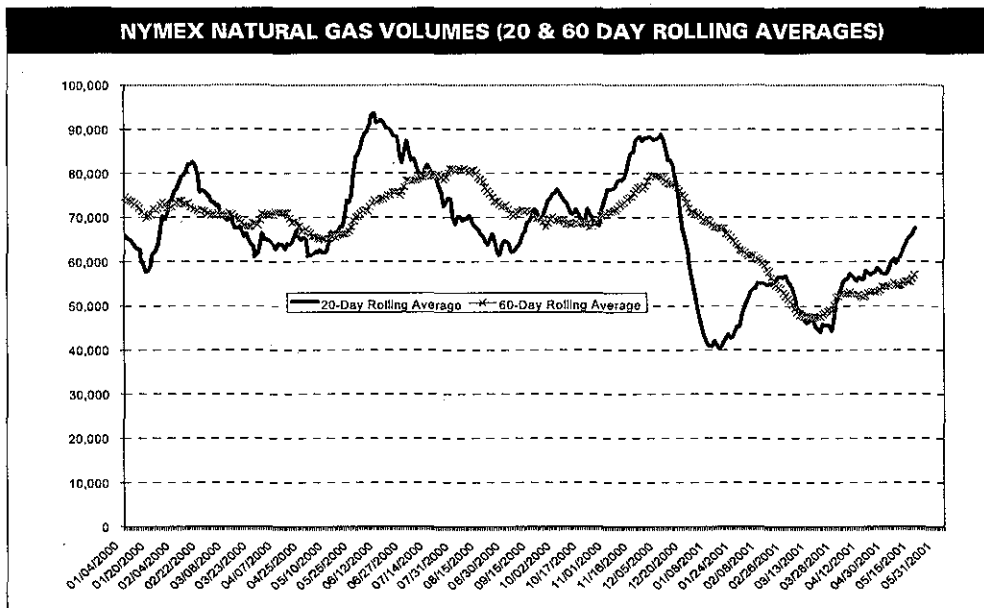
Not unlike for the ups and downs of equity markets, reasons for the decline in the number of futures contracts traded in 2000 are unclear, but, we believe, they include the following in order of importance: **1)** loss of business to EnronOnLine, a virtual exchange, which not only facilitates bilateral on-line trading but also offers a NYMEX-related product; **2)** In 2000, among the Gnomes, several funds landed in financial difficulties and were forced to exit the ranks of the Gnomes. This reduced their number in the gas pit; **3)** contraction in trading volumes during periods of extreme spiking in volatility of futures contracts and subsequent increases in NYMEX's margin requirements prevented some Gnomes from further participation in the gas pit or reduced the level of participation they were able to afford; **4)** a reluctance to hedge at unprecedented levels of gas futures prices against the background of backwardation (without resorting to other, usually complex, instruments to offset the effects of backwardation), and **5)** a predilection for (more affordable) options in lieu of futures contracts. Under options, traders are not required to buy or sell futures contracts, especially if and to the extent that they entail the danger of losses. Instead they have the option to enter into futures contracts, if the market moves in their favour or to let the option expire and pay the option premium.

Chart 5 shows the 20-day moving average trading volume of NYMEX futures from the inception of NYMEX futures on April 3, 1990, to the end of May 2001. It illustrates the enormous rate of growth in futures activity levels. **Chart 6** shows for the period January 2000 through May 2001 the 20 and 60-day rolling averages of the number of NYMEX futures traded.



Source: NYMEX

Chart 5



Source: NYMEX

Chart 6

The ratio between average daily U.S. gas usage and the number of NYMEX futures is remarkable. We have assumed 249 trading days for 1999 and 250 for 2000. In 1999, the average daily gas usage was 59.46 bcf and in 2000 62.246 bcf. In contrast the number of NYMEX futures traded was 769.68 bcf in 1999 and 715 bcf in 2000. This shows that, in 1999, almost 13 bcf/d were traded on an average day for each 1 bcf/d of physical gas usage. For 2000, the ratio was almost 11.5x.

Although permitted by NYMEX rules, physical volumes of commodities are rarely delivered. Instead, traders close-out (liquidate) the vast bulk of futures contracts prior to contract expiry by buying and selling futures contracts. Contracts not closed-out can be taken into the physical market through the EFP-mechanism (Exchange Futures for Physical). **As a rule of thumb, less than 1% of all NYMEX contracts goes to physical delivery. For the gas pit, 0.23% went to physical delivery in 1999, and 0.18% in 2000.**

**Gas Prices** – *The USA is chock-full of gas-price experts. We are not among them, and feel very uncomfortable, when our Aunt Emma professes to know gas prices at the city gates of New York and elsewhere in the USA*

The knowledge of physical gas prices in the USA claimed to exist amongst investors is nothing short of astounding. Investors can spend significantly high subscription rates for and choose from a plethora of “rags” (newsletters), some of which can be accessed on line, to become instant and permanent gas-price experts. However, when our Aunt Emma informs us of city-gate gas prices in New York City or plant-gate prices for Gulf-of-Mexico gas delivered by Sea Robin Pipeline, for example, expressed in US\$/mcf, her alleged knowledge raises our suspicion, because there is no source that records transaction prices timely at any city gate in the USA. Not only is there no such source, but city-gate transaction prices are expressed in US dollars per mmbTU in the USA. Even pipeline tolls are expressed on the basis of calorific value. NYMEX’s futures are prices, expressed in US dollars per mmbTU. After all, what U.S. gas pipeline; gas distributor and/or gas users would purchase volumetrically a commodity, whose quality changes constantly? **Hence, we are the first one to concede that we have no knowledge of gas transaction prices representative for the USA as a whole or any of its regions, regardless whether they are spot or contract/term prices.**

Quite often, we believe, because of lack of definitional care investors are confusing city-gate gas prices with ‘delivered/bundled city-gas prices’ (the aggregate of the price of the commodity (gas) and related transportation service). They are also confusing average revenue with price. Except for the commodity-portion of delivered city-gate or retail prices, expressed in U.S. dollars per mmbTU, where average revenue is equal to average price, average revenue and price for the toll portion of delivered city-gate prices are not the same. Except for a rare volumetric toll, where average revenue and price also equate, for any multi-part or step tolls, price and average revenue do not equate, unless gas is transported/distributed at a load factor of 1.0. This is also rare. The customary lack of specificity in the use of price/revenue terms is another instant source of confusion.

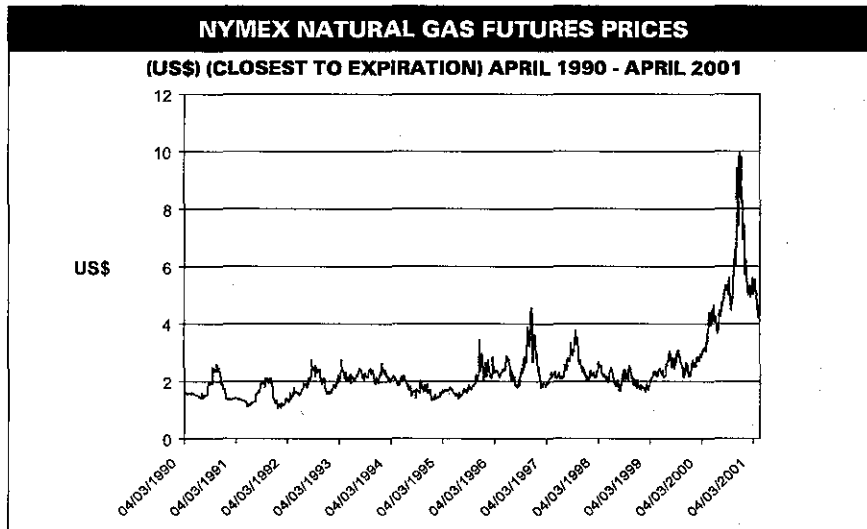
For some purposes, this definitional accuracy may not matter, but for other purposes, lack of definitional care generates hot air and may lead to heated arguments. For example, two gas producers in the Gulf of Mexico with identical gathering, processing and transportation contracts may have agreed to let title to their gas pass at Henry Hub and negotiated the **same NYMEX price-strip** there. However, the **net-back, i.e. average revenue differs,**

because they have different load factors. Or two industrial gas users in New York City may have negotiated identical distribution contracts; yet, their average distribution cost may differ, again, owing to different load factors. Two, otherwise identical residential gas users with the same distribution rate may have entered appointed Keyspan as their default supplier of gas. However, one may have agreed to a fixed price of gas for each year of a three-year contract, while the other may have agreed to a NYMEX-related contract. Moreover, to the extent of differences in load factor, the service component of the delivered price may differ. Prices of gas also differ because of the different pricing parameters.

With respect to NYMEX futures prices, undoubtedly, they form in some instances the basis for spot-price quotations and spot-transaction prices, invariably as futures approach expiration and convergence causes futures and spot prices to coincide. Nevertheless, there is no source that records the number and volumes of transactions and their prices across the USA or any of its regions.

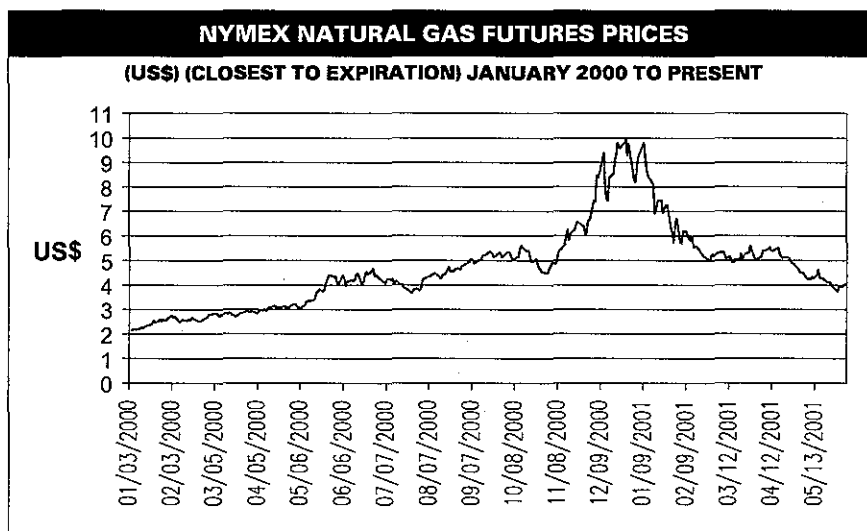
**Natural-Gas (Gas) Futures And Spot/Contract Prices – are they a miracle inside an enigma, wrapped in a mystery, or simply the by-product of open outcry, poised to trigger public outcry because of the machinations of the *deeply concerned merchants of fear, the Gnomes of NYMEX?***

No physical and financial market can escape the force of fundamentals forever. In the interim, markets can develop excessive price levels on the up- and downside. Sooner or later, however, fundamentals will emerge and reassert themselves and lead markets, until a new bout of excesses will emerge. Chart 7 illustrates NYMEX's gas futures prices from the inception of the gas pit (April 3, 1990) to April 2001. In the winter 2000/2001, NYMEX gas futures prices (closing prices) scaled unprecedented heights, opening at US\$2.176/mmBTU on Jan. 4, 2000, troughing at US\$2.168/mmBTU on Jan. 5, 2000, and peaking at US\$9.978/mmBTU on Dec. 27, 2000. The peak-to-trough price change was about 360% (Chart 8). Although gas-futures prices do not represent physical transaction prices, this increase contrasts sharply with a preliminary increase in total U.S. gas usage in 2000 of 4.97%. Although this was a relatively large increase, it came about by a significant increase in new supplies, especially from Canada and the ensuing increase in availability of gas in the USA, due to the construction of new pipeline capacity, notably from Canada. And, despite the relatively large increase in U.S. gas consumption, demand for and supply of gas were in balance. There was neither a run on gas nor a lack of availability analogous to the inflation of the U.S. Civil War or Germany's hyper-inflation in the early 1920s. Hence, the inflation in gas-futures prices had no basis in fact, in the sense that growth in demand was disconnected from the rate of price changes. **The highly disproportionate increases in NYMEX-gas-futures prices relative to increase in U.S. gas consumption are devoid of any logical or otherwise compelling justification, and are, thus, prima-facie evidence that forces other than demand and supply were at work that resulted in phantom prices. They were real, but based on phantom forces. We suggest that the Gnomes unleashed them.**



Source: NYMEX

Chart 7



Source: NYMEX

Chart 8

The effect of forces, other than rational ones, become evident, if one compares, as the Energy Information Administration (EIA) did, average quarterly spot prices/tolls and price/toll differentials for selected trading hubs. One finds that the Henry Hub to the bundled city gate differential price of Southern California Gas Company rose from \$0.81/mmbTU in the third quarter of 2000 to \$7.18 in the fourth quarter 2000 and to \$8.75 in the first quarter 2001. In comparison, the Henry Hub/Chicago (bundled) city-gate differential was \$0.09 in the third quarter 2000; \$0.41 in the fourth quarter 2000, and \$0.17 in the first quarter 2001. The Henry Hub-to-California differentials are totally out of step with transportation-cost differentials. Given efficient and competitive markets, price differentials must not differ by more than transportation costs. The EIA-data, in our view, reflect the existence of market power, responsible for the price disparity. We believe it was market power wielded by the Gnomes of NYMEX.



Also, despite all 'price rags' floating around, there is, as mentioned, no timely record of U.S.-wide or regional term or spot calorific **transaction prices of physical gas** (in real time or otherwise). However, to the extent that they reflected NYMEX gas futures prices, they would have fallen just somewhat short of mandated tight-gas (field) prices in and around 1980. In 1980, for example, Amalgamated Bonanza/Bonanza International received field prices for Austin Chalk gas of about US\$10.89/mmBTU.

The EIA estimates that average bundled residential gas prices rose from \$6.69 in 1999 to \$7.71/mcf in 2000, and spiked at \$10.18/mcf in August 2000. Industrial gas prices rose from \$3.10 in 1999 to \$4.46/mcf in 2000, and spiked at \$6.50/mcf in December 2000 and \$8.00/mcf in January 2001. Electric utilities' gas prices rose from \$2.62 in 1999 to \$4.32/mcf in 2000, and spiked at \$8.21/mcf in December 2000. They reached a new spike of \$9.47/mcf in January 2001. We note that all prices after 1999 are estimates or preliminary.

The following is more than anecdotal evidence in support of our view that The USA lacks a source of price information that provides representative gas prices for any market in the USA, let alone the whole market. Michigan Consolidated, for example, has fixed its gas supply costs and, hence its sale prices, for calendar year 2001. It involves 166 bcf of gas. Of this, prior contracts cover 110 bcf; current contracts cover 31 bcf and storage withdrawals 25 bcf. Even if this were an isolated instant, which it is not, the so-called gas price that everyone claims to know (except ourselves) does not reflect this particular fact. Whatever this phantom-price may be, it does not apply to a large segment of Michigan's gas market.

**We have concluded that, in the absence of any evidence to the contrary, the Gnomes, based solely on their interpretation of gas underground storage data and weather reports, rather than the interaction between physical supply and demand, appear to have been the root cause of gas-futures price escalation during 2000 and 2001, and continue to drive NYMEX gas futures prices, at the very least, at the margin. As NYMEX has admitted the Gnomes as market-makers, and as they are in this capacity trading at the margin, it would follow logically that, if it is true that prices are formed at the margin, the Gnomes, rather than physical demand for and supply of gas, have been dominating gas-futures prices.**

To the extent that NYMEX gas futures prices translated into spot/contract prices of physical gas in 2000 and early 2001, affected U.S. users of gas for fuel and petrochemical-feedstock applications have paid truly inflationary prices. In the case of petrochemical producers, using gas-based feedstocks (primarily ethane and propane), **North America's producers of ethylene, styrene and methanol and their derivatives (to say nothing about nitrogens), became literally over night the highest-cost global producers.** If sustained for any length of time, spot/contract prices of physical gas, based on or related to speculative gas futures prices, would cause irreparable structural damage to important sectors of the U.S. economy, and deeply erode disposable incomes of residential gas users. The credit for this carnage goes, in our view, to the Gnomes too.

To the extent that spot/term prices of gas were based on or related to NYMEX-gas futures prices, why were they so "successfully" intrusive to the U.S. economy? Because the U.S. gas industry has been such a master in promoting gas as the abundant \*, affordable\*\* fuel of choice \*\*\*, vast numbers of gas users have abandoned over time fuel flexibility and placed themselves blindly into the hands of gas suppliers, now facing "no way out." The only gas users not at the Gnome's mercy are those, whose gas prices are neither NYMEX-based nor NYMEX-related, and multi-fuel/feedstock gas users.

