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July 11, 2011

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Department of Employment, Economic Development and Innovation  
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PO Box 15216, City East Queensland 4002

Sent via email to [OQGC@deedi.qld.gov.au](mailto:OQGC@deedi.qld.gov.au)

## **Innovative Energy Consulting Submission in Response to the Draft Gas Market Modelling dated May 31, 2011 for the Qld 2011 Gas Market Review**

Innovative Energy Consulting Pty Ltd's ("IEC") Managing Director, Glen W. Gill, has participated extensively in Canada's gas de-regulation process that commenced in the mid 1980's and in gas matters pertaining to Australia's economic reform process that commenced in the early 1990's and appreciates the opportunity to provide a submission to the Office of the Queensland Gas Commissioner regarding the May 31, 2011 Draft Gas Market Modelling report submitted by SKM/MMA.

### **Summary**

- After 40 years of slow growth and development, Qld's gas industry is at the crossroads of tremendous change and unprecedented opportunity in both the domestic and export market. This will involve major changes in the structure of the gas industry for the export of onshore gas supplies in general and onshore CSG supplies in particular while ensuring that an abundance of low cost gas is available on a sustainable basis for Qld's gas demand and perhaps for the rest of the

interconnected Eastern Australia gas market is an immediate and important challenge facing Qld policy makers.

- The time is now for Qld to adopt objectives and related policies that support and drive the development of a vibrant and efficient gas industry that serves both the export and domestic market. The entrenchment of old outdated practices, policies and gas trade structures as contained in the draft report supplied by SKM/MMA do very little to assist Qld with this important task;
- A few other OECD gas exporting regions and countries have vast experience in the creation of policies and practices that have invigorated both the export of gas to high value markets and the growth and wellbeing of the local domestic gas market. Qld has the opportunity to learn from such examples and these are glaring omissions in the SKM/MMA report.
- Eastern Australia's gas industry has been shaped to date by a number of distinct drivers and an environment that either no longer exists or does not have to continue into the future. These include but are not limited to the following: the history of state protectionism and barriers to inter-state trade, the ownership of most gas pipelines by Government until the mid 1990's, an absence of economic regulation and open access policies to ensure ready access to low cost infrastructure, the embracing of upstream gas production cartels and the dedication of upstream gas reserves and production capacity to a single customer or buyer under a long term onerous GSA. In my view it is neither accurate nor constructive for SKM/MMA to simply extend most of these attributes into the future as they attempt to forecast gas supply and demand. Most of the underlying assumptions about how the future gas industry will operate that are implicit to this report are simply an extraction of the past. This is akin to driving a car while looking in the rear view mirror.
- LNG exports from Qld CSG resources offer gas explorers and producers several benefits including, but not limited to: access to a liquid world LNG market, gas market diversification and the ability to accelerate gas production and sales. The sale of gas exports to overseas markets is again a right that is granted by Governments of exporting countries such as Australia and Qld, as the case may be, and this right should not be confused with the obligation by gas producers to first look after the domestic market of the exporting country or state. For example, Canada has been a large exporter of gas to other countries (Mexico and the USA) since the late 1950's but the export of gas has always been done as a surplus gas market opportunity and never at the expense of the domestic market. Canada's practice requires export permits and export price tests to ensure that the domestic market is not disadvantaged in any way from the exporting of gas. Furthermore, the export market is served as a second priority to the domestic market in terms of reliability. Consequently a large price differential existed between the price received by producers from the export market compared to that received from sales to the

domestic market from the late 1950's until 2002, at which time surplus export capacity resulted in a converging of various regional markets into a continental market.

- Security, reliability and efficiency in the gas industry has been proven overseas to be obtained by economic regulation of those with excess market power (i.e. infrastructure owners/operators) and a transparent fully competitive commodity market (gas) with multiple buyers and multiple sellers trading frequently in time and at frequent intervals along the value chain. Reliance on long term gas contracts or GSA's in the domestic market is an outdated and very inefficient manner in which to conduct gas trade. Furthermore the light handed approach to the economic regulation of gas pipelines in Australia has resulted in regulatory failure not often seen in an OECD country that relies on spanning long distances with resource movements. The cost to transport gas in pipelines in Australia is outrageous given the age and size of the pipelines. This is due to the recapitalisation of pipelines when divested by Government and the lack of proper economic regulation since that time.
- Benchmarking to other OECD countries in general and to those with abundant gas resources in particular would reveal that significant efficiency gains and other advantages to both gas consumers and gas producers in Qld could be achieved if policy and structural changes were introduced. Generating future scenarios or forecasts regarding the impact of such changes would be a useful exercise but this approach was not taken in the draft report. Qld has recently attracted and continues to attract significant capital investment in its upstream sector of the gas industry and it needs to adopt policies that continue to support both this upstream investment and ensure that its domestic market has access to readily available low cost gas supplies.

## **About IEC**

IEC provides commercial, regulatory and strategic advice to large companies in the gas industries of North America and Australia. IEC's Managing Director, Glen W. Gill, has held executive positions over 2 decades with many of the largest gas companies operating in both Australia and North America and across the entire value chain. Most of his experience is with upstream petroleum exploration and production companies but his experience includes large vertically integrated gas companies that are involved in gas production, power generation, reticulation, trading, gas pipelines, and gas storage. Mr. Gill was involved in the de-regulation of Canada's gas industry that commenced in 1985 and represented the interests of one of Canada's top 5 gas producers, AEC Oil & Gas (now known as EnCana), in that process. Mr. Gill was also involved in the micro-economic reforms that commenced in Australia in the early 1990's as they related to the gas industry and in that process he represented the interests of BHP Petroleum and its related companies, BHP Steel and BHP Minerals.

It is important to note that IEC is neither a gas producer nor a gas consumer in Qld and is not representing any clients in this submission. IEC is therefore objective and unlike many of those submitting submissions, it has no self serving agenda in that regard. IEC does own a mining lease in Qld pertaining to the Boree Salt deposit and has and continues to promote the development of underground gas storage in Qld.

The gas industry tends to be very fragmented and each sector tends to make self-serving arguments to the extent that it is sometimes difficult for policy makers and regulators to find a balanced solution to issues or to generate workable criteria for goals and objectives. This submission may be particularly helpful in that IEC is only attempting to make observation and comments based on experience across the gas value chain in Australia and overseas.

Qld based IEC has provided consulting services to both Government and the private sector in Australia since 1996 and among other things was selected by the Qld Treasury Department in 1999 to provide comprehensive advice regarding the proposed PNG to Qld gas pipeline project and more specifically comment on the involvement of several Government Owned Companies in underpinning that proposed project.

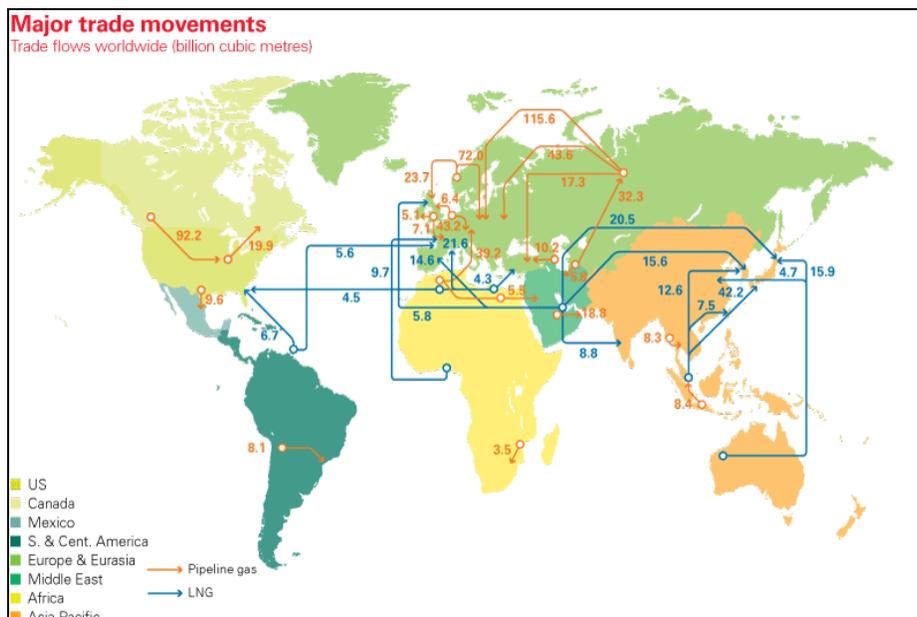
## **General Comments**

1. While the topic of the paper is "Gas Market Modelling" the authors discuss the entire value chain, or what they think is the entire value chain. The executive summary of the report dwells on gas supply and states very little about gas markets! I recommend that the title more accurately reflect the content of the report (i.e. the gas industry) or else the consultants stick to their brief, whatever the case may be;
2. Market forces working in a regulatory and policy framework that creates and ensures that a level playing field exists across the value chain is the best method to ensure that supply and demand remain in balance both in the short and long term. Modelling by SKM MMA or anyone else is rather academic exercise and should be left to students studying economics at university;
3. Reliance on a crystal ball analysis by SKM MMA is a poor substitute for sound policy and regulation of the gas industry by the Qld Government. It was SKM and MMA who in the late 1990's fed the rhetoric that Qld was running out of gas and had to quickly build a long distance pipeline to either the Timor Sea or to PNG in order to keep the "lights on in Brisbane". All of the modelling and forecasts done at that time were totally inaccurate and yet the same Government is relying on the same information generated by the same consulting companies. Albert Einstein once said "The definition of insanity is doing the same thing over and over again and expecting different results". Redoing a theoretical supply/demand study each year is rather insane, especially