**Demand For And Supply Of Gas In The USA – utterly irrelevant to the Gnomes**

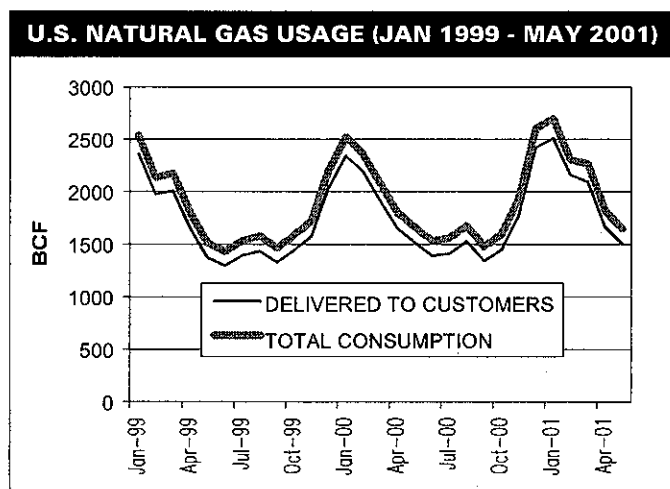
The USA has no daily or weekly records of physical gas demand. The EIA publishes demand data; however, initially issued monthly and annual data are subject to numerous revisions.

**Total U.S. Gas Usage**

	1998	1999	2000	Change 1999 vs. 1998	Change 2000 vs. 1999
	bcf	bcf	bcf	%	%
Residential	4,520	4,726	4,943	4.56	4.59
Commercial	3,005	3,050	3,332	1.50	9.25
Industrial	8,686	9,001	9,581	3.63	6.44
Electric Utilities	3,258	3,113	3,050	(4.45)	(2.02)
Total Deliveries*	19,469	19,890	20,906	2.16	5.11
Lease and Plant Fuel	1,157	1,077	1,104	(6.91)	2.51
Pipeline Fuel	635	735	772	15.75	5.03
Total Gas Usage	21,262	21,703	22,782	2.07	4.97

\*Note: total deliveries to end-users.

Source: Energy Information Administration



Source: Energy Information Administration

Chart 9

It estimated in June 2001, that total U.S. gas usage in 2000 was 22.782 tcf, up 4.97% from 1999. In 1999, gas usage was 21.703 tcf, up 2.07% from 1998. **Gas deliveries to electric utilities in 2000 were 3.035 tcf, down, remarkably, 2.02% from 1999.** In 1999, deliveries were 3.113 tcf, down 4.45% from 1998. Deliveries to industrial customers (including non-utility generators) in 2000 were 9.581 tcf, up 6.44% from 1999. In 1999, deliveries were 9.001 tcf, up 3.63% from 1998. In the first five months of 2001, total gas usage was 10.167 tcf, up 3.28%.

Footnote: \*\* "...given its domestic abundance...it is surprising that natural gas accounts for only one-fourth of America's energy use. We think that percentage should be higher" (World Gas Conference 2000, Keynote Address – America's Natural Gas Industry – Outlook For The Millennium, by Gary Neale, Chairman, American Gas Association, Nice, France, June 7, 2000, Page 5).

Footnote: \*\*\* Gas is...affordable now as well as in the future... (Fuelling The Future, The American Gas Foundation, February 2000, Washington, D.C., Page 1)

Footnote: \*\*\* "In the U.S. residential market, gas is already the fuel of choice" (ditto Gary Neale, Page 8).

***Although neither the 2000 nor 2001 data are final, there is absolutely nothing that is alarming in terms of growth in demand. Yet, NYMEX-futures prices reflected a doomsday scenario, completely and utterly out of step with reality (or a reasonable estimate thereof). Could it be that the intrusive force of NYMEX-gas futures prices was just the product of a charade with very real and very harsh consequences?***

Because of the lack of real-time demand and transaction prices in the USA, one may argue that the Gnomes should not attract criticism for disregarding demand data. This argument, we believe, misses the point, namely, that the Gnomes simply disregard and dismiss as irrelevant any demand data per se, be they preliminary or final. In other words, even if real-time demand data were to exist, the Gnomes would ignore them, because they are entirely preoccupied with storage data and weather reports. They are their "props" and consideration of demand data or anything else would simply upset and ruin their singularly simplistic preoccupation with storage data and weather reports. The Gnomes will also argue that the use of storage and weather data is a surrogate for the use of demand. However, this argument is as good as saying that gas usage peaks in winter and is significantly lower in summer and the shoulder seasons, which is trite and known to even the most uninformed person. The issue is that the Gnomes have not even attempted to find demand data, no matter how preliminary. The other point is that one could excuse the use of storage and weather data, if the Gnomes were willing to consider all of the factors that have been impacting the U.S. gas industry, including the role of storage. Moreover, the Gnomes' reliance on inputs other than demand data is analogous to the use of revenue and EBITDA-multiples of unprofitable technology companies. The argument is that the market has to use something to come-up with valuations.

Likewise, we view storage data and weather reports, particularly their simplistic, uninformed interpretation, as insufficient reasons and justification for the generation of the visibility of the NYMEX gas pit and the notoriety of the Gnomes. Before the arrival of NYMEX, the U.S. gas industry functioned well without the assistance of NYMEX, notably the Gnomes. There is no evidence whatever, that the U.S. gas industry would not function equally well if the Gnomes and the entire NYMEX gas pit were to disappear.

***Gas Deliverability And "TransCanada PipeLines (TRP) Field Receipts" – another red herring unfit to explain gas prices***

Given the role of TRP as North America's largest gas pipeline, it became fashionable for some hedgers on NYMEX and some members of the U.S. investment industry to point fingers at TRP field receipts and to concoct a link to deliverability.

Starting in spring of 1999, and continuing thereafter, certain U.S. gas users and members of the U.S. investment industry, reinforced by references of U.S. financial news services, began musing about an alleged omen for Alberta's gas deliverability, manifested in declines in TRP field receipts. Keen observers of Alberta noticed the evolution of a flatness in TRP field receipts, interspersed by daily, weekly or monthly declines. They claimed, very adroitly, but erroneously, that Alberta's gas deliverability was flat or declining, evidenced by flat or declining field receipts.

Anyone who has ever transported gas through pipelines, participated in gas-pipeline regulatory proceedings and/or who is familiar with the definition and measurement of deliverability in the days, when pipelines owned the gas they carried, is instantly aware of a

disconnect between TRP field receipts and deliverability. ***It is either a measure of contractual performance, measured against a contractual standard, or of the ability of a well, field, pool, an entire province, or of a nation to meet demand and/or production targets.*** In their role as owners of gas, pipelines were contractually entitled to test, at least bi-annually, deliverability under provisions of long-term reserves-based supply and transportation contracts. Testing proceeded as follows. Contracts specified a daily contract quantity, a minimum take-or-pay obligation (usually at 80% of the DCQ) and a maximum daily contract quantity (MDCQ) (usually at 125% of the DCQ) of gas. Usually in winter, producers had to demonstrate their ability to deliver the DCQ and MDCQ. A company, such as TRP, would require producers to increase wellhead flows to MDCQ-levels and to maintain it for 24 hours. If producers failed the test, it became necessary to dedicate more supply from other wells, fields or pools, to conduct workovers, or else reduce the contract parameters. Following such dedication and confirmation of their ability to deliver the MDCQ, producers were then in compliance with their deliverability obligations. Obviously, TRP field receipts and deliverability, as defined, are unrelated.

Ill-advised comparisons between undefined deliverability and TRP field receipts are somewhat akin to looking at and comparing over time gas storage data, oblivious to structural changes of the gas industry. The most important reasons for the changing pattern of field receipts are: (1) lacklustre demand for gas owing to warmer-than-average winters, as evidenced by flat or declining nominations, and (2) shift of TRP's field receipts to bypass pipelines. For example, it has lost, on average 175 mmcf/d of receipts to the South Suffield Pipeline of Alberta Energy Company. Currently, AEC is flowing about 170 mmcf/d, but it has shipped as much as 185 mmcf/d across the Alberta/Saskatchewan border). It has lost and continues to lose field receipts to ATCO Pipelines; Simmons Pipelines; Suncor's Albersun Pipeline and Saskatchewan's TransGas Pipeline. In 1999 and 2000, ATCO's field-receipt volumes have grown by about 440 mmcf/d. TRP has not this entire volume, because part thereof never entered TRP's system in the first place. By-pass losses to smaller pipelines, especially along the Alberta/Saskatchewan border, have averaged about 50 mmcf/d in the past 12 months. TransGas has siphoned-off about 150 mmcf/d over the past 12 months. In total, we estimate average aggregate losses to by-pass in the order of 575 mmcf/d. The fact that these losses exist, let alone their magnitude, was completely unknown to and not been considered by U.S. observers of TRP field receipts. Regrettably, these misconceptions fuelled rumours about deliverability problems in Alberta.

Anyone who has ever shipped gas on TRP's pipeline facilities, for example, knows that it is not deliverability, but shippers' daily/hourly nominations that determine the volumes of gas TRP is obligated to receive and deliver, provided shippers delivered what they had nominated. Given contractual and economic penalties arising from gas transportation above and below daily contract quantities, only incompetent shippers would nominate gas above or below what markets require.

**Given the relatively mild winters 1998/1999 and 1999/2000, any flatness in or declines in TRP field receipts, not attributable to by-pass pipelines, simply reflected nomination levels, i.e. a proxy of demand for gas.** This is the simple, and, apart from by-pass, only explanation of flat or declining field receipts. Why would anyone have tried to flood TRP's system with gas destined for U.S. gas markets in the absence of corresponding nominations? In other words, TRP field receipts were and still are, to this date, the aggregate of specific nominations by shippers on TRP's system, affected by the operations of by-pass pipelines in Alberta. This is plain and simple a matter of nominations, disconnected from the issue of deliverability.

We wish to add that studies of U.S. or Canada-wide (i.e. regional) deliverability, as distinct from corporate contractual deliverability studies, are infrequently conducted, as they are time-consuming and costly. In the USA, possibly the FERC and the EIA are agencies qualified to conduct deliverability studies. In Canada, it would be the National Energy Board and the Alberta Energy and Utilities Board. None of them has recently conducted deliverability studies.

Trying to link deliverability and TRP's field receipts and claiming that flat/declining field receipts are evidence of flat/declining gas deliverability is as valid as the claim that a flatness/reduction in the number of tourists visiting Quebec evidences declining disposable income. If the flatness/decline in the number of tourists is measured in a very rainy year, compared with that in a preceding sunny year, then the obvious and correct explanation is weather influence.

The misguided linking of TRP's field receipts and deliverability is a splendid example for the phenomenon of nonsense correlation.

## The Gnomes' Tools

*(gas underground storage levels and weather reports/forecasts)*

When we interviewed certain Gnomes, they revealed, as mentioned, their two tools underpinning and shaping their trading actions, namely,

- (1) current gas underground storage levels, compared with those a year ago, and
- (2) weather reports/forecasts.

### **Gas Storage Levels – the Gnomes' tool no.1**

As mentioned, the Gnomes are fixated on gas-storage levels in the current/last week compared to levels in the same week a year ago. The Gnomes' guesses of current-week/near-week gas-storage levels relative to actual storage levels are guiding their conduct prior to and after the release of storage data by the American Gas Association (AGA) every Wednesday. Given their obsession with and predilection for "bad news", the Gnomes are treating updates of last week's gas-storage levels with great anticipation. They tend to expect systematically excessive reductions in storage volumes and shortfalls in refill levels. If they are confirmed, the Gnomes are elated and bid-up futures prices. If storage levels fall less than expected or increased, the Gnomes fall into depression, putting downward pressures on futures prices, because they are, by nature, merchants of fear, harbouring a disdain for good news (increases in storage levels) but a cynical love of "**schadenfreude**" (a feeling of pleasure about mankind's misery) about bad news (reductions in storage levels, for example). At any time, when they arrive at crossroads, they are facing a three-way choice between expecting increasing, decreasing or constant storage levels. Each week, they choose the worst possible outcome, namely net storage withdrawals. This is hardly an endorsement of objectivity.

### **Weather Reports/Forecasts – the Gnomes' Tool No. 2**

Next to gas storage, the Gnomes have one other preoccupation, namely, current and forecast weather. Forecasts of potential weather changes prognosticated for 24 hours, one and two weeks ahead or longer will trigger immediate changes in bid/ask prices. Should actual weather differ from forecast, the Gnomes will either break into howls of applause over stormy, unusually dry or rainy weather and unusually hot or cold weather, and into bouts of depression over calm, seasonally dry weather and moderate temperatures. In the case of the former, they are ready to buy more futures contracts and options e.v.v. in the case of the latter.

Given the somewhat haphazard means by which information is fed into the gas pit, e.g. through electronic bulletin boards and audio-signals, from whatever source, the Gnomes are reacting to just about the announcement of any event by triggering buy- or sales-actions. In winter, news of the "Alberta Express" and in summer, news about the development of a tropical depression offshore West Africa, are music to the Gnomes' ears. If someone's shouts about a tropical depression reach the gas pit, a feeding frenzy starts at once among the Gnomes akin to that triggered among piranhas by bleeding cattle crossing a river. Everyone jumps into action and no one asks questions at first. If it occurs to an inquisitive Gnome, a most unusual attribute, to inquire somewhat later into the location of such a depression, and the answer is "somewhere in the South China Sea", there is usually no adverse reaction, because the damage has already been done, and it is in nobody's interest to correct erroneous information, provided it helped to buy low and sell high. However, if the clarification offers new buy/sell opportunities, the Gnomes will jump at the chance. Hardly ever, if at all, do the Gnomes harbour a need for any accountability for their speculative buy- or sell-decisions, if they had reacted to erroneous news, because it is for their own account.

The perhaps "best" weather-related news in the Gnomes' minds might involve hurricane damage to every off-shore gas-producing platform in the Gulf of Mexico, involving capsizing, and loss of life of experienced operators. The worse the damage and the greater the loss of life, the more elated would the Gnomes be, because repairing damage and replacing casualties would be prolonged, costly and simply arduous. In the interim, the USA could safely count on exploding futures prices. News about gas-pipeline ruptures, preferably associated with casualties and a prolonged outage, is music to the Gnomes' ears. If actual events disprove the wisdom of the Gnome's actions in response to anticipation and rumours, they will instantly shift into reverse gear, leaving it engaged until the validity of the correct news is confirmed or disproved. In other words, the Gnomes always act on the basis that forecasts and their own anticipation of events impart perfect foresight; hence, their notion of infallibility, subject to unanticipated extraneous forces.

## Gas Storage in the USA

### U.S. Gas Underground Storage And Its Changing Role

The originally fundamental reason for gas storage was peak-shaving of demand. Instead of having to build oversized transmission and distribution facilities (that would be underutilized in off-peak periods) to meet peak demands for gas, storage was created as a rational and economic means of "right-sizing" transmission and distribution facilities, without sacrificing the ability of gas pipelines and distributors to meet their traditional "bundled" utility functions as merchants and carriers of gas. As owners of gas, pipelines and distributors were required, contractually, by regulation or otherwise, to meet the peak demands of their customers. While regulated (under rate-base/rate-of-return regulation), the cost of gas, the commodity, was invariably a flow-through item. Pipelines and utilities were not allowed to mark-up gas. However, to the extent that utilities and pipelines stored gas, its (prudent) cost became part of the rate base, whereon they as owners of gas were allowed to earn a rate of return. Hence, pipelines and distributors had a strong incentive to fill storage to maximum level by the end of October of any year. If it turned-out that, at the end of the heating season (i.e. March) there was working-gas left in storage, it formed part of the ensuing year's rate base, whereon the owners of the gas were allowed to earn. Gas inventories did not cause unabsorbed carrying costs, because the rate of return covering debt, equity and related income taxes was assured. The more gas was stored, the greater the rate base, and the greater the rate base, the higher the earnings. **Rate-base maximization was one of the cardinal rules of pipelines and distributors. By capitalizing expenses for paint and labour, for example, regulated firms were able to enhance their earnings by re-decorating their back offices. To our knowledge, no other industry has ever been capable of duplicating these conditions.**

Now that gas distributors, in their role as default suppliers of gas, own perhaps about 20-25% of working gas in storage, the remaining 80-75% or so is working gas owned by producers, users, marketers etc. that are painfully aware of the risks and costs of maintaining unnecessarily high storage levels. The significance of "just-in-time delivery" has not stopped at the doorsteps of automotive companies, but has carried through to the owners of stored gas. What owner, in a sound frame of mind, would indulge in gas-price risk and many months of carrying costs, especially when gas might cost, perhaps, \$8/mmBTU instead of \$1.75 in the "good old days". Given the razor-thin gas-marketing margins, the carrying cost alone to a gas merchant storing gas can easily wipe-out a year's gas-marketing earnings, especially if excess amounts of working gas are being stored. In other words, gas is no longer just a profit, but also a cost centre.

**Structural Changes Of The US Gas Industry Post FERC-Order 636** – the Gnomes are oblivious thereto

It appears that the Gnomes are unaware, by choice or otherwise, of the immense structural changes the U.S. gas industry has undergone since deregulation and their implications for corporate strategies and tactics. We are suggesting that the Gnomes' obliviousness thereto helps to explain why they insist on underpinning their conduct by their two tools.

Orders 436 (1985) and 636 (1993) of the FERC changed the then existing structure of interstate gas pipelines (pipelines) fundamentally. Prior to Order 436, carriage of third-party gas was virtually unheard of. Based on Order 436, pipelines began to carry third-part gas as well as their own, and Order 636 unbundled the merchant and carrier functions of pipelines.

However, U.S. gas distributors (distributors) (subject to state regulation) began to unbundle slowly. As a result, distributors are still significant "default-suppliers" of residential gas markets and have as such retained their traditional duties as utilities, including the duty to supply gas.

However, unbundling had and still has profound effects on the mode of operating pipelines and distributors. Many, if not most, pipelines and utilities have established unregulated marketing, trading and risk-management affiliates that invariably are storage, transmission and distribution customers of their pipeline/utility parents. These affiliates are not only storing gas to meet the average annual and peak-day gas requirements of their customers, but they also store gas for profit with or without the aid of NYMEX futures and options.

As of 1985, under open access, the new mantra is to fill pipelines with gas, regardless of the ownership of the molecules, because this increases capacity factors and earnings. Furthermore, open access has also caused a process of increasing integration of transmission and storage functions and, in many cases, transmission, storage and distribution functions, reinforced by Order 636. This has led to the creation of first transportation hubs and next marketing hubs, integrated with transportation hubs. As a result, U.S. pipelines and, to some degree, distributors are using their infrastructure far more efficiently than ever. Owners of gas can now store, park, exchange, swap (geographically and over time), displace, buy and sell gas through the various hubs. Moreover, the convergence of gas and electricity has made them mutually fungible, and further helped to minimize the need for and justification of gas storage. It has also led to more efficient utilization of pipelines than in the past. For example, through swaps/displacements, gas stored by its (upstream) owner in a third-party downstream storage location in summer allows that owner of gas to use gas belonging to the downstream owner of storage in winter off a pipeline instead of having to ship it to the owner of gas downstream. The downstream owner of storage will use the gas stored by its upstream owner in winter. This minimizes both transmission and storage requirements and their costs. **Therefore, storage, in isolation, has lost much of its historical significance. Moreover, the USA is now capable to meet peak demand for gas (whether summer and/or winter) with less storage than historically, without jeopardizing its ability to meet the needs of physical gas markets.** As a result, relatively little new storage is being developed. While it is dangerous to generalize, (high-deliverability) salt-cavern storage is now the preferred type of incremental storage because of its capability of multiple turnovers in a year and rapid injection and withdrawal rates.

#### **Convergence Between Gas And Electricity – a barren no-man's land for the Gnomes**

Not only are the Gnomes oblivious to the restructuring of the gas industry, they are also oblivious to convergence between gas and electricity in the context of weather. For example, when gas prices exceed their opportunity costs for the generation of electricity, motivated by arbitrage opportunities, electricity generators will not convert their gas into electricity, but substitute an alternate fuel and sell the gas opportunistically into peaking-gas markets, or they may purchase "economy electricity" opportunistically to supply their customers. This means that working gas stored by and/or on behalf of electricity generators may not be converted into electricity but sold into gas markets.

Furthermore, if the cost of gas-fired electricity generation becomes excessive, generators may convert to alternate (less-costly) fuels, e.g. distillates and/or heavy fuel oil into electricity, freeing-up gas for use by gas markets. **About 6 bcf/d, or about 10% of U.S. gas demand, can be (and was) displaced by distillates and heavy fuel oil.** Neither this



ability nor this number show-up on the Gnomes' "radar screens." Although it may sound cynical, the Gnomes' lack of knowledge about the intricacies of gas markets and convergence between gas and electricity, saves them from having to make trading decisions, based on fundamental facts. Being knowledgeable about the gas industry and gas markets would be distinct disadvantage, because it would complicate, if not frustrate, speculative trading decisions based on fiction. On many occasions in the winter 2000/2001, the economics of refined petroleum products made it attractive to forego gas-fired generation in favour of distillates and heavy fuel oil. Yet, the Gnomes broke-out into howls of pleasure about escalating gas prices, reasoning that falling temperatures would increase the demand for gas-fired generation, based on seemingly dwindling gas-storage levels. Little did the Gnomes know that gas storage was either not depleted at all or merely at reduced rates because of the use of more economical forms of energy other than gas.

Moreover, especially in the summer 2000, the Gnomes drove futures prices and basis differentials between California and Henry Hub, for example, sky-high on the grounds that high and rising temperatures would cause increases in gas demand by electricity generators. However, they never explained how owners of generating capacity, then already operating at capacity levels, could possibly have been able to increase output beyond capacity limits and, thus, demand more gas. Yet, gas suppliers, traders, marketers and others did not dare to challenge the Gnomes, because they had self-interests to protect.

#### **Start-up Of Alliance Pipeline and U.S. Gas Storage Levels**

The Gnomes were deploring underground gas storage levels at least since summer 2000. They compared them with historical levels and declared them as a looming omen of gas shortages in the winter 2000/2001, and declared the leaders of the U.S. gas industry, at least by inference, as intellectual dwarves. Given their preoccupation with history, it did, of course, not occur to the Gnomes that the start-up of Alliance Pipeline (AP) would deliver, as early as November 2000, an incremental 1.325 bcf/d of gas (gross) into the USA. We are suggesting that it did not take a mental giant to translate the impact of AP into a reduced storage requirement. We are also suggesting that the Gnomes ought to try marketing their talents as historians instead of speculators versed in knowledge of the fundamentals of economics and the U.S. gas industry.

**Hence, comparisons of current with historical gas-storage levels are utterly irrelevant and inappropriate because of lack of comparability. This suggests that the Gnomes are trapped in a time warp;** yet, as mentioned before, historical comparisons are one of the two tools the Gnomes rely on, blindly and slavishly we suggest. Restructuring and open access, of course, have apparently escaped the Gnomes' grasp, because they insist of remaining steeped in a whip-and-buggy mentality. Their unmitigated preoccupation with historical storage levels, despite their non-comparability with current storage levels, is among the reasons for the Gnomes' deep concern and near-despair. This is akin to worshippers grasping a hymnbook, whose cover has not changed over the years, but whose contents and melodies have, and pretending to know, where to locate and how to sing seemingly familiar songs. One also can hardly contain oneself not to think that the Gnomes fell asleep just prior to restructuring similar to Hans Christian Andersen's Sleeping Beauty. She fell into a 100-year sleep, until awakened by Prince Charming through a kiss. All the servants awoke as well and carried on their 100-year old and, hence, outdated duties, and the flies on the wall resumed crawling, as if the entire world had stood still and slumbered.

**The Gnomes Are Oblivious To The Fact That U.S. Gas Distributors, In Their Role As Default Gas Suppliers, Are Always Building And Maintaining Gas Storage To Meet The "100-Year-Winter"**

We have disagreed every year with the Gnomes about their assessment of gas prices and their interpretation of the import of gas-storage levels, ever since they set foot on NYMEX. If the possession of knowledge and expertise were painful, the Gnomes would be chronically ill. **It is well known, except to the Gnomes, that, to the extent that U.S. gas distributors are default-suppliers of gas, they continue to store by the end of October each year sufficient gas to meet the "100-year-winter."** This means that, as default-suppliers and because of their obligation to supply gas, gas distributors will ensure that, by the end of October of any year, storage levels are adequate to meet gas requirements in the coldest winter in 100 years. In some respects, gas-storage data are akin to what a lamp post means to a drunkard. It serves more as physical support than a source of enlightenment.

Producers, large end-users, and marketers/aggregators are other owners of working gas. To the extent that they are themselves interruptible and/or serve interruptible storage and/or distribution customers, they have rarely, if at all, been subject to interruptions in the winters 1998/1999 and 1999/2000, when temperatures were above average. During this period, gas owners with long gas positions, i.e. excess working gas in storage, fell onto their knees in gratitude, if and when interruptible customers helped minimize excess gas-storage levels. While this has provided comfort to interruptible customers in the recent past, it has not conferred upon them the right to firm supply and service, nor has it imposed an obligation on the owners of gas and storage to store gas for them in the future. Obviously, if they are interrupted, this neither signals gas nor fuel shortages, because as a condition of benefiting from discounted interruptible gas service, they are required by contract and/or regulation to demonstrate dual-fuel capability. In other words, storage does not exist to ensure that interruptible customers receive firm service at interruptible, i.e. discounted, rates.

**To the extent that producers and marketers/aggregators are serving firm customers, they will, as required by their load patterns and relevant provisions of gas-supply contracts, maintain adequate working-gas levels in storage. The annual capacity and load factors of these non-utility customers are significantly higher than those of utility customers. As a result, the required storage levels are correspondingly lower. If non-utility gas suppliers default under their contractual delivery obligations, contractual remedies will keep the respective non-utility customer whole. In some cases, gas suppliers are begging firm customers to agree to interruptions, by enticing them with handsome compensation for the use and cost of alternate fuels and/or the cost of temporary shutdown of operations, because the very same suppliers can sell gas, so released, very profitably in the peaking market. Given these facts, what possible logical reason is there for the Gnomes to wring their hands about storage in the context of private (non-utility) sales and purchase contracts of gas? Of course, the fact that non-utility customers require far less, if any, storage than low-load-factor utility customers (who are protected against the "100-year-winter") and arbitrage opportunities for non-utility gas suppliers have completely escaped the Gnomes; yet, these phenomena have profound implications for gas-storage levels. Undeterred, the Gnomes are relying on history, but history is not repeating itself. Hence, the Gnomes rely on wrong road signs and are ending-up misdirected in the wilderness.**

If it were not so anachronistic, one would have to deplore the manner in which the USA, having just crossed the threshold into the 21<sup>st</sup> century, has allowed itself to let the Gnomes dominate gas pricing and redistribute corporate cash and disposable income, given their lack of demonstrated ability to grasp the import of the structural changes of the U.S. gas industry.

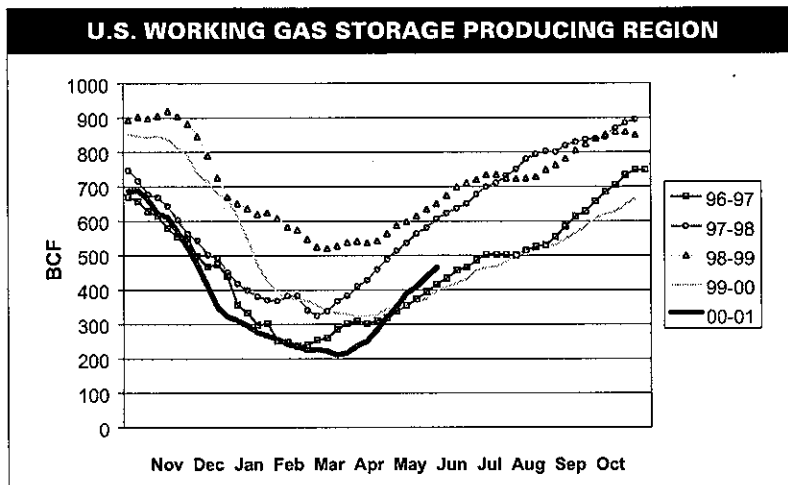
**Inventory of U.S. Underground Working-Gas Storage Capacity**

The USA has over 410 underground gas storage sites with 76 bcf/d of withdrawal capacity and the following working-gas capacity as of March 2000:

Producing Area	953
Market Area East	1,835
Market Area West	506
<b>Total</b>	<b>3,294</b>

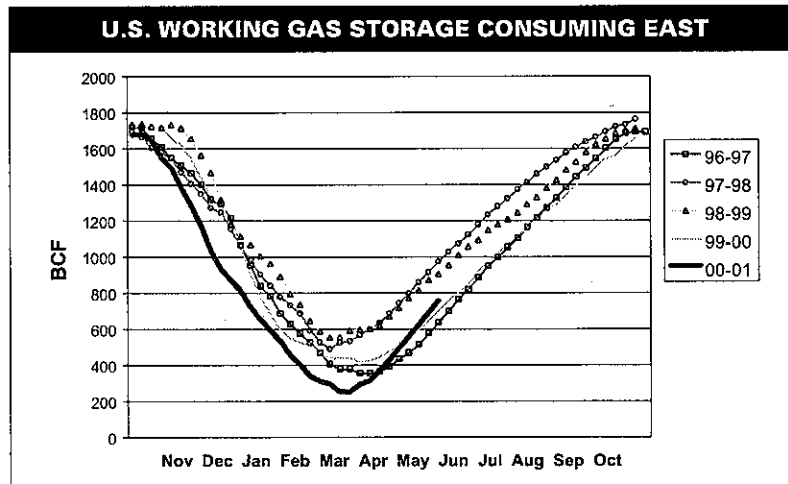
Note \*: Gas distributors and integrated gas pipelines own the bulk of the storage capacity in the market areas.

Charts 10;11;12, and 13 illustrate for the gas years 1996/7 through April 2000/1 the evolution of working gas inventories in the U.S. Producing; Consuming East and Consuming West areas, and Total USA.



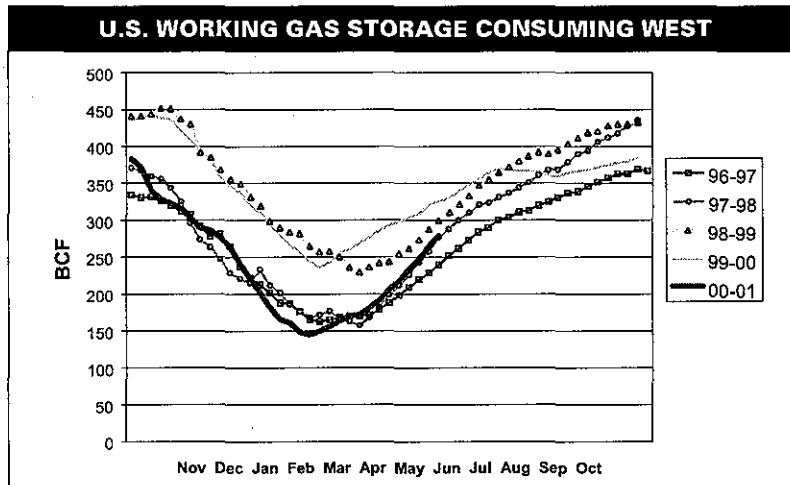
Source: American Gas Association

Chart 10



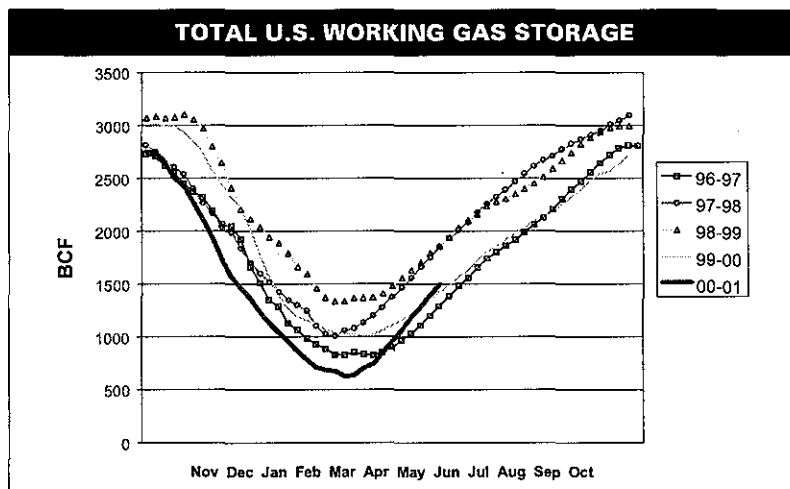
Source: American Gas Association

Chart 11



Source: American Gas Association

Chart 12



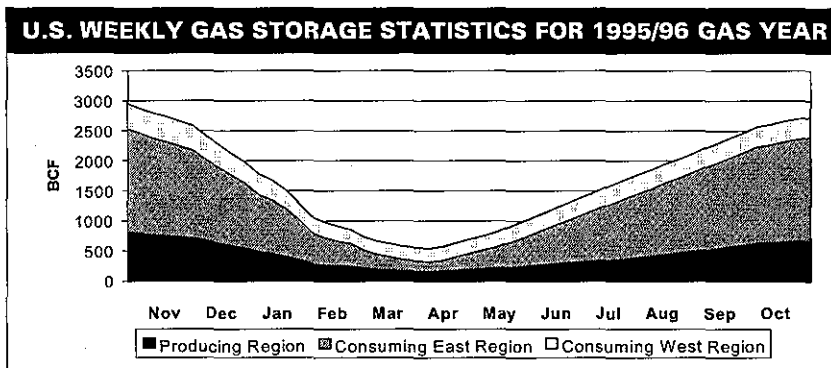
Source: American Gas Association

Chart 13

For the USA, the gas years 1998/1999 and 1999/2000 had record levels opening inventories of working gas, namely, of 3,094 bcf at the end of October 1998 and 3,016 bcf in early November 1999. (close to the record opening inventory for the period records are available was 3,099 bcf at the beginning of November 1994. We believe that the fact that both 1998 and 1999 were years with warmer-than-average temperatures, they caused opening inventories to be higher than intended by prudent operations. The warmer-than-average temperatures in the winter 1998/1999 resulted in costly record working-gas inventories of 1,367 bcf at the end of the 1998/1999 heating season. Except for the gas years 1998/1999 and 1999/2000, when opening inventories stood around the 3,000 bcf level, in the other three gas years, the USA entered the heating seasons with inventories around the 2,700 to 2,800-mark level.