- given the poor track record in Qld. All of the Australia consultants advised Qld to go to either PNG or Timor Sea for gas less than 10 years ago for they all discounted CSG as an irrelevant fad; a distraction to the gas supply issue at hand. They could not have been more wrong and thankfully the PNG pipeline did not happen or else CSG would not have been developed as CSG investments would have gone elsewhere.
4. There are many fatal flaws in the approach taken by SKM MMA and they reflect the mindset that the future will look like the past. This most certainly was not the case regarding CSG's role and I suggest that there are many other game changers that SKM MMA knows very little about due to their parochial nature. For example, pretending that the future will be orderly and predictable regarding contracted gas and uncontracted gas and what markets such gas will ultimately serve is extremely naive. Anyone who has lived through the development of a short term trading market or has pioneered the capture of market share as a new entrant will know that contracted gas can be displaced by other gas, contracts can disappear very quickly under various circumstances and it is impossible to physically track production to consumption in a true gas market that has a vibrant short term trading market. SKM MMA is effectively driving while looking in the rear view mirror and is encouraging the Qld Government to behave likewise.
  5. SKM MMA's world view or paradigm appears to be that market forces will not work and that the future will unravel as if Government has remained the owner of all gas infrastructures and everything will be predictable and orderly. They seem to believe that new entrants will simply bow to incumbents and not challenge their position and exports will simply happen at the expense of the domestic market in terms of deteriorated security of supply, higher prices and unavailable gas for the domestic market. They also discount such important tools as gas storage and the short term trading market, as they did CSG a decade ago. This is, I suggest, a very absurd way of looking at the future and has not been my experience either overseas or in Australia. For example, I pioneered the development of the Eastern Gas Pipeline project and more importantly all of the gas sale agreements in NSW that justified that pipeline and according to all of the experts in Australia the pipeline could not happen until post 2006, i.e. after the Cooper Basin gas contracts with AGL started to decline. That pipeline was built and commissioned in 2000, at least six years prior to any forecast by companies such as SKM MMA and without any co-operation by either AGL or Esso Australia. That is how open markets and competition are supposed to

work! It would be refreshing to see Australia grasp such a model and drop all of the protectionism and theoretical analysis.

6. Benchmarking provides the ability to use the power of comparison to identify inefficient businesses and to force them to improve. A benchmarking of any sector of Australia’s gas industry to other OECD countries would indicate that Australia’s gas industry is very inefficient. Furthermore it would also indicate that regulatory failure runs rampant across Australia as it sought to apply a light handed regulatory model that is rather unique among OECD countries.
7. ON page 1 of the report SKM/MMA states the following: “worldwide, the preferred route to exploiting excess gas is LNG”. This is a rather ridiculous statement for LNG facilities costs are higher generally than long distance pipelines and most inter-regional and inter-country trade is done by gas pipelines as is illustrated by the figure below. Russia and Canada are by far the largest exporters of gas and of course their preferred route to exploiting excess gas is not LNG but pipeline exports to other countries. In fact the trade movement between countries in 2010 totalled 876.5 billion cubic metres of which LNG was less than 28% of the total. I have found in the past that SKM/MMA often make such inaccurate statements in reports to Governments and that they remain unaccountable for such glaring errors. Furthermore they are retained to redo study after study from one year to the next without providing accurate information in such reports.



Source: BP June 2010 Statistical Review

It is fairly common knowledge that historically the most common method of moving excess gas from one region to another in OECD countries and from one country to another was the construction of long distance large diameter gas pipelines. For example, Alaska built its first LNG liquefaction terminal 40 years ago, long before Australia's first LNG facility, and yet long distance gas pipelines connecting the tremendous excess gas reserves in Alaska (>35 Tcf) and the McKenzie Delta of Canada to US markets has been proposed for the past decade. Such a gas pipeline would cost in excess of \$35 billion and yet has been proposed by two competing consortiums, namely the BP/ConocoPhillips consortium and an Exxon Mobil/TransCanada consortium. Only recently has the BP/ConocoPhillips consortium announced that they are scrapping this project due to the recent explosion of shale gas production in the lower 48 states of the US that has driven gas prices to the lowest levels in a decade. The least preferred route has been the construction of LNG export facilities and only countries or gas supply regions that are located very long distances from gas markets resort to such alternative. It is also important to appreciate that in North America a \$35 billion gas pipeline project can and will proceed without one molecule of gas dedication. Such a concept is difficult for Australians to grasp but it is common practice in North America and has been since the 1980's.

## **Gas Supply (Upstream sector)**

1. Gas supply in Eastern Australia has several key ingredients, none of which are dealt with in this report. These key ingredients are: remaining gas reserves as a ratio of gas production or demand in the case of an exporting country (R/P ratio), the annual gas production replacement rate historically, the amount of production deliverability in place, the annual decline rate of the upstream gas deliverability, the load factor of installed gas production capacity (i.e. average day production/installed peak day production capacity) and the cycle time between a gas discovery and its on-stream date. All of these indicators should be monitored for they are the vital signs of any gas supply and any and all projections of the past into the future must take into account each of these variables as benchmarked against world's best practice for otherwise projections will be very inaccurate. Australia has exceeded 100% of annual production replacement since the genesis of the gas industry. The annual replacement rate varies from a high of 800% to well over 100% every year since gas production commenced in 1969.
2. For example, by all measures Eastern Australia's gas supply has historically been long and very inefficient. The load factor of installed production capacity is very

low, the R/P ratio is unusually high for an OECD country and the average cycle time between gas discoveries and gas sales is extremely long. All of these factors discourage upstream investment in the gas industry; hence the large number of remaining unexplored gas prone basins in Australia and the low number of wells drilled onshore annually. Eastern Australia may be compared to Western Canada which attracts 20,000+ new wells per year most of which are gas targets, has an R/P ratio of less than 10 years, a cycle time of months and an upstream load factor in the high 90%. Western Canada attracts upstream gas investment while Eastern Australia typically does not. The hope of building an LNG export market has temporarily attracted upstream investment in Qld but it remains to be seen whether or not this is sustainable.

3. Among other things, one fatal flaw in the SKM/MMA approach to modelling gas supply/demand balance is the notion that a producer's ability to deliver gas under a long term sale contract must be underwritten by demonstrated 2P gas reserves upfront. This is a very ancient practice and a rather inefficient manner in which to conduct the upstream sector. Finding and proving 2P gas reserves is a capital intensive business and producers should rely on their exploration track record and failing that their ability to acquire gas supply either insitu or gas production as required to supply any and all future gas supply commitments. The concept of dedicated gas reserves and stockpiling gas upfront prior to entering into long term sale contracts disappeared long ago in many overseas markets that lead the way in efficiency benchmarking studies. For example the US has relied on an R/P ratio of well less than 10 years for decades and Canada has followed. This transition occurred in both of those countries well prior to the conversion of the gas market to predominantly short term or spot transactions. The practice of reserve dedication has proven to be a very inefficient manner in which to sell gas and was replaced by corporate performance guarantees with liquidated damage provisions for non-performance. It is highly unlikely that Australia will continue with the dedicated gas reserve concept for it destroys upstream profitability and reflects a very conservative upstream sector.
4. The assumption that long term gas sale contracts is going to remain the key manner in which gas is purchased and sold in Eastern Australia is also a fundamental flaw in the draft SKM/MMA report. Gas markets can and will transform very quickly from one based on predominantly long term multi-year contracts to very short term contracts of 30 days or less as again has been demonstrated in many major gas markets worldwide. For example, this transition took only one to two years in Canada and it was driven by market

forces as opposed to regulatory intervention. Under such a transition those parties with long term contracts soon de-contract for they are severely disadvantaged by not having floating gas prices and more modern terms and conditions that reflect a commoditisation of gas. This and other behaviour reflect the market power of the upstream sector and their wish to set gas prices in Qld as opposed to being price takers as is the traditional role of producers of any commodity in an openly and freely traded market. Furthermore the onerous gas supply contracts discourage any reference to prevailing market prices for gas on a meaningful basis.

5. There is absolutely no reason, in my view, for the Government of Qld to support the clear mission of Australia's gas industry's upstream sector to distort and skew market power to the extent that they essentially control the gas industry. While gas producers undoubtedly would prefer to avoid gas on gas competition in the domestic market of Qld, it is not in the interest of the gas industry in general, the Government nor the public to let any of the following occur:
  - a) Parity between international LNG prices and domestic Qld prices since that would mean that gas producers have dictated prices in Qld in lieu of any real gas to gas competition and of course they would want to reverse this to the extent that LNG prices returned to those experienced by the North West Shelf Project in the 1990's;
  - b) Basing the domestic gas price in Qld on the cost structure of the petroleum industry serving that market for under such a scenario there is no incentive for producers to reduce costs or gain efficiencies and of course it would also mean that gas producers have dictated prices in Qld in lieu of any real gas to gas competition;
  - c) Encouraging or permitting the joint venture marketing of gas for that is clearly anti-competitive behaviour as it is not required elsewhere and these same producers would not dare mention such a request in North America.
6. There has been a great deal of discussion across Australia since the mid 1990's regarding upstream market power and how to mitigate it and yet very little has been accomplished to date. Countless upstream working committees have come and gone and it appears as if the producers are untouchable. It is important to note that Governments own all of the resources and while one would like to think that they should be stewards of those resources with all stakeholder's best interests in mind, it may be tempting to simply side with the producers and take the highest royalty possible with little regard to the other stakeholders.