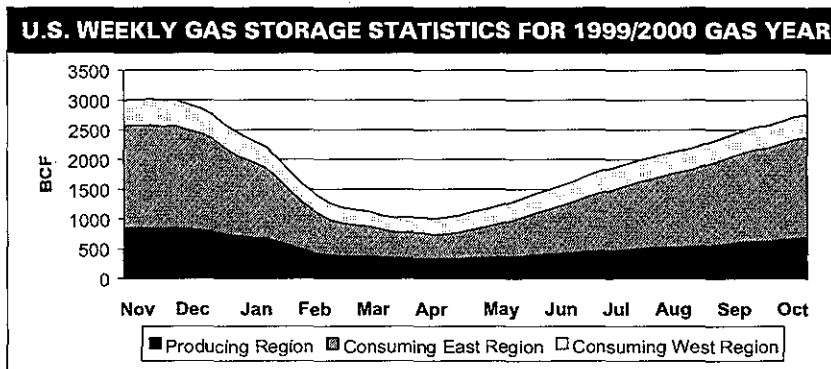
For the five years shown on **Chart 14** (Total USA), inventories at the end of the 2000/2001 heating season hit a low of 627 bcf at the end of March 2001. Yet, remarkably, firm gas users were not curtailed in the USA. ***This is a testament to prudent storage levels, reflecting just-in-time-delivery consideration.*** Yet, the Gnomes castigated U.S. owners of working gas wrongly for the storage levels, after having “cried wolf” more than once in the 2000/2001 and preceding gas years. Although the gas year 1995/1996 is not shown, it was another year, when the Gnomes preached gloom and doom for U.S. users of firm gas, but when we predicted, correctly as it turned out, that the U.S. gas industry would be able to meet firm gas demand. Indeed, in early April 1996, working gas reached a record low of 546 bcf, the lowest in the modern era (since 1980).

Indeed, because of the very close similarity between the working-gas inventory patterns of the 1995/1996 and the 1999/2000 gas years, we have included **Charts 14 and 15**. Both charts are remarkably similar in their patterns. Opening inventories of just under 3,000 bcf were close to identical. The rates of draw-down to the end of the respective heating seasons differed somewhat. In the 1995/1996 gas years, the rate of draw-down was highly steady. In the 1999/2000 gas year, the initial rate of draw-down was flat, but began to accelerate toward the end of December 1999. At the end of the heating seasons, working-gas inventories had fallen to 546 bcf in 1996 and to 627 bcf in 2002; however, November and December 2000 were colder than average, and the U.S. gas industry supported a significantly higher average winter load in the gas year 2000/2001 than in 1995/1996. And at the end of the heating seasons in March 1996 and March 2001, inventory levels were virtually identical.



Source: American Gas Association

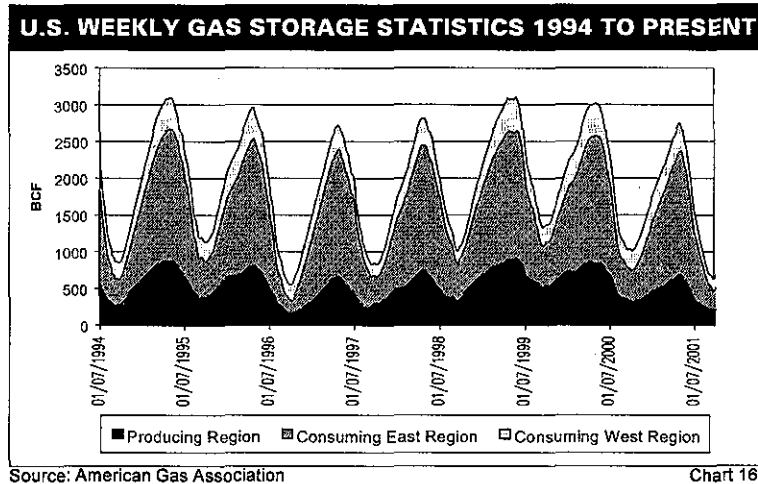
Chart 14



Source: American Gas Association

Chart 15

**Chart 16** shows for the years records are available to us, the annual storage patterns of working gas for the USA. Apart from the warmer-than-average years 1998 and 1999, whose storage patterns tend to obscure the trend, the graph shows that the USA is using and managing storage levels more wisely than in the past. Just-in-time deliveries are designed to minimize carrying costs of storage and the risk of having to carry excessive inventories into the "fill-season," exposed to price risk.



It is difficult not to view the musings of the Gnomes about gas storage management as evidence of hubris nor their conduct as deplorable, belittling the U.S. gas industry for incompetence over storage levels, when none of them we met had any gas-industry experience or expertise or ever seen gas in any form, and did not know the difference between 1 mcf and 1 cubic metre of gas.

Astonishing is the notoriety enjoyed by the Gnomes in the investment community about their prowess as gas experts. How many more times can they afford to "cry wolf," without loss of credibility. Perhaps, as long as the Gnomes help certain stakeholders to line their pockets, they are unlikely to draw criticism and doubt, if not neglect.

**Liquefied Natural Gas (LNG) – bright prospects for a renaissance and renewed growth**

During our recent meetings with Petronas and Pertamina and with ExxonMobil; Royal Dutch Shell and Unocal, our belief, that LNG, globally, is not only undergoing a renaissance but also embarking upon an extended period of growth, received endorsement., reinforced by discussions with CMS Energy; El Paso Corporation and The Williams Companies about the current and future role of LNG in North America.

The USA has four LNG-receiving terminals:

<b>U.S. LNG-Receiving Terminals</b>				
<b>Location</b>	<b>Owner</b>	<b>Storage Capacity</b>	<b>Send-out Capacity</b>	<b>(Re)Activated</b>
		<b>bcf</b>	<b>mmcf/d</b>	
Cove Point, Md.	Williams Cies.	5.0	1,000	2002
Elba Island, Savannah, Ga.	El Paso	4.2	540	2002
Everett, Mass.	Tractebel	3.5	450	Active
Lake Charles, La.	CMS Energy*	6.3	700	Active

Note: \* CMS is expanding the send-out capacity from 700 mmcf/d to 1 bcf/d by May 2001 (Phase 1). It is also planning to further expand the send-out capacity by the installation of a new storage tank to 1.2 bcf/d by 2005 (Phase 2), provided it receives long-term commitments.

Originally, the LNG facilities were designed to serve the U.S. winter-peaking gas market. However, LNG will now be supplying both the winter- and summer-peaking markets. Currently, LNG supplies about 200 bcf per year as peaking fuel. By 2005, it is expected to provide supplemental daily supply of about 750 bcf/d or more. We anticipate the restoration of the four terminals to their design capacity, subject to increases in the send-out capacity of the Lake Charles terminal (above). A potential expansion of the Everett terminal is also being discussed.

In addition, we anticipate the construction of new terminals. El Paso is planning to build a terminal in California or Mexico (initial send-out capacity of 1 bcf/d by 2005, with a potential doubling by 2009). CMS, in conjunction with partners, is planning to build a new offshore terminal in the Mississippi Delta, with an initial capacity of 1 bcf/d, for an in-service date in 2005. If built, this terminal could be tied into CMS' Sea Robin Pipeline and deliver gas to Henry Hub and other destinations. CMS is also discussing with potential partners construction of another LNG terminal along the East Coast of Mexico with a potential send-out capacity of 1 bcf/d by 2005 and potentially a doubling by 2008.

In addition to Algeria and the Caribbean, we expect Venezuela, West Africa, the Persian Gulf and Southeast Asia, including Australia to emerge as LNG-suppliers to North America.

Our impression is that the Gnomes are currently paying very little, if any, attention to LNG. However, we expect that, in a departure from a history of the underpinning of liquefaction plants, LNG-tankers and receiving terminals by long-term contracts tied to crude-oil prices, we expect the evolution of merchant markets for LNG and for prices LNG-on-gas and LNG-on-electricity prices to develop. This means that liquefaction, tankers and receiving terminals will be built/expanded partly or solely for the merchant market. We also expect international LNG-trading, including trading in-transit.

Although incremental LNG facilities, including tankers, and the evolution of international trading in LNG will have long-term effects on North American gas markets. In the interim, we are anticipating LNG to increasingly supplement indigenous gas supplies, especially in peak periods. The Gnomes are, of course, ignoring deliveries of gas from LNG storage.

Although the Gnomes would be well-advised to move LNG onto their radar screens, it would be unfair, if not unreasonable, to expect them to grasp the short- and long-term implications of LNG for their trading actions, given their minimalist knowledge of the gas industry. Moreover, integrating the role of LNG into their thought processes would be a painful challenge.

## The Gnomes

*(Their Perceived Psyche)*

### **What Are Possible Root Causes Of Chronic Concerns The Gnomes Suffer From, And What Justifies Their Raison D'être and Activities? – akin to a Freudian endeavour**

To try to fathom the inner driving forces of the Gnomes' gyrations is akin to diving in a bathyscaph into the depths of their psyche, employing Freudian tools and methods. As the Gnomes, unlike hedgers, are not trying to protect a revenue or control a cost stream of an underlying physical commodity, their **raison d'être and sole motivation is to maximize speculative trading profits by locking-in a spread. In other words, greed drives the Gnomes, but greed is not a character flaw.** However, unconditioned participation by the Gnomes in gas futures and options trading has uncontrollable influences on the hedging transactions in the gas pit of NYMEX, spot prices of gas and the entire U.S. economy. For the purposes of finding motives for initiating and engaging in speculative transactions, there must be, and there are, forces that, when unleashed, will drive futures prices. One of the fundamental theories, if not laws, of market-price formation is that prices are a function of supply and demand, and that prices cause demand and supply to be always balanced (i.e. in an equilibrium). However, there is a difference between demand and requirement. A requirement becomes a demand only, if a buyer is willing and ready to pay the market price to a supplier. Otherwise, the requirement is not being met. Regrettably, any effort to instil into the Gnomes knowledge of the most general basics of gas markets must be viewed as futile or 'cast in the wind.'

As mentioned, **the influence of demand for and supply of physical gas on price-formation is utterly irrelevant, according to the Gnomes.** They are disinterested in demand and supply data, because they are viewed as excess baggage. **All that counts and all they devour with incredible gusto, until gorged, is a diet consisting solely of: (1) current vs. last year's storage levels, and (2) weather reports.**

With each passing hour, day, month and year, the Gnomes' relentlessly oozing message from the NYMEX-gas trading pit to U.S. gas users has been and is: **"prepare for sustained gas shortages and raids of the money belt, because U.S. gas underground storage (gas storage) levels are pitifully inadequate (i.e. below historical averages), and weather reports and forecasts are not propitious."** Every day, the Gnomes are acting as "merchants of fear," predicting that the U.S. gas industry will be **unable to meet the day's, let alone annual, gas demand. One wonders how the USA is able to believe in and will ever reach and meet the "30- tcf -market" by 2010.**

The daily message to **U.S. electricity users** in most regions in the USA from the Gnomes of NYMEX, speculating in electricity futures, resembles that to gas users. Inadequate reserve margins, low hydraulic reservoir levels in the Western USA, and woefully inadequate gas-storage levels reduce the supply of electricity, while high summer temperatures, fuelling demand for air conditioning, and low winter temperatures, driving heating demand for electricity, are creating supply gaps. Moreover, the Gnomes argue, high summer demand for electricity is siphoning-away gas that otherwise would go into storage, presaging gas shortages for the next heating season.



What is the root cause of these messages? Financial media, interviewing Gnomes and commenting on NYMEX, are stressing time and again concerns about storage levels and weather as the forces behind NYMEX's futures prices. A reasonable interpretation of business-media comments on gas futures prices is that **the Gnomes are chronic worrywarts**. Their concerns about real and imaginary forces impacting gas futures prices, no matter how remotely or flimsily, are so pronounced that one may reasonably ask what it is that lends support to the belief of the Gnomes that they and only they have and ought to have a quasi-monopoly, if not an outright monopoly, on concerns, and to use it as tools for speculative actions, designed to lock-in a spread?

Our interviews with certain Gnomes seem to corroborate that deep-seated concerns are influencing the Gnomes' mindset and conduct. The Gnomes revealed to us bruises and confirmed the stressful atmosphere of the gas pit. Hence, it is difficult not to conclude that these deep concerns may be the manifestation of chronic suffering of the Gnomes from what might possibly constitute sustained psychosomatic anxiety attacks, reinforced, possibly, by the forces of neurological disorders; fatigue-related disorders; a trial fibrillation, and perhaps bipolar disorders. The Gnomes verbalize these conditions by utterances about inadequate gas-storage levels and supply gaps for gas and electricity, exacerbated by non-propitious weather reports and forecasts. The upshot is Gnomes-induced gas (electricity)-futures-price escalation that, to some degree, spills-over into spot and contract prices in physical gas and electricity markets. **We believe that the Gnomes' actions have been and are, arguably, the force behind the unprecedented rate and levels of gas-futures price escalation.**

**Remedial Actions** – *to instil calm, composure and knowledge into the Gnomes*

It would appear that the Gnomes require a two-pronged form of assistance, namely, compassion and possibly help through counselling, and, if, and to the extent required, treatment. If the Gnomes are to continue to drive gas-futures prices, one might be tempted to suggest that each speculative NYMEX-gas-futures and option contract ought to be accompanied by a pouch of suitable tranquilizers or antidepressants, such as tricyclics, for the purpose of alleviating, if not curbing, the force of self-inflicted concerns. Potentially, orally active, small molecules, such as CEP 1347, might bring relief. They are designed to enhance the survival of neurons, thereby intervening in the progression of neuro-degenerative diseases. For fatigue-related disorders, Provigil may provide relief.

In addition, the **NYMEX ought to consider whether the Gnomes and other non-gas-industry traders ought to undergo accredited lessons about the gas industry, periodically interspersed by proficiency tests, to be qualified to trade in the gas pit.** The AGA may become a suitable mentor and teacher of gas-industry fundamentals. Periodically, it may test the Gnome's knowledge of the gas industry.

**Is there any way out at all? Yes, by requiring that each gas futures contract must be supported by an offsetting physical quantity of gas under the control, if not ownership, of principals. This would restrict trading in the NYMEX gas pit to hedgers.**

**The Future Role of NYMEX For Gas – does it create original economic value or merely redistributes corporate cash flow and disposable income?**

Given the fundamental role of gas and other forms of energy in sustaining human and economic life and viability, the key question is whether there is a future fundamental need for an institution such as NYMEX's gas pit, as currently constituted. By having opened its doors and, thus, invited unbridled and rampant speculation, we believe that the current role and status of the gas pit has moved far beyond the very legitimate protection of gas-related revenue and cost bases through hedging. The U.S. and North American gas industries have reached a state of relative maturity without futures and options, and, certainly, without the "assistance" of the Gnomes. Their various segments are prospering, except for gas users, and the entire gas industry has evolved and grown, for almost its entire life span, without the presence and "help" of the Gnomes. Why is it, then, that the Gnomes are allowed to claim to have a monopoly on concern, to operate rampantly without restrictions, and to place themselves in the position of self-appointed judge and jury with respect to gas prices? In their current role, unsoiled and uncorrupted by any demonstrated knowledge of the U.S. gas industry, the Gnomes challenge and denigrate its leaders, by accusing them, indirectly or by inference, of incompetence and ignorance in the understanding of the impact of weather and management of gas inventories, based solely on the allegation, that weather reports are seemingly mostly inopportune, and that gas-storage levels are not what they used to be.