## Gas Transportation & Storage Sector (Midstream)

1. It is very interesting that SKM MMA did not mention nor discuss the regulatory failure that exists in the gas pipeline sector in Qld. The poor service and inflated prices charged by the gas pipeline owners has forced the upstream sector to convert CSG to electricity on site as opposed to the generally accepted much more efficient manner of downstream power generation plants. Furthermore the gas producers are all building their own gas pipelines from their CSG fields to Gladstone as opposed to outsourcing this midstream activity. This vertical integration by gas producers illustrates that they do not have any faith in outsourcing these lower risk lower return activities. This trend is opposite the behaviour of these same companies in places such as North America where they have outsourced not only gas transmission but also gas processing and often gas gathering infrastructure to third party service providers. This is not the case in Australia because the light handed regulation model has provided neither good service nor good value to the gas industry. This has inflated gas prices paid by end users and discouraged the development of gas resources.
2. The regulation of the owners and operators of gas pipelines across Australia including in Qld has been a disaster in terms of delivering quality service for good value to Australia's gas industry. The pipeline owners in Australia believe adamantly that they should be permitted to charge what the market will bear for pipeline services and they have essentially been allowed to employ such a strategy in Australia since the divestment of these assets by Government in the 1990's. Any benchmarking in this regard will illustrate how the tolls and services do not reflect the fact that Australia's gas industry is 40 years old and that its growth has outpaced most other OECD countries (which should lead to low tolls on a depreciated and economies of scale sector) but that pipeline companies have significant market power and will exercise that power if not properly regulated.
3. While many other OECD regions have expanded the ownership by service providers to include gas storage, gas processing facilities, offshore gas platforms, gas gathering and other midstream infrastructure asset, Australia's trend is more vertical integration by either gas producers or large gas end users in order to control access to and the cost of the midstream segment of the value chain. The ownership of these assets is driven by the lack of confidence in Australia's regulatory bodies based on the track record over the past 2 decades.

4. The Draft report does not even mention underground gas storage (UGS) let alone discuss how it might very well play a crucial role in Qld's future gas industry. Qld has pseudo gas storage facilities at Ballera and Newstead and several proposed new facilities utilising depleted reservoirs in the Surat Basin and perhaps utilising rock salt caverns in the Adavale Basins. The insignificant amount of UGS that exists in Qld and the small role that it plays at present should not be assumed to continue into the future. The role of UGS facilities in Russia, Western Canada and the Gulf of Mexico region to promote gas exports to other regions and countries is a good future analogy for Qld. In excess of 50 UGS facilities in either Canada or Russia and an UGS working gas capacity in either country equal to in excess of 10% of the annual gas production. Gas storage has been a tool used for decades to enable gas exporting regions to achieve the necessary efficiencies and security of supply in order to accommodate the demands and expectations of both the domestic and export markets and customers. These regions and countries over the past 40 years have developed their gas resources, export and domestic markets, and related infrastructure in such a way that the domestic market enjoyed abundant, low cost, reliable gas. High valued export markets were served on a secondary priority but with a very high level of reliability. For example Western Canada has exported over half of its gas production to the US markets over the past 25 years while serving Canada's national domestic market on a first priority basis and yet has never defaulted on deliveries to its US gas customers. An extensive network of underground gas storage and other facilities are used to ensure that gas supplies are abundantly available regardless of the prevailing gas market prices. There is no reason for Qld to not adopt this proven model. Of course SKM/MMA is a parochial Australia based consulting firm that is apparently unaware of the many decades of widespread UGS use in other OECD countries and the degree of reliance of those countries and regions on this sector of the gas industry.
5. The gas pipeline network in Qld, while extensive, is not depreciated to any significant degree and therefore charges tolls that are very high. There is no level playing field as foundation customers have preferential rights and privileges. Furthermore, the services offered on these pipelines reflect the desire by upstream JV's to control market channels and thereby discourage the development of a secondary market for gas or any other services. The pipeline owners also resist the introduction of a free and open gas market as it will no doubt reveal many of the over inflated charges related to their gas pipelines such

as interruptible and backhaul tariffs that do not reflect the cost to provide those services.