***The answer seems simplistic, but the Gnomes are there, because NYMEX has allowed them in and wants them there. It wants them there because of the notion that they, as market-makers, provide liquidity on NYMEX, which legitimizes their existence and explains their dominant role.***

**We are suggesting that it is utterly irrelevant how current gas-storage levels compare with historical ones. What counts is, whether, prospectively, there is any valid cause for concern about the ability of the U.S. gas industry to meet prospective demand. Since the Gnomes are oblivious to gas-supply data and are disinterested in any demand data, past, current or future, it is obvious that their actions are not even addressing the adequacy, or the lack thereof, of U.S. gas supplies.**

**We are also suggesting that the NYMEX gas pit requires no market-makers. The number of futures and options contracts traded on NYMEX since inception has grown rapidly, evidencing high and growing levels of trading activity. The requirements of hedgers are not constant over time over the life of a specific contract. There, periods of relatively high activity levels are followed by periods of less-intensive trading activity, because this is the nature of futures markets. However, given the millions of contracts traded, this is not a valid endorsement for the use of the Gnomes. Hence, why is it that the NYMEX gas pit requires Gnomes that introduce artificial levels of activity that distort the characteristics of the NYMEX gas pit, and are not required by the hedgers? Nowhere does economic theory of markets require (Gnome-induced) speculative hype as a condition for their proper functioning.**

Why is it that humankind, including the Gnomes, tends to view the future as a clear or blurred mirror image of the past, with the result that the departure of the present from trodden paths and patterns of the past causes disdain, dismay and outright objection? This question is particularly relevant in the context of gas storage data. Consistent with their demonstrated lack of understanding of the U.S. gas industry, and based on the notion that driving, by looking into the rear view mirror from below the dash board (i.e. reliance on history as a reliable guide for the future), is the only correct way of "driving", the Gnomes have transmogrified uninformed use and interpretation of gas-storage data into a pseudo-science and a spectacle and weapon for fear-mongering? What unknown force, divine or otherwise, is out there that makes a comparison of current with last year's gas-storage levels the only relevant and valid measure for determining whether or not current storage levels are adequate to meet prospective seasonal or annual gas demand? What is the rationale and relevance for assessing the adequacy or lack thereof of gas storage levels, if current levels are below the last five-year average? Why not averages of two or three or all of the years since AGA commenced the publication of storage data? Why any averages at all?

The Gnomes have never attempted to demonstrate and justify the relevance of gas-storage data and weather reports in the context of the operation of the U.S. gas/electricity industry and their implications, if any, to gas pricing. Incomprehensibly, the U.S. gas industry has never challenged the Gnomes' "wisdom" or taken them to task. ***The beneficiaries of the Gnomes' actions have silently applauded gas-price escalation, and U.S. gas users have cursed it.***

Another question is whether the Gnomes, through expertise and experience, are actually qualified and capable of understanding, interpreting and applying properly the two tools they rely on, namely, storage data and weather reports. During our interviews of the Gnomes, we met not even one whose intellectual capabilities were corrupted or contaminated by gas-industry expertise and experience. They are unaware of, for example, the difference between 1 mcf and 1 cubic metre of gas. Not one knew what 1 mmBTU and 1 gigajoule mean or the difference between them. Not one knew what "wet" and "dry" measurement of gas means or the difference between them. Not one of them had ever seen gas in any form.

If the state of knowledge of the Gnomes we met is, in any way, representative of that of all or most others we did not meet, then their manner of conduct comes as no surprise. We believe that, as a condition of issuing trading licences to the Gnomes, **NYMEX may wish to consider the creation of a fund, charging each futures and options contract from \$0.001 to \$0.01 to cover a program of initial and continuing education of the Gnomes in the gas business.** Successful completion of an entry test, followed by periodic proficiency tests might be required to maintain a trading licence in good standing. Not only would this provide the Gnomes with skill sets, but it would also go a long way toward eliminating the Gnomes' deep-rooted concerns and elevating them from the level of emotion to that of reason. All the gas industry needs are the facts. The hype it can create itself without the Gnome's participation.

**While this may seem harsh, it may be justified to inquire why gas, because it is not internationally traded, ought to be qualified for trading on a commodities exchange. Energy sustains life, and the right to life is a fundamental human right. Hence, why should gas, as one of the life-sustaining forms of energy, be exposed to and traded by the machinations of the Gnomes of**

**NYMEX, especially since it is uncertain whether NYMEX and, for that matter, the Gnomes are actually adding real economic value or are merely redistributing income and corporate cash flow? If one compares the windfall profits heaped upon a few beneficiaries from gas-price inflation with its burden imposed on millions of gas users, one is hard-pressed to find real value added.**

However, for now, the U.S. gas industry has to contend with the NYMEX gas pit. Is there an escape from the Gnomes? We believe, there is. Although NYMEX may not admit it, we believe that NYMEX Access<sup>SM</sup> and enymex<sup>SM</sup> are more than enhancements of the system of open outcry in the gas pit. The Gnomes, in our view, are walking a fine line between credibility and loss thereof. We do not see a convincing reason, why marketing and procurement of gas ought to remain entangled in the Gnomes' web and remain a victim of concerned Gnomes. We believe that gas marketing and procurement belongs in the hands of professionals. In the discussion of the reasons for the decline in the trading volume of gas futures, we have mentioned the emergence of virtual exchanges, such as **EnronOnLine** and, in the future, the **IntercontinentalExchange (ICE)**, established in Atlanta in March 2000, may erode NYMEX's gas trading, once it enters, as it plans, into global gas and electricity trading. ICE is an Internet-based market, trading of over-the-counter energy and other commodities. It charges no dues or fees other than those incurred in trading.

***In addition, we believe that, assisted by the Internet, there is a place for bilateral marketing and procurement of gas without the involvement of exchanges. It would appear that Internet-based bilateral trading between sellers and buyers of gas and virtual commodities exchanges have the capacity of delivering a silver bullet to the gas pit.***

Despite the useful function of NYMEX and similar exchanges, **the emergence of online trading allows bilateral transactions to take place "sine ira et studio," i.e. without hype and input of nervous energy.** Indeed, we are of the view that on-line trading is the arguably most efficient and lowest-cost transactional tool, allowing buyers and sellers of energy commodities to stabilize/lock-in their revenue/costs through bilateral contracts. In contrast to commodity exchanges, on-line trading, spanning the globe, transcends the reach and capabilities of commodity exchanges. Even an institution as simple as the flower-clock auction in Aalsmeer, Holland, is capable of substituting the role of a commodity exchange without speculators.

Given the capabilities of information technology, notably the Internet, efficient buyers and sellers of physical gas, unwilling to be victimized by the Gnomes, are already circumventing NYMEX, by employing on-line bilateral contracts, that are perfectly capable of accommodating their needs to protect their cost and revenue interests, without participation of the Gnomes.

**Calling The Gnomes' and Their Economics 101's Bluff** – revenge of fundamentals  
Equity markets have demonstrated time and again that the role of fundamentals as pricing determinant can be suppressed. However, ultimately, they will re-emerge and re-assert themselves. In the process, they are curing from within, on the up and downside, the excesses that equity markets indulge-in from time to time. In the case of the NYMEX, its gas pit has no mechanism that would enable the discovery, let alone, measurement of excesses. Accordingly, it lacks obvious intent and capability of curing any excesses. Hence, the cure must come from physical gas markets.

Revenge from the fundamentals of the physical gas market came late, but, ultimately, it came, calling the Gnomes' bluff, at least for the time being. Beginning in January 2001, even hard-core Gnomes had to admit their errant ways in connection with their litany of allegation that the U.S. gas industry will run out of storage gas before the end of the winter season 2000/2001. The persuasive facts of physical gas markets silenced the Gnomes temporarily, but they embarked quickly on another bandwagon in support of their claim that the USA would run out of gas. They seemingly found it by alleging that the USA would be short of reformulated gasoline (RFG). Because gas is the dominant feedstock for methanol and it is, in turn, a feedstock for the production of MTBE, a vital ingredient of RFG, the Gnomes tried to concoct a "gas story" out of alleged increases in demand for RFG, claiming that its alleged shortages would stimulate RFG-production. Its production would trigger demand for gas and drain rising volumes of gas from other applications and storage into the production of methanol. This, they claimed, would deprive these applications and storage of gas, exacerbate the allegedly then existing shortages of gas, and drive-up gas prices further. The Gnomes overlooked as minor detail that then prevailing methanol prices were high, but not high enough to offset the then prevailing gas spot prices, as evidenced by the fact that much of North America's methanol industry was flat on its back. This was false start and has back-fired so far.

The kindest comment on the actions of the Gnomes is that, for the purpose of making a bid/ask-spread, not hobbled or burdened by knowledge of gas markets, they are (mis)interpreting current data and are forecasting the direction of futures gas markets by looking into the rear view mirror (historical storage data) from below the dash board of their whimsical vehicles, and by erecting out of misread storage data, tempered by weather reports, a row of straw-men, which physical market will proceed to knock-down in due course. However, until then, the Gnomes are capable of causing havoc, damage and injury to users of physical gas by mis-pricing gas futures and options, based on a charade of smoke and mirrors.

Call it a riddle, inside an enigma, wrapped in a mystery, if NYMEX did not exist, markets for physical energy left to their own devices, could, through the price mechanism, reduce demand for gas and make the actions and existence of Gnomes redundant for the reasons cited above. After all, prior to the Gnomes, physical markets built a growing North American gas industry. If it were true that the USA, whipped-up by the acid-laden stomachs of concerned Gnomes, must brace itself for threatened incremental price escalation of gas and electricity, then a "curious" phenomenon would surface. Based on the laws of supply and demand, rising prices, if and to the extent they occur, would have rationing power by triggering demand and supply responses, so that price escalation would throttle demand for gas and electricity and ignite supply, with the result that demand and supply would reach an equilibrium automatically, nullifying the very concern about supply gaps that the Gnomes are professing publicly every day, by worshipping to the God of Greed. This is what reasonably functioning markets are supposed to do and this is what they are doing.

Perhaps unknown to the Gnomes, the very essence of functioning markets obviates any need or basis for expressions of concern about underground storage and/or weather, because market forces, allowed to operate, are self-healing and self-compensating, obviating the need for intrusive torture by concerned speculators.

Moreover, it has not occurred to the Gnomes that **gas-price escalation**, triggered by their own gyrations, did and does not only discourage demand for gas, but also

**stimulate(d) the use of substitute fuels/feedstocks.** It is, indeed, curious to understand how the Gnomes, on the one hand, are wringing their hands about alleged gas deficiencies, while bidding-up futures prices, that, when translated into excessive physical gas prices, would strangle demand for gas.

While postulating that the USA was running out of gas on or before the end of March 2001, the Gnomes' very own actions created and mobilized demand responses that helped the USA to sustain gas demand with seemingly low storage levels, with the result that even the last "Gnomic Mohican" became convinced of the contradiction between the Gnomes' actions and their results. In other words, their machinations had almost Machiavellian powers. ***The higher futures prices rose, the easier it became for the USA to meet winter demand for gas on the basis of optically low inventories.***

Consequently, instead of having to reach for smelling salts and tranquilizers, antidepressants, and other remedies for self-inflicted (com)motion sickness, the Gnomes ought to take the honourable step, fade into the background, relax and acknowledge the contradiction between their motivations and ensuing actions on the one hand and their results on the other, that are inherently diametrically opposed. In other words, **by bidding-up gas prices, the Gnomes are unwittingly destroying the justification for and credibility of their** existence. It is difficult not to conclude that their actions and reactions are smitten with symptoms of what elsewhere might be considered as bipolar disorders, hypertension or other forms of sensory disturbance.

The underlying absurdity of the Gnomes' gyrations is their assumption that the level of futures prices, if translated into prices of physical gas, will cause neither a demand nor a supply response. **This means that the Gnomes view gas demand as totally inelastic and imply that markets will urge for and use more gas until its availability is exhausted and still crave for more, thereby fuelling and sustaining the escalation of futures prices. In other words, the Gnomes' economics 101 are based on the notion that speculation-infected futures markets will never reach an equilibrium,** feeding the Gnomes' concept of a nirvana for gas prices, which they can milk ad infinitum, without triggering demand or supply responses. Regrettably, demand and supply do not balance instantly. Until they do, the effects of the Gnomes' gyrations are not confined to gas futures and options, but affect and damage physical gas markets as they did in 2000/2001, because of the way some physical gas is priced. ***Unless neutralized, actions of the Gnomes in futures markets are actually interfering in the interplay of market forces, if, and to the extent that, futures prices translate into physical spot and term prices.*** This is fundamentally inflationary, and this is where and how an otherwise vibrant economy can be damaged.

***What are practical alternatives for hapless users of physical gas? To curl-up, pay ransom prices and become comatose, or to de-mask the Gnomes, tear-off the covers of what resembles a charade, and trade bilaterally on line, that is the question faced by gas users in the USA, if prices for physical gas are to varying degrees at the Gnomes' mercy or the lack thereof. The other alternative is for NYMEX to restrict trading in gas futures and options to underlying physical demand and supply.***

**Important is to recall time and again that gas supply and demand are a function of price. It ought to be redundant to mention that existing NYMEX prices of gas are discouraging gas usage. This raises a fundamental question: given the rationing power of market prices, why are the Gnomes so concerned about gas supplies, when their own speculative trading actions are discouraging gas usage? In other words, in 2000/2001, gas prices had risen to levels that are more than highly conducive to lure incremental supplies to the market and to snuff-out demand. If this occurs, the perceived problems and anxieties and concerns evaporate. At that point, demand and supply will, as always, balance, albeit at a greatly reduced levels of demand.**

Unbeknownst to the Gnomes, prices driven by them to extremes would have succeeded in extinguishing the flames of their concerns about weather, storage and alleged gas shortages, because at that point their concerns would, as they did, have self-destructed.

**Gas-Market Power** – *it has been said that brutal(ized) rulers do not govern for very long*  
In principle, markets reward value creation through successful efforts. What, if any, successfully efforts have the Gnomes to their credit? How much incremental gas supply can they legitimately claim to have added. In other words, how much real value have they added to the U.S. economy? Assuming that they unable to substantiate to have added real value, are they proud that they have lined their pockets at the expense of U.S. gas users? Have the wounds inflicted by the Gnomes onto the U.S. economy and residents healed, covered by scar tissue, or are they still festering? How much permanent disability has the USA suffered at the Gnomes' hands? What do the assets and liabilities of the U.S. "gas-balance-sheet" look like now, compared to the same time two or three years ago?

Suppose there had been a legitimate reason for gas-price escalation to the proportions experienced in the USA. Would this have required the intervention and intrusive actions of the Gnomes, because gas producers were so inept and powerless in pricing their gas, that it required "divine" interventions by the prophets of greed, or could they have embarked upon pricing, more or less autonomously, and channelled most of the incremental cash flow into their coffers instead of suffering some leakage to middlemen active in the gas pit? We would think that the latter is the case, because **gas production in the USA is an oligopoly. If the USA were to need unreasonable gas prices to transfer economic wealth to gas producers, they are perfectly capable to price gas under the aegis of a price leader, without having to enlist the assistance of the Gnomes.**

### **Energy Cartel, Oligopoly and Oligopoloid**

In theory, crude-oil prices around the globe reflect directly/indirectly the strategies and tactics of the OPEC-cartel and those sailing in its wake as well as those of "outsiders." However, even a cartel is not always autonomous in its production and pricing decisions. Ever so often, physical markets, driven by fundamentals, are rearing their "ugly heads", reducing demand and/or cranking-up physical supply, including oil substitutes. In short, non-OPEC supply and that of OPEC-cheaters, combined with demand responses and substitutes will sooner or later emasculate cartel powers, at least temporarily. When the earnings of OPEC-members and sympathizers continue to erode and dwindle, OPEC-members will call for discipline, namely, production cuts and quota-compliance. This triggers a new round of price escalation until capped by demand and non-OPEC supply responses, followed by price reductions.