## Gas Markets

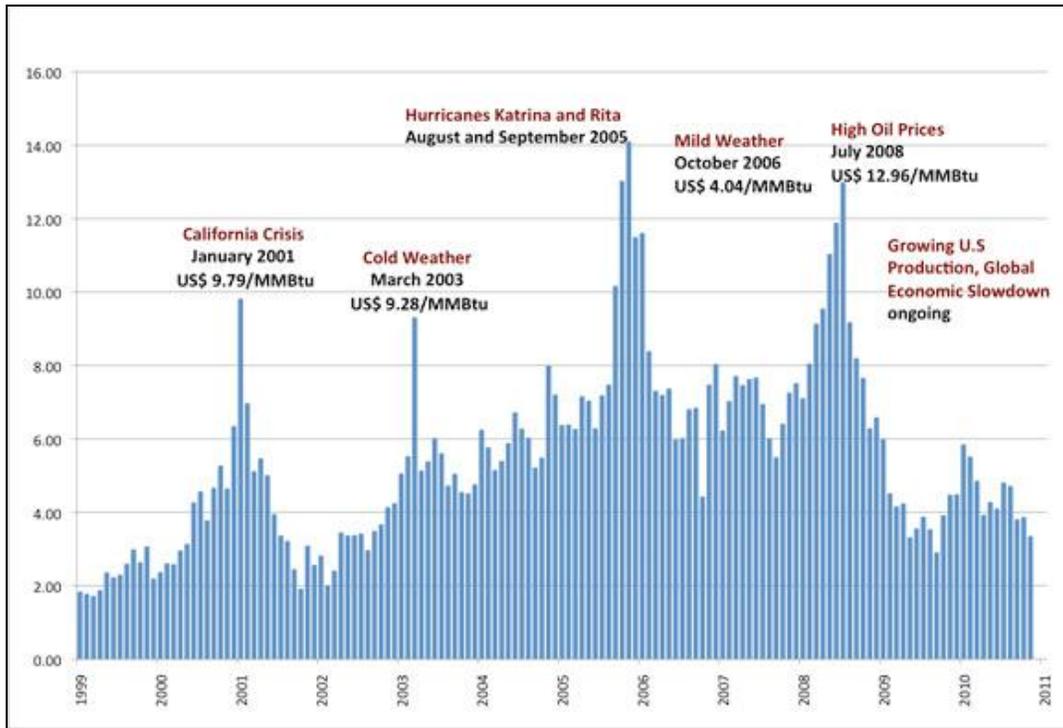
1. SKM MMA purport that it is possible that the “widely stated expectation that when exports commence domestic pricing will inevitably move to export price parity, as measured by the netback of LNG” will materialise. This concept is contrary to most well accepted economic theory for gas supply in Eastern Australia far exceeds gas demand (domestic consumption and LNG exports) and will continue to do so for capital intensive export projects will not occur unless sufficient surplus to the domestic market gas supplies are found and developed. This situation places downward pressure on continental gas prices in general and particularly in the region adjacent to the gas supplies driving the export market. Local gas consumption located in prolific onshore gas supply basins worldwide has not exhibited a phenomena of price convergence with exports on a netback basis unless and until gas supplies decline significantly from the stage where exports facilities were justified. For example, gas prices to Alberta consumers were a fraction of the netback price received from US exports for Alberta gas for decades and only converged when there were insufficient gas supplies to meet both local gas consumption and exporting pipelines. The same phenomena of a local depressed prices existed in the Gulf Coast states of America as it served New England, the Midwest US and the south eastern seaboard of the US. In fact the opposite to what SKM MMA suggests has occurred more worldwide – that is the subsidisation of the domestic gas market by export revenues. Russia, which has the second-largest gas market in the world, for a long time has subsidised domestic gas prices from revenues received from exports. Alberta, Canada has also done this for decades in that it costs less to ship Alberta gas to provincial end users than to provincial export border points, essentially thereby subsidising the freight associated with serving Alberta gas consumers. It would be political suicide to do what SKM MMA is suggesting and free markets do not operate in such a manner. They only converge once gas production declines to the extent that excess export capacity exists, thereby placing upward pressure on domestic gas prices.
2. Although there is gas production and gas consumption across Qld, there has yet to be a gas market whereby gas prices are set freely in the market, an approach

- known as gas-to-gas competition (usually as spot trading or the STTM or as gas-price indexation in term contracts. Gas price indexation has yet to exist in Australia and the STTM has negligible liquidity at the moment. Gas prices are set this way in North American and the UK. According to the International Energy Agency, as much as one quarter by volume of continental European gas supply is priced in this fashion and approximately one-third of the world's gas supply. Encouraging a gas market to develop in Qld is the only way to achieve price transparency and price signals that allow the market to react quickly and efficiently to changing supply/demand balances. Qld should encourage the development of a gas hub at Wallumbilla and investment in gas storage facilities and other infrastructure that supports such a free and unfettered gas market.
3. The SKM MMA report has significant discussion around long term contracting of gas and the gas reserves dedicated to the long term performance of those contracts. Among other things, the authors assume that sufficient proven commercially recoverable gas reserves must be found or acquired by any upstream company prior to entering into long term gas contracts with various buyers. They then assume that the gas producer will dedicate all the reserves and upstream production facilities to those buyers until such time as the long term contract expires. These concepts reflect the lack of business acumen and familiarity with a sophisticated gas market by the authors. Long term onerous gas contracts were the genesis of all continental and regional gas markets, including those of the UK, Canada and the US. Such contracting practices could not compete with an open freely traded gas market and soon disappeared in spite of their original terms once such a gas market was introduced. Furthermore, all parties who held such contracts were severally disadvantaged when the gas industry shifted to an open and freely traded gas market. A similar experience has occurred in Australia's electricity market upon its liberalisation. All world commodities tend to trade on an open short term market and they never go from this to predominantly a long term market with no indexation to the commodity in question. One has to wonder why Australia thinks that gas has to be different!
  4. When Qld's gas industry embraces a STTM and all of the benefits related thereto, most of the analysis and conclusions contained in the SKM MMA report becomes irrelevant. Gas then will be traded many times between production and consumption and the entire gas industry will vastly improve in efficiency as gas supplies will be developed according to price signals and excess production capacity will be sold at prices that reflect the marginal cost of production until

- such time as the gas supply and demand tightens on an average day basis as opposed to a peak day. Gas storage and arbitrage opportunities will drive inefficiencies from the market place. While the timing of such an event is uncertain it is certain that it will occur and I would guess that it will be well within the forecast period. Furthermore it is common knowledge that when a general and durable transition occurs in Qld to a more STTM indexation of prices, then the result will be lower gas prices to end users both in the near and medium term regardless of netback prices to Qld for LNG export sales.
5. It is fairly outrageous for SKM MMA to insinuate that gas markets either have to rely on long term gas supply contracts (GSA's) or that such a tool is in the best interest of the gas industry. Overseas gas markets which rely on gas as an essential service for residential users for heating purposes do not rely on long term reserve dedicated gas supply contracts but rather on a healthy industry that replaces gas production on a just in time basis and has gas storage, fuel switching capability, financial products and other tools that mitigate short term gas price volatility. Longer term, a healthy gas industry with real time price signals have proven to outperform long term contracting practices in terms of providing an abundance of low cost gas supplies to consumers. There are voluminous reports and data from overseas that verify this fact but apparently SKM/MMA either does not read such reports or is of the opinion that that experience is irrelevant to Qld and Eastern Australia. In my view, SKM/MMA are simply reiterating the rhetoric and propaganda that has hindered the maturation of Australia's gas industry to date and generating gas supply/demand scenarios that fit that worldview. This approach does very little to improve the gas industry and leaves many questions and issues unanswered.
  6. I would expect that the Qld Government would be seeking advice on possible future paths for the gas industry in terms of structure including policies and practices that would be required to underpin any such scenario and then deciding which scenario to adopt as its object given all of the stakeholders involved. This would engage the industry in a meaningful discussion and assist in building a better gas industry as opposed to holding onto old habits and practices that are outdated and very inefficient. Benchmarking would also be very beneficial for it would reveal productivity gain potential and how free commodity markets and economically regulated common infrastructure have benefited both gas producers and gas consumers in other OECD countries. Export policies of other gas supply endowed OECD countries should also be

- considered so that Qld can benefit from the vast experience gained in such regions and countries.
7. The propaganda spread across Australia by gas producers includes the rhetoric that the industry would not exist without long term sale contracts containing long term pricing formulas and infrequent and onerous price renewal provisions. This has proven to not be the case in North America's gas industry which has never had a problem attracting investment nor in the oil industry worldwide as both are based on short term gas supply contracts and short term variable pricing formulas; usually based on the daily price index. Large petroleum producers have for example spent \$Cdn 50 billion on oil sands mega mining projects in Canada and over \$Cdn 20 billion in 2008 alone. This expenditure is expected to grow by another \$Cdn 100 billion over the next few years if oil prices remain at today's levels. All of this expenditure is underpinned by volatile, short term world oil prices. Furthermore, most Australian LNG export projects are based on floating oil prices possibly with floors and ceilings and not fixed or escalated prices. The capital requirements of such LNG export projects are orders of magnitude larger than the capital requirements of the gas production facilities required to serve Australia's domestic market. To suggest that upstream gas production facilities would not exist in Australia without certainty of market and revenue to the producers is inconsistent with how the oil and gas industry operates in most OECD countries.
  8. To the extent that market responsive pricing exists where prices are established by buyers and sellers at various pricing nodes along the value chain, then the price received by any gas producer is determined by deducting either the actual freight from the gas plant to that node. Figure 1.0 illustrates how gas prices tend to fluctuate with gas/demand variables in a functional gas market. While gas was once supplied in North America under onerous long term contracts with long term pricing formulas and provisions, essentially all gas is bought from gas producers under very short term contracts and even shorter term price postings. A long term contract today in North America in relation to buying and selling the gas commodity from a gas producer would be in the order of a month. Most gas production is sold at a daily index price and that includes all of the gas production from the offshore Gulf of Mexico. Real time gas price signals are a vital component to any domestic gas industry for without transparent and meaningful price signals the gas industry cannot make sound investment decisions. While price projections and forecasts are never accurate, market participants take great comfort in any market that exhibits the characteristics of a free, open and fully contested marketplace supported by sound Government policy. Gas and electricity are very similar in that markets in both of these industries are a product of good policy and regulation as both rely on a very restrictive, capital intensive and relatively inflexible value chain.