We have likened the NYMEX gas pit to an "oligopoloid", if not an oligopoly, and the Gnomes collectively to its price leader, because, as mentioned, they are NYMEX-designated market-makers and, as such, operate at the margin. By operating as market-makers at the margin, the Gnomes are setting prices, based on the concept that marginal operators set prices. Unless members of an oligopoly decide to fight for incremental market share, an oligopoly, under the aegis of a price leader, can be very stable. Depending on the degree of oligopolistic discipline, a price leader will stabilize the market or lead it up or down. However, an oligopoly can also turn viciously competitive. This is usually caused at the onset of fights for incremental market share. They will, at the expense of prices, lead oligopoly prices down, at times very far. When prices have reached such depressed levels that only the fittest can sustain their continued operations, sanity returns accompanied by a supply-side response in the form of shut-in production, while the original or a new price leader emerges, restoring discipline and solidarity and leading prices up. When, after an arduous climb, prices have reached "nose-bleed" levels, physical markets respond with more or less vengeance on the demand and supply-sides. Simultaneous supply/demand responses (to price escalation) will accelerate the rate of price collapse. This process continues until a price leader manages to instil discipline somewhere between the peak and trough prices or until a new price trough is reached. Then the process reverses and starts all over again.

In the case of the gas pit, there is no reason to assume that it functions, in principle, in a form other than a physical gas oligopoly. The only difference is that the Gnomes, acting as the price leader and akin to lemmings, will fall off the cliff, because, in their pursuit of greed, they are unaware that the price elasticity of demand will ultimately begin to take effect.



# BACKGROUND

## Commodity-Exchange-Traded instruments

### **Futures** – *how they work in theory*

Futures contracts (“futures”) are legally-binding, firm commitments to make or accept delivery of a specified quantity and quality of a commodity during a specific month in the future at an agreed-to price at the time of the commitment. The buyer (the long) agrees to take delivery of the underlying commodity. The seller (the short) agrees to make delivery. Only a very small number of futures traded each year results in delivery of the underlying commodity. Instead, traders generally offset/liquidate (a buyer will liquidate by selling the contract, the seller will liquidate by buying-back the contract) their futures positions before their contracts mature. The difference between the initial purchase or sale price and the price of the offsetting transaction represents the realized profit or loss.

Futures trade in standardized units in a highly visible, extremely competitive, continuous open auction, lending itself to widely diverse participation and efficient price discovery giving an accurate picture of the market.

To do this effectively, the underlying market must meet three broad criteria: (1) **volatility** of the prices of the underlying commodities; (2) **diverse, large number of buyers and sellers**, and (3) **fungibility of the underlying physical products**, that is, products are interchangeable for purposes of shipment or storage. All market participants must work with a common denominator. Each understands that futures prices are quoted for products with precise specifications delivered to a specified point during a specified period of time.

Because a commodity exchange’s physical commodity contracts allow actual delivery, they ensure that any market participant who desires will be able to transfer physical supply, and that the futures prices will be representative of cash market values.

Most market participants choose to buy or sell their physical supplies through existing channels, using futures or options to manage price risk and liquidating their positions before delivery.

An exchange provides buyers and sellers with price insurance and arbitrage opportunities that can be integrated into cash market operations.

Trading exchange contracts can improve the creditworthiness and add to the borrowing capacity of suppliers, thus augmenting their financial management and performance capabilities.

Cash prices are the prices for which the commodity is sold at the various market locations. The futures price represents the current market opinion of what the commodity will be worth at some time in the future. Under normal circumstances of adequate supply, the price of the physical commodity for future delivery will be approximately equal to the present cash price, plus the amount it costs to carry or store the commodity from the present to the month of delivery. These costs, known as carrying charges, determine the normal premium of futures over cash. This is the theory, but it does not always apply.

As a result, one would ordinarily expect to see an upward trend to the prices of distant contract months (contango), typical of many futures markets. In most physical markets, the crucial determinant of the price differential between two contract months is the cost of storing the commodity over that particular length of time. As a result, markets that compensate an individual fully for carrying charges – interest rates, insurance and storage – are full contango-markets, or full carrying-charge markets.

Under market conditions, when supplies are adequate, the price of a commodity for future delivery should be equal to the present spot price plus carrying charges. The contango-structure of the futures market is kept intact by the ability of dealers and financial institutions to bring carrying charges back into line through arbitrage.

Futures markets are typically contango-markets, although seasonal factors in energy markets play an important role in market relationships. For example, during the summer, heating oil futures are often in contango as the industry begins to build inventory for the approaching cold weather. On any given day, prices in the forward contract months are progressively higher through the fall, reflecting the costs of storage, interest rates, and the assumption of increased demand.

Backwardation, the opposite of contango, is a market condition where the nearby month trades at a higher price relative to the outer months. Such a price relationship usually indicates a tightness of supply; a market can also be in backwardation when seasonal factors predominate.

As a futures contract approaches its last day of trading, there is little difference between it and the cash price. The futures and cash prices will get closer and closer, a process known as convergence, as any premium the futures have had has disappeared over time. A futures contract nearing expiration becomes, in effect, a spot contract.

### **Principles of Hedging And Price Discovery**

Futures contracts have been used to manage cash market price risk for more than a century in the United States. Hedging allows a market participant to lock-in prices and margins in advance and reduces the potential for unanticipated loss.

Hedging reduces exposure to price risk by shifting that risk to those with opposite risk profiles or to investors who are willing to accept the risk in exchange for profit opportunity. Hedging with futures eliminates the risk of fluctuating prices, but also means limiting the opportunity for future profits should prices move favourably.

A hedge involves a position in the futures or options market that is equal and opposite to a position at risk in the physical market. For instance, a crude oil producer who holds (is "long") 1,000 barrels of crude can hedge by selling (going "short") one crude oil futures contract. The principle behind establishing equal and opposite positions in the cash and futures or options markets is that a loss in one market should be offset by a gain in the other market, because the cash and futures markets do not have a perfect relationship, hedges are not perfect, leaving almost always some profit or loss. However, an imperfect hedge can be a much better alternative than no hedge at all in a potentially volatile market.

Hedges work because cash prices and futures prices tend to move in tandem, converging as each delivery month contract reaches expiration. Even though the difference between the cash and futures prices may widen or narrow as cash and futures prices fluctuate independently, the risk of an adverse change in this relationship (known as basis risk) is generally much less than the risk of going unhedged; and the larger a group of participants in the market, the greater the likelihood that the futures price will reflect widely held industry consensus on the value of the commodity.

Because futures are traded on exchanges that are anonymous public auctions with prices displayed for all to see, the markets perform the important function of price discovery. The prices displayed on the trading floor of the Exchange, and disseminated to information vendors and news services worldwide, reflect the marketplace's collective valuation of how much buyers are willing to pay and how much sellers are willing to accept.

### **Types of Hedging**

**Long Hedge** – *hedging against a gas-price decrease by selling futures*

Among the most common commercial applications of futures is the **short hedge, or seller's hedge**. It is used for the protection of inventory value. Once title to a shipment of a commodity is taken anywhere along the supply chain, from wellhead, barge, or refinery to consumer, its value is subject to price risk until it is sold or used. Because the value of a commodity in storage or transit is known, a short hedge can be used to essentially lock-in inventory value.

A general decline in prices generates profits in the futures market, which are offset by a decline in the value of the physical inventory. The opposite when prices rise.

**Long Hedge** – *hedging against gas-price increases by buying futures*

A long hedge is a commitment to purchase a commodity in the future at a fixed price by establishing a cost against a known selling price. Typically, a long hedge protects a desired profit margin.

# **NYMEX DIVISION OF THE NEW YORK MERCANTILE EXCHANGE AND COMMODITY EXCHANGE (NYMEX)**

## **Strip-Trading In Gas Futures**

Energy risk managers can hedge their extended exposure to gas-price risk through a single transaction, by trading calendar strips for gas futures contracts.

A strip is the simultaneous purchase/sale of futures positions in several consecutive months. Instead of purchasing each monthly position separately, a buyer can open the monthly positions as a single transaction. The strip is valued at an average differential to the prior month's settlement prices for the months being purchased. A six-month strip, for example, consists of an equal number of futures contracts for each of six consecutive contract months, priced as a negotiated differential to the prior day's settlement prices. The differential is the same for each month of the strip and is calculated based on the current average price of these months versus the prior day's settlement.

One can protect against rising (falling) prices for several months at a time by simultaneously buying (selling) a contract in each of the months to be hedged. For the HH-futures contract, NYMEX-traded strips are available for between two and 36 consecutive months. Strip traders must post and maintain margin levels for each month of the strip as if it were a separate transaction.

## **NYMEX Futures Contracts And Options**

On April 3, 1990, NYMEX launched the first-ever **gas futures contract**, and, in October 1992, the first ever **options on gas futures**.

Prior to April 1990, buyers and sellers entered into bilateral single or portfolios of transactions (including purchase of reserves), and risk-averse marketers locked-in spreads and/or engaged in back-to-back transactions, unless they were prepared to act as principals and assume price risks in return for price opportunities. **Gas futures** facilitate **risk-management** opportunities. By assembling buyers and sellers, gas futures allow them to hedge their price exposures by transferring the risk to market participants with inverse risk profiles. Gas futures also facilitate **spot-price discovery** at present and, to some degree, in the future.

**Options contracts (options)** are another risk-management tool, allowing a hedger to achieve price protection, while retaining the ability to participate in favourable price moves. The opportunity cost is limited to the premium paid for the option.

The fundamental reason for and justification of futures is hedging. It allows buyers and sellers to offset the risk of price fluctuations associated with the purchase and sale of a commodity. A gas producer may sell futures to lock-in the sales price, thereby protecting a revenue stream, should (physical) market price for gas fall. However, should gas prices rise instead, then the price increase of the (physical) gas offsets the producer's loss on the gas futures. Alternatively, a buyer of gas may buy gas futures to lock-in the cost of gas. Should (physical) gas prices fall, then the cost advantage gained from buying (physical) gas at a reduced price offsets the loss from the gas futures. Either party may, if it so decides, hold the gas futures until they expire, and then make or take delivery through NYMEX at a point designated as a NYMEX delivery/receipt location.

Futures are most widely used for hedging. It permits to offset the risk of price fluctuations for physical supplies of a commodity. For example, a gas producer sells a futures contract to lock-in the sales price of gas and protect its revenue stream in the event that the market price of gas falls. Should gas prices rise instead, the increase in value of the physical gas offsets the loss on the futures contract. The counter-party (buyer) buys futures to lock-in the purchase price. Should the price of gas fall, the cost advantage from buying physical gas at a price lower than the futures price offsets the loss from the futures contract.

#### **NYMEX Gas Futures Contract Specifications**

The **trading unit of a gas contract** is 10,000 mmbTU at prices expressed in \$/ mmbTU. For options it is one NYMEX Division gas futures contract.

Futures contract have a **term** of 36 consecutive months commencing with the next calendar month, plus a long-dated contract, initially listed 36 months out.

Sabine Pipe Line Co.'s **Henry Hub in Louisiana is the delivery location**. Seller must deliver gas to and through the Hub, and the buyer from the Hub. Seller pays the Hub-fee. Subject to notifying NYMEX, an alternative delivery procedure enables buyers and sellers to consummate delivery under terms of their choice.

Also, subject to notifying NYMEX, sellers and buyers may **exchange a futures position for a physical position of equal quantity**. This mechanism is available for initiating or liquidating a futures position.

**Position limits** are: 7,000 contracts for all months combined, but not to exceed 1,000 in the last three days of trading in the spot month, or 5,000 in any one spot month.

**The maximum daily limit is \$0.10/ mmbTU (\$1,000 per contract)**. There is no maximum daily limit during the month preceding the delivery month (first nearby futures contract).

**Minimum Price Fluctuation:** \$0.001/ mmbTU (\$10 per contract)

## NYMEX'S GAS PIT

*(a strange place delivering adrenaline boosts and potentially a fertile ground for tort lawyers)*

Since the introduction of gas futures contracts on NYMEX on April 3, 1990, wholesale and retail physical-gas pricing the USA, has changed, although there is no source recording the volumes of gas being bought and sold physically on the basis of or related to NYMEX futures prices. This report questions in no way NYMEX's role and utility for principals (with physical gas to buy or sell) engaging in hedging, but it questions the process of price formation in gas-futures/options markets, and the conduct, if not the role, of the Gnomes.

### **Purpose**

Gas prices are determined through **open outcry**. It is an open and continuous auction on the NYMEX floor in the tiered "gas pit." The open-outcry process and minimal space around the NYMEX gas pit contributes, in our view, unduly, to the atmosphere of supercharged emotions, comparable to a hot and humid boiler room. We believe that this atmosphere, reinforced by crowding, due to close bodily contact, shouting, shoving and pushing, is contagious in the sense that the rush of adrenaline, heightened by the craving for trading commissions and speculative gains by the Gnomes trading for their own account, produces a trading and pricing environment utterly devoid of any semblance to the interaction between supply and demand, except the demand for and supply of gas futures. Accordingly, the higher gas futures prices can be pushed, the more conducive is the system to the adage of buying low and selling high. Of course, this does not mean that the Gnomes could and do not profiteer from falling futures prices.

Gas-futures/options trading is a bizarre and arcane spectacle. On each trading day, the spell binds North American gas users and innocent bystanders with spectacle. About 150 traders, many of them Gnomes, seemingly more properly dressed for the carnival in Rio than downtown Manhattan, are crowding the three tiered ring of the gas pit. They are shouting, grimacing, gesturing, ramming, pushing and shoving, elbowing and at times kicking for position, suffering and delivering physical abuse, and throwing a downpour of tickets onto a net covering the centre of the gas pit, because public outcry requires stamina, visibility, and a tolerance, if not a desire, for physical abuse. Surprising is that hard-hat and steel-toe rules do not apply. If the Ontario Workmen's Compensation Board were the competent authority, it would shut down the gas pit out of concern for safety violations.

To describe the action as pandemonium would not overstate the facts. In the process, traders routinely suffer physical injuries, which, if they were occurring elsewhere, could be viewed as battery with legal consequences (a potential Mecca for tort lawyers). In theory, and usually in practice, the best bids and offers are allowed to come forward. A trader willing to accept the highest price will so indicate, silencing all lower bids. No one is allowed to under-bid a higher bid, or to over-bid someone else's lower offer. This adds heavily to the very competitive tone of trading. The system and processes are, of course, not perfect. It is possible that a trader, believing that he/she had found a counter-party may subsequently discover that his/her order was not or was not entirely transacted. This leaves traders at risk for make-up.

Other persons, clad in ill-fitting yellow jackets, holding what seem to be Nintendo-look-alikes, are punching keys, transmitting changes to the computer system, and to communicate by wire with news services reporting on the circus-like action. Other persons rushing

along narrow aisles, clutching pieces of paper, are dodging or tripping on tangles of telephone cord, the lifeblood of NYMEX (mercifully to be replaced by cellular telephones). This is where large and small fortunes are made or lost, and this is the source of elation for those selling physical gas high and misery for those buying it high (to the extent that futures prices become the price standard for spot and term gas). This is where, in the absence of proper hedges, end-users of gas are losing disposable income or corporate cash flow, and this is where industrial gas and gas-feedstock users were losing their global competitiveness last fall and winter, if and to the extent that they purchased spot gas at NYMEX-based/related prices.

The transmission of information into the trading pit is a combination of the tools and products of information technology and word of mouth, with the latter being incapable of instant verification, as illustrated above. Given the inability of confirming instantly the veracity of information disseminated by shouting, it is no surprise that price formation is a chaotic process.

### **Aids The Gnomes Employ**

Given the level of sophistication attributed to commodity exchanges, one might expect the Gnomes to come equipped with maps, global-positioning systems, energy, including gas, supply and demand data, academic or industry training, and experience in the gas industry. One is disappointed to discover that, apart from a trading licence, the Gnomes' toolbox consists only of weekly gas storage data, weather reports/forecasts, and the ability of expressing, credibly or otherwise, hype through convincing bouts of concern. Notions of demand for and supply of physical gas are irrelevant, as they have no place whatever on the Gnomes' radar screens.

While the process and technical conduct of trading in the gas pit are relatively orderly, the parameters of speculative trading are, to a degree, akin to a neurotic craze. Like Roman and Greek sages sorting through glistening, intertwined entrails for bends and twists, presaging future events, some of the Gnomes are charting prices and poring over historical charts trying to predict turning points and trends in the direction of gas prices. In the process, they are relying on strange parameters, e.g. multi-tiered **support prices** and **resistance levels**. As far as we are able to tell, and this may not be entirely accurate, they reflect nothing but history. We believe that any particular so-called support price has nothing to do with support, but merely indicates that, at the end of a particular trading day, there was no more time to continue trading, or there were no more buy and sell-orders at higher or lower than closing prices. The following day triggered a new trading with little, if any, relation to the previous day.

However, there is, no matter how bizarre and frightening, a degree of apparent reality to futures and options trading. Obviously, as long as sufficiently many agnostic or believing Gnomes and hedgers cling to and believe, or pretend to believe, in the use of gas-storage levels, weather reports, and the concepts of support and resistance, and act accordingly, futures and options trading tends to become a self-fulfilling prophecy or a boot-strapping exercise. As such, it lends alleged legitimacy to the underlying concepts, no matter how ill-conceived and illogical, and helping to form and prop-up gas prices. Once a particular belief/notion changes or vanishes, so do support prices and resistance levels.

The only "reason" why the notions of support price and resistance levels may have validity is the consensus of traders and their shared belief in its inherent existence, based on the notion that history will always repeat itself. In other words, it is implied that the future will always be a blurred, if not true mirror image of the past. This is akin to insisting on driving a vehicle with the head below the dashboard, by looking for direction into the rear view mirror only and listening to weather reports. What a way of driving! What a way of making a living! But it works. Why? Because every trader pretends to heed or actually heeds the creed, and sings from the same hymnbook. This is the apparently real, but, in fact, frightening and surreal characteristic of NYMEX and probably other commodities exchanges. It is not unlike the opening of Tennessee Williams's play, *Glass Menagerie*: "It... gives you the illusion that has the appearance of truth."

Notwithstanding claims about the accuracy and efficiency of public outcry, traders have advised us that errors do occur. Upon discovery of errors (e.g. non-completion of a transaction (especially one, where its size required a breakdown into tranches) that, at the time, appeared to have closed), the cost of errors is to the account of the trader rather than the trader's principal. Speculators must account for their own errors.

Only traders are present in the "gas pit". The identity of their clients seeking to take or liquidate positions remains anonymous. Basically, traders come in two versions: **hedgers and speculators**. The former are acting for a principal.

#### **Open Outcry** – *its utility or lack thereof beyond the threshold of the 21<sup>st</sup> Century*

At this juncture in the 21<sup>st</sup> Century, the existence of open outcry appears not only anachronistic, but is also costly, at a time when computerized trading is the only logical method for the future (it is used on **NYMEX Access** <sup>SM</sup> after the close of open outcry. NYMEX ACCESS<sup>SM</sup>, an originally Windows-based trading system, is the after-hours (beginning at 4 p.m.) electronic trading system of NYMEX, allowing trading in gas and other energy futures and options following closing of the trading floor for the day. However, gas, electricity and propane are offered in abbreviated evenings sessions only. NYMEX Access is being migrated to an Internet-based platform so as to make it more efficient and cost-effective, and to improve the flow of instantaneous communication between the trading floor and global trading.

The new **enymex**<sup>SM</sup> system (announced in May 2000) and being launched in the second quarter of 2001, is intended to be a global Internet-based exchange for forward trading and clearing contracts for physical commodities, with its initial focus on energy and metals. It is to support and enhance the depth of liquidity provided by open-outcry trading. It is an Internet-based market, providing trading; price transparency, counter-party credit risk management and liquidity associated with NYMEX-based trading of standardized products that are traded in relation to the benchmark NYMEX futures contracts. Ultimately, it will provide a single interface between the electronic derivatives market and the futures market by routing futures orders to the trading floor and the NYMEX Access electronic trading system.

It will use the Exchange's well-capitalized and highly regarded clearinghouse to provide counter-party risk management and net margining of positions across the markets for traditional exchange contracts and complementary products. Net margining will provide significant cash-flow benefits to participants, trading across the Exchange and physical markets.



**We believe that NYMEX Access and enymex<sup>SM</sup> and perhaps other Internet-based programs will, at least for the gas pit, eventually cause the disappearance of open outcry because of its weight, costs, inefficiency and slowness.**

On a merciful note, electronic trading may be holding out the promise that hype and emotions, whipped-up by adrenaline-boosts and the contagious frenzy of close physical contact in tight quarters, typical for public-outcry systems, may moderate, although perhaps not disappear altogether.

NYMEX (A Guide To Energy Hedging) believes that: "To be efficient and effective risk-management instruments, futures markets require a mix of commercial hedgers and private speculators". NYMEX's "energy markets have attracted private and institutional investors" seeking "to profit by assuming the risks that the underlying industries seek to avoid, in exchange for the possibility of reward. These investors, in conjunction with hedgers, have brought a diversified balance of participants to the Exchange's markets."

In principle, the objective of hedgers is to use futures to help stabilize their revenues or costs. Conversely, the Gnomes try to profit by buying low and selling high e.v.v., taking positions in futures, hoping that they move in their favour. A Gnome's *raison d'être* is to lock-in a spread. Hedgers hold offsetting positions in the market for the physical commodity; the Gnomes do not.

The Gnomes add liquidity. They often take the opposite sides of bids or offers that are in the market. On NYMEX, a trade will not be completed, unless someone is willing to take the opposite side of a transaction.

Hedges work, because cash and futures prices tend to move in tandem, converging, as each delivery- month contract approaches expiration.

**Is NYMEX's Gas Pit An Indispensable Prerequisite For Functioning Gas Markets Or Merely A Forum Of Convenience That Is Easily Replaceable By Bilateral Online Trading? – or, *for that matter, does the gas pit create economic value?***

At the outset, one may pose the question why, fundamentally, buying and selling energy commodities on an exchange such as NYMEX should concern and, thus, involve anyone other than principals (buyers and sellers of physical commodities, acting in their own name and for their own account) and their (appointed) agents (acting in their own name for the account of their principals)? This applies especially to energy commodities, **because energy** does not represent a discretionary item of trading/marketing that is readily reproduced or provided by substitution, but **is the essence of life, both human and economic**. For ultimate users of energy and feedstocks, the prices paid for energy consume either part of their disposable income (in the case of individuals) or are input costs for transacting business, affecting earnings, cash flows, interest coverages and debt/equity ratios.

The *raison d'être* for the role of speculators, but not their motives, in trading NYMEX gas futures and options is entirely unclear. Are they creating economic value or are they merely redistributing value? Are they adding to the nation's store of reserves, or are they taking advantage of an oligopoly for gas futures and options? Since they, by their own admission, pay no attention to physical supply of and demand for gas, are they possibly distorting the pricing process of physical gas? Given the relative inelasticity of supply and demand, are the Gnomes actually fuelling inflation?

The Gnomes might argue, although not from around the gas pit, that “making a spread” is all that is relevant to them. However, the fact is that gas suppliers have been very skilful in maximizing prices long before the Gnomes saw the light of day, and that they are perfectly capable of raising prices, as long as it appears opportune to. In other words, since balancing demand and supply through pricing is the task of and *raison d’être* for the existence of markets, what is it that the Gnomes are adding that markets are not adding? What is it then that the Gnomes are adding to the “wealth of the nation,” to vary Adam Smith somewhat?

In contrast to the action of hedgers, for whom commodity exchanges are designed first and foremost, what is the business reason for and justification of price manipulation and speculation? Other than having been licensed by NYMEX to act as market-makers, what fundamental right allows the Gnomes to interfere with the functioning of “reasonably competitive markets” and cause economic and financial dislocation, to the extent that futures prices translate (in)directly into physical gas prices. Traditionally, North America’s petrochemical industry has been very competitive globally. Why is it that U.S. petrochemical producers utilizing gas-based feedstocks, essentially ethane and propane, became globally uncompetitive literally over night in 2000? The answer is, of course, that, to the extent that NYMEX gas-futures prices became translated into spot and perhaps contract prices in U.S. energy markets, petrochemical producers were forced to compete with the prices gas-fuels markets were prepared to pay or, as many did, curtailed production.

Commodity exchanges, such as NYMEX, perform an economic (i.e. useful) role involving hedgers; however, we are unaware why and how the purpose and functioning of NYMEX or any other similar exchange require the presence of speculators. After all, how can one explain how and why, for most of the presence of man on earth, societies, and trade and commerce have managed to operate very well without speculators. Indeed, how many units of energy can speculators claim to have provided directly and solely through their existence, actions and machinations. Is it as much as a single unit? How can one possibly begin to explain that most of North America’s gas reserves supplying today’s gas markets have been found prior to the creation of gas futures and the arrival of and invitation by the Gnomes? This also applies to the period that has since elapsed. What logical explanation, short of resorting to a miracle, can one possibly pull out of thin air that would explain, without input by the Gnomes, the discovery of giant gas field in the South China Sea and off-shore East Kalimantan that we visited recently? How did Petronas and Pertamina ever manage to enter into sales contracts with Japanese, Taiwanese and South Korean importers of LNG without input of the Gnomes?

If it is accepted that commodity exchanges ought to deal with globally traded energy commodities only, should one not, at least intellectually, challenge the justification of gas futures and options, because gas is, at best (and even this represents somewhat of a stretch) a “continental commodity”?

### **Commodity Futures Funds (CFF)**

Our thesis that Gnomes and other speculators are the chief architects of the gas-price escalation in 2000/2001 is also illustrated by the activities of CFF.

On March 19, 2001, Business Week reported strong performance for CFF. The 10 most profitable CFF in 2000 with low-minimum investment requirements earned rates of return from 11.48% to 31.43%, and the 10 most profitable high-minimum investment requirements CFF earned rates of return from 42.73% to 181.52%. While no information is available on the extent to which the various funds invested in gas and electricity futures, it is probably safe to assume that energy futures performed very well. In 1999, most CFF suffered double-digit declines.

CFF benefit from rising and falling prices, because they can speculate on the direction of prices. Most of the CFF managers reportedly trade on the basis of technical, rather than fundamental, analysis, analyzing patterns of price movements and changes in trading volume. They have developed analytical models, based on the behaviour of various futures markets over time. The systems are designed to profit, when prices of futures move through designated levels, triggering buy or sell signals.

Again, this supports our thesis that speculators ignore demand and supply forces.

# RISK MANAGEMENT

## **Weather**

In managing risk, gas traders, notably the Gnomes, attach extreme importance to weather and its potential effects, including hurricane forecasts, watching for updates of, for example, Earth Satellite Corporation's Hurricane Service. However, it is not just the number of hurricanes that may affect gas prices, but particularly the potential effect on gas-production facilities in the Gulf of Mexico and adjacent producing regions.

Regarding weather, gas traders pay close attention to the following:

## **Key Forecasts**

Short-term 3-5 days; 6-10 days; 11-15 days;  
Long Lead

## **Key Updates**

Hourly Verifications  
Noon Update

## **Exchange Futures For Physical**

NYMEX trades based on contract months. The vast majority of contracts is "closed-out"/liquidated before contract expiry, i.e. three business days prior to the actual month. Traders can take contracts not closed-out into the physical market through Exchange Futures for Physical (EFP). EFP involve the simultaneous execution of both a futures and a physical market transaction, allowing for the exchange of a futures and a physical position in the underlying market. In essence, the buyer of a futures contract can swap it with the seller of a futures contract. The transfer of title to the physical gas supporting the futures contract offset each party's futures contract.

EFP are useful, because they allow parties to choose their counter-parties and its own physical delivery location (unlike the NYMEX's gas futures delivery procedure), while permitting them to independently hedge their own risk profile. The parties are able to transact business at prices, locations and times agreed-to. The quantity of the physical gas must be approximately equivalent to the quantity covered by the futures contract. It must be fungible or a by-product or derivative of the physical gas. As EFP are non-competing trades, their prices remain confidential and do not enter the calculation of NYMEX-settlement prices. Likewise for EFP, NYMEX does not match parties for delivery. Each of them must locate their counter-party and make bilateral arrangements.

## **Put and Call Options**

Put and call-options introduced in 1992 on NYMEX, give holders the right, without an obligation, to buy or sell futures contracts at a specified price at a specified time, in exchange for a one-time payment (premium). The seller of an options contract is obligated to buy or sell a futures contract, in the event that the holder of the options contract chooses to exercise it.

If gas prices do not increase (decrease), the buyer of a call- (put-) option forfeits only the premium, but is otherwise able to participate fully in any favourable price move.

### **NYMEX Clearinghouse Function**

NYMEX's clearinghouse guarantees every futures trade, thereby eliminating counter-party credit risk. Each clearing member is required to deposit daily funds with the clearinghouse in proportion to the number of contracts cleared. These deposits, augmented by guarantee funds and surplus reserves of the clearinghouse are available against default by any clearing member.

Traders must post and maintain in their accounts a certain minimum amount of funds (margins) for each open position held.

### **NYMEX Procedures**

The NYMEX gas contract, if taken to delivery, is delivered to Sabine Pipeline Company's Henry Hub (HH). All other gas receipt points are traded at a differential to Henry Hub (HH), called "basis." Basis markets are traded OTC through brokers and directly between users. Basis does not necessarily equate to the cost of transportation from HH to different trading points. Rather, basis is determined by supply/demand dynamics within a particular region. Many traders trade "basis." They hope that the price levels at HH and a specific delivery point are not synchronized, because such anomalies present arbitrage opportunities. The most influential factor determining basis is the current and projected weather. Often, traders use historical spot prices and average them to forecast the future basis. Past spot prices at HH and another delivery point incorporate weather implicitly. Traders then assume that the past will be an indicator for the future.

### **Hedging and Trading Strategies and Tactics**

Traders on NYMEX are using a myriad of hedging and trading strategies, ranging from fundamental analysis to technical analysis to neural nets.

While not restricted for use by the Gnomes, traders look at curve structures: **short-term and long-term curve structures** indicating contango and backwardation, differences in term structures, hoping to benefit from inherent differences in terms structures through **spreads and butterflies**. **Spreads** are one of the major instruments of the Gnomes. Indeed, "making a spread" seems to be the Gnomes' claim to fame. Spreads involve buying one month, while simultaneously selling another. They are designed to capture the inherent mismatch between the price differential, or relationship, that ought to exist versus the actual existing one.

Similar to spreads, **butterflies** involve a mismatched perception in value between months. Unlike spreads involving only two months (years), butterflies involve three. A trader buys one amount of a month, sells twice that amount for the second month, and buys the amount for the third month. This transaction can also be done for calendar years ("strips"), or any other time frame. The theory behind the trade is that the price relationship between the three months is distorted. Such a trade is relatively low-risk enabling to capitalize on the perception of a temporary misalignment. The rationale for the 1/2/1 ratio of amounts bought/sold is to theoretically "hedge" the price movements with equal amounts (i.e. the delta of the spread is neutral, because the trader is long and short equal amounts). This minimizes the price exposure if the trade goes against the trader.

# UNDERGROUND GAS STORAGE

## **The Gnomes And Their Antics About Weather And Gas Storage – *the Gnomes are akin to the sorcerers' apprentices***

In addition to weather, underground gas storage (storage) is the chief operating parameter of the Gnomes. Regrettably, because or despite of their lack of gas-industry knowledge, the Gnomes have managed to create, in some minds, **unsubstantial fears** about the adequacy of gas supplies and have driven futures prices of gas to record levels. Conversely, those knowledgeable of the U.S. gas industry and able to see through the threadbare litany of the Gnomes, are taking advantage of the arbitrage opportunities presented to them by the Gnomes. Hence, despite their knowledge, experience and expertise, they are refraining from unmasking the Gnomes and exposing their smoke-and-mirror antics, because they are highly useful tools profitable marketing, trading and risk management.

Hence the impunity with which the Gnomes are second-guessing the gas supply logistics of the executives of U.S. gas suppliers, users, pipelines and distributors. They are, in essence, implying that those responsible for gas suppliers have mismanaged their duties. It is not suggested that gas industry executives are infallible. On the contrary, but substituting the Gnomes' opinions (uncontaminated by gas industry knowledge) for the actions of the gas industry raises a fundamental issue. For some time, the U.S. gas industry and past and present Administrations have been promoting gas as the secure and reliable fuel of choice. The Gnomes have so far done well to challenge discredit these efforts. How can gas be the fuel of choice, when the Gnomes are pricing it beyond the realm of choice and, by raising warning flags, are doing their best to paint a picture of fragility designed to discredit, if not remove, the attribute of choice from gas as a fuel?

What is wrong with the Gnomes' opinions and actions? The analysis of storage levels during the past six years shows that the U.S.A. has been able to operate with successively reduced storage levels, despite the years 1998 and 1999, whose warmer-than-average weather obscures the trend somewhat. This means that, contrary to the Gnome's insistence on relying on 1995/1996 storage levels as an icon of supply security, the real issue is for the U.S. gas industry to **determine appropriate operating levels of storage**. Whatever they should be from time to time, will not be determined in a vacuum.; however, they will be less than the "installed" storage capacity. Moreover, they will not be constant from year to year. The gas industry does not build and manage storage levels by looking into the rear view mirror. That industry determines operating levels prospectively, based on rigorous corporate plans.

**As shown on Chart 16 (page 34), the U.S. gas industry has been reducing storage levels over time, as it is determining each year appropriate operational storage levels. As mentioned, the war winters of 1998 and 1999 are obscuring the trend toward lower-than-historical underground-gas-storage levels. By deploying storage more efficiently than in the past, the U.S. gas industry is fully capable of operating with lower-than-historical storage levels.**

### **Impact of the "636-Series of FERC Orders" and the Changing Role of Storage**

What seems to have been lost on the Gnomes is the entire process and impact of deregulation on the conduct of the gas business. Prior to the 636-series of FERC orders, interstate gas pipelines owned or leased most of the gas storage reservoirs, were the largest owners of gas in storage, and provided storage as a bundled component of gas sales and transportation. They operated storage very basically. They injected gas into storage during the non-heating period and withdrew it during the heating period. Storage gas formed part of the pipelines' rate bases. The higher gas inventory levels and the higher allowable rates of return were, the greater the earnings of pipelines.

After the separation of the pipelines' merchant from their carriage function, ownership of gas in storage and determination of working-gas levels became the prerogative of gas suppliers (including marketers), users and utilities. To the extent that gas utilities own working gas, such gas forms part of the rate base. However, state regulatory agencies are punishing gas utilities for imprudent storage levels filled with imprudently costly gas. Gas suppliers and users that own gas in storage are disciplined by the need to minimize the cost of gas and transportation. Now that futures prices are at record levels and cash prices have risen sharply, owners of working gas are reluctant to build/replenish storage levels at prevailing prices, because they are afraid of becoming caught with excessive working-gas levels acquired at excessive prices in the event that any winter will be average or warmer-than-average, and it becomes obvious that ample gas supplies become available before the end of the winter season. If storage levels decline early in the current heating season, this does not mean that the U.S. supply chain is under pressure. Rather, it means that owners of stored working gas prefer to draw gas from storage instead of buying expensive gas in the market.

### **Storage Management Techniques in the Post-Order-636 Era – storage as a profit centre**

New storage-management techniques are evolving that are changing the historical role of storage. Gas distributors and other owners of gas are now calculating working-capital requirements and their cost in deciding on how much gas they can afford to store. They can now optimize pipeline peaking supplies versus holding gas in storage. They will weigh year-round the costs of fixed/variable pipeline charges and the cost of storing gas against alternative methods of arranging peaking-gas supplies. They may prefer to pay for peaking-gas high spot prices and transport gas interruptible on pipelines instead of locking-in fixed pipeline charges and incurring the cost of working capital for gas in storage. To the extent that pipelines interrupt deliveries, this becomes a cost of doing business. Important is that some gas users are simply avoiding storing gas. Some owners of storage reservoirs are now using storage opportunistically *as a profit centre*. In the post-Order-636 era, they have control over load, including storage, management and can engage in price arbitrage. Some owners of storage allow (unregulated) gas marketers to utilize part of the storage space to store gas for the sole purpose of being withdrawn and monetized during peak loads. The marketers count on the premise that, at the peak, someone may need gas and may be prepared to pay dearly. In the winter 1995/1996 gas demand was high in the Midwest, notably the Chicago area. Rumours circulated about a delivered city-gate price in the order of \$60/mmBTU. To the extent that buyers paid \$60 or prices close thereto, sellers did not sell \$60-gas. They used opportunities presented by the "*grey market*" (a market where non-pipelines bundle the merchant and transportation function) and sold gas with a field

price of perhaps \$2.50 and charged some \$57.50 for related services and profits, the latter of which they split with the utility. If gas owners can sell from storage profitably, e.g. at US\$3.50/ mmBTU, early in the heating season, instead of realizing perhaps one-half of the prices later, they have no economic incentive to maintain storage early in the heating season at historical levels. Some industrial gas users with gas in storage and multi-fuel capability will sell gas out of storage, if prices are attractive early in the season and burn lower-priced coal and/or fuel oil during the balance of the heating season. With their fixation on year-over-year storage levels and weather forecasts, supported by little or no knowledge about gas markets, the Gnomes will interpret reductions in storage levels early in the heating season, compared with a year ago, as a catastrophe. In contrast, industrial gas owners view this as an opportunity, because they know that they will have all of the energy they require during the heating season, regardless whether it is gas, fuel oil and/or coal, after having sold gas out of storage profitably.

The Gnomes also appear not to be aware of the ***Grid Integration Project of U.S. and Canadian gas pipelines***. **Due to increasing pipeline integration, the U.S. intra- and interstate gas pipeline network is becoming more and more a system of “communicating tubes” that balance gas deliverability across the nation rather than regionally as in the past.**

The Gnomes are also overlooking that Canadian gas pipelines to the U.S. Midwest and East are rapidly developing summer rather than winter peaks. This simply means that utilities in particular located in the South and Southeast are arranging to fill storage in Michigan and Pennsylvania, for example, during summer. During the ensuing heating season, they “backflow” gas from storage to their markets. However, this simply means that participating utilities in the Midwest, the North-Central region and the Northeast no longer draw any (or very little) gas from the South, Southwest and Midcontinent during the heating season, but draw gas from mainly Canadian pipelines and storage (that has been partly filled by utilities in the South and Southeast and perhaps Mid-Atlantic) to meet their peak loads. This means that in winter, gas no longer travels through pipelines as far north/northeast as it used to historically, because Canadian gas and storage withdrawals, supplemented by some gas from U.S. pipelines are now feeding winter-gas demand in the Midwest, the North-Central region and the Northeast. In other words, the logistics and flexibility of gas deliverability have improved immensely from past levels and continue to do so.

The Gnomes are, of course, oblivious to deliverability improvements, as their minds are not cluttered by gas-industry knowledge. They remain fixated on weather forecasts, and nationwide storage levels (compared to a year ago). Based on these two single variables, they are trying to concoct demand/supply imbalances that pretend to indicate physical gas shortages now and/or in the very near future.

**Storage And Pipeline Integration Are Now Part Of U.S.-wide Gas Deliverability**  
***Gas deliverability from storage*** is now an issue. The Gnomes are unaware of or ignore its significance. The U.S.A. has started to utilize increasingly **liquefied-natural-gas (LNG) facilities** that can quickly compress, convert and store gas for release during periods of peak demand. By 2002, all of the four tidewater LNG terminals in the USA will be fully reactivated. The Gnomes are also failing to give credit to **salt-cavern storage** and their share of total storage capacity. They can be completely filled and drained in 20 days or less. About one-third of proposed incremental storage capacity is scheduled to come from salt caverns. Even during mild winter days, gas can be injected into salt caverns.



To increase storage deliverability, owners of underground storage reservoirs have started to drill horizontal wells into such reservoirs. Such wells can withdraw and inject gas five-to-six times faster than vertical wells at perhaps three times the cost. These and other types of storage-management techniques are of immense value in meeting peak-day demands, a fact that the Gnomes are unable or unwilling to recognize.

What has also been lost on the Gnomes is **pipeline integration; the use of swaps and displacements; the re-emergence of energy-switchable users; sustained growth in storage capacity, notably salt-cavern storage, and increasing cross-border pipeline capacity from Canada.** Pipeline integration is a process spawned by the 636-series of FERC orders. In the days, when interstate pipelines carried no or virtually no third-party gas, they kept on expanding, whenever the need for incremental capacity arose. It then appeared to make good sense, because capacity expansions entailed rate base growth, and rate-base growth triggered earnings growth. Now storage has become an economic good requiring judicious management. If storage levels are higher or lower than last year, is of no consequence. What matters is storage management, based on business plans rather than the Gnomes' rear view mirror.

#### **Summer and Winter Peak Shaving**

Last summer, the Gnomes bid-up gas-futures prices alleging that high temperatures and the need for peak shaving caused electricity generators to step-up gas-fired generation drawing heavily on gas supplies. As usual, they never attempted to account for the veracity of their claim nor did they factor-in the methods and techniques used to meet summer peaks. First of all, it is lost on the Gnomes that the majority of U.S. gas-fired co-generation facilities operates on the basis of firm, long-term gas supply contracts and firm pipeline transportation contracts, because it is essential to have a positive spark spread. Next, the Gnomes are unaware that the economics of gas-fired co-generation demand year-round operation at high load factors. This simply means that **gas-fired co-generation does not cause high summer demand for gas**, because it operates in the base-load mode. Again, the spark spread is all-important. While non-co-generation, gas-fired generating capacity is called upon to meet summer peaks, **U.S. utilities rely heavily on non-gas-fired thermal generation (e.g. coal- and oil-fired) for peak shaving.** To the extent that they use gas to meet their market, it is noteworthy that gas usage by electric utilities fell by 63 bcf in 2000 from 3,001 bcf in 1999. From June to August, electric utilities used 1,188 bcf of gas in 1999 and 1,093 bcf in 2000, for a reduction by 95 bcf. Surely, electric utilities did not support the Gnome' allegations of heavy demand for air conditioning in 2000. To the extent that single-cycle generation is used for summer-peak shaving, it is difficult to determine their gas usage, because non-utility generation is statistically part of industrial gas usage, but is not readily broken out. To the extent that **gas-fired, combined-cycle generation** is used to meet summer peaks, electricity markets benefit from high levels of conversion efficiency mitigating increases in gas demand. The Gnomes are unaware or fail to give credit to efficiency gains that technological progress continues to produce. The Gnomes never analyze how U.S. utilities meet summer peaks nor do they test the validity of their claims. Of course, since the Gnomes do not look at actual demand nor at conversion efficiencies nor at fuel substitution, they simply postulate and pronounce pseudo-logistic electricity supply/demand conditions, that have the appearance of fact, because of their superficial, semi-plausible appeal, but are largely, if not pure, fiction.

**Convergence of Gas And Electricity – another source of deliverability**

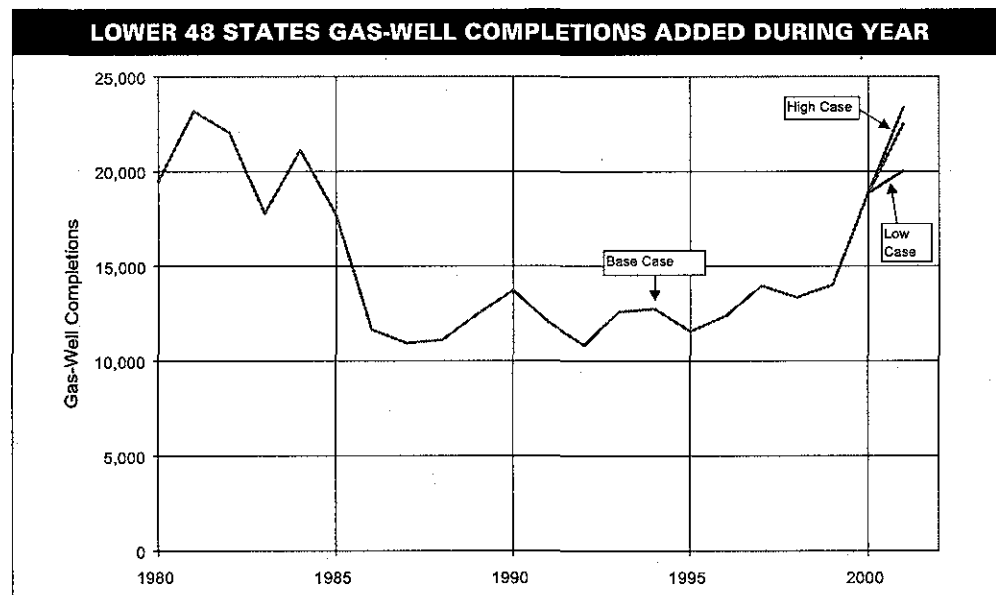
The **convergence of the gas and electric industries into an energy-supply industry** and the emergence of market/storage and/or transportation hubs is also lost on the Gnomes. They overlook or are unaware that, to the extent that gas-fired generation meets summer peaks, utilities are now shutting-down gas-fired co-generation in winter and use the gas so freed-up to meet summer peaks. Simultaneously, they arrange for third-party-supplied non-gas-fired electricity to meet the electricity demands of their co-generation customers in winter at the same prices they would have charged for gas-fired co-generated electricity. This means that the real gas supply on winter-peak and summer-peak days is larger than the Gnomes try to make the public (gas users) believe.

## Natural Gas – Productive Capacity In The Lower-48 States

The **Energy Information Administration (EIA)** released its May 2001 study on the productive capacity for natural gas in the lower-48 States.

### Gas Well Completions

In 2000, an estimated 18,480 gas wells were completed, a 34.4% increase over 18,840 wells. For 2001, the EIA's low, base and high cases project 20,026; 22,508 and 23,388 wells, representing estimated increases of 6.3% for the low; 19.5% for the base, and 24.1% for the high case. As shown below, the increase in well completions translates, with a lag, into increases in productive capacity. **Chart 17** illustrates the well completion trend.



Source: Energy Information Administration

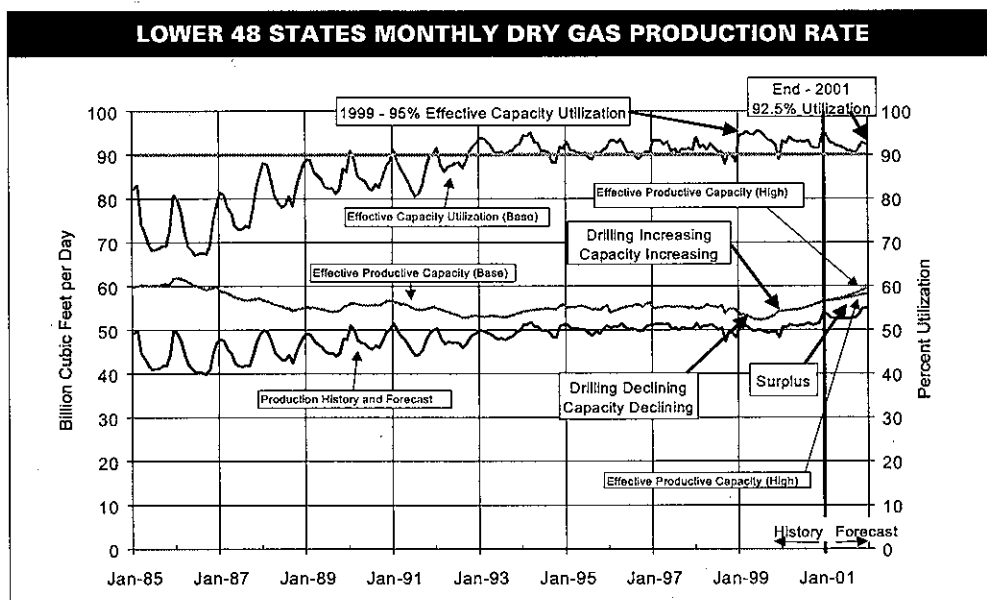
Chart 17

**Dry-Gas Production Rate And Effective Productive Capacity And Utilization In The Lower-48 States**

The EIA has determined the base demand/production (bcf/d); the effective productive capacity (bcf/d); the demonstrated wellhead productive capacity (bcf/d); the effective productive capacity utilization base (%), and the demonstrated wellhead productive capacity utilization base (%).

	Base Demand/ Prodn. bcf/d	Effective Capacity Low bcf/d	Effective Capacity Base bcf/d	Effective Capacity High bcf/d	Demonstrated Wellhead Productive Capacity Low bcf/d	Demonstrated Wellhead Productive Capacity Base bcf/d	Demonstrated Wellhead Productive Capacity High bcf/d	Effective Productive Capacity Utilization Base %	Demonstrated Wellhead Productive Capacity Utilization Base %
12/01E	54.970	58.235	59.446	60.049	72.747	74.363	74.957	92.5	73.9
12/00	53.742	56.640	56.640	56.649	68.625	68.625	68.625	94.9	78.3
12/99	48.323	54.246	54.246	54.253	63.048	63.048	63.048	89.1	76.6

**Chart 18** illustrates trends in productive capacity.



Source: Energy Information Administration

Chart 18

Based thereon, the base demand would utilize in 2001 92.5% of the effective productive capacity (base case), down from 94.9% in 2000, but up from 89.1% in 1999, and 73.9% of the demonstrated wellhead productive capacity for the base case, down from 78.3% in 2000 and 76.6% in 1999.

Since the Gnomes do not concern themselves with facts such as well completions and changes in productive capacity, we expect them to continue to pursue their "concern-trip", based on storage levels and weather.

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