### Historical 3 Day Average Gas Price at a Major North American Gas Hub



Source: National Energy Board of Canada

## Government Policies

1. Government Policy and the types of instruments used to implement policies affect gas resource development and gas consumption choices. It seems to me that the Qld Government should be seeking advice on various policies and their effectiveness in terms of reaching stated objectives as opposed to simply buying another macro study on the “gas market” by SKM MMA. The latter is not worth much while the former would be quite valuable if it benchmarked Qld to world’s best practice as it relates to other OECD countries that have surplus gas production and well endowed in terms of gas resources. Other OECD countries that are also blessed with an endowment of gas supplies to the extent that they are also large net gas exporters include Russia, Canada, Norway and the Netherlands. It seems to me that it would be useful to learn from those other countries. Other regions of OECD countries that have excess gas production and supplies and are therefore major exporters of gas to other regions of the continent include Western Canada and the Gulf of Mexico region. Both of these

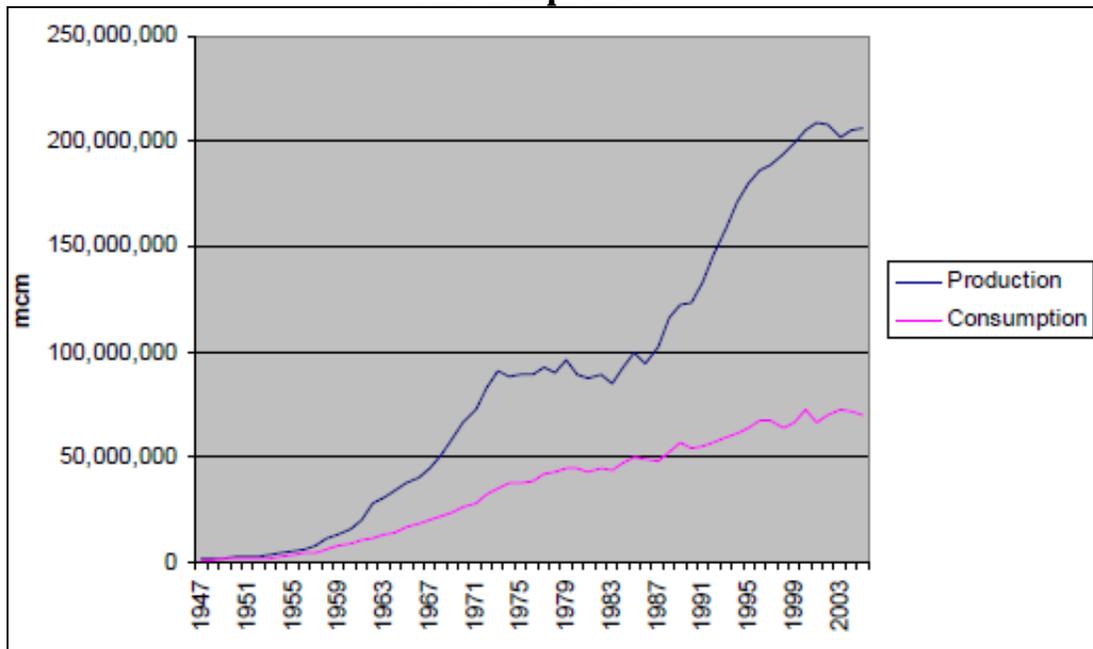
regions have developed policies and practices that support 100% load factor exports to other predominantly gas consumption regions of North America and yet support a vibrant domestic regional gas market that relies on access to low cost readily available and secure gas supplies. This is accomplished without any reliance on long term dedicated gas supplies or facilities to the local market.

2. The uncertainty surrounding future energy policy in Qld is rather high. For example there is no adequate regulation or policy regarding the development and operation of underground gas storage facilities even though this is an important part of the value chain on a going forward basis. There is no policy regarding the role of Qld's gas supplies in meeting the needs of the domestic Eastern Australia gas market, or the Qld state gas market or the LNG export market in terms of priority, etc. These are but two of many fundamental issues that need to be addressed in a comprehensive manner.
3. The track record of ad hoc policy making in Qld regarding its gas resources is not a very attractive feature of the state for future investors. For example, only a decade ago Qld was committed to importing large gas supplies from either the Timor Sea or from PNG and now it has surplus gas supplies to the extent that many large LNG export facilities are being promoted by the Qld Government at Gladstone as a necessary market outlet for this surplus gas. While every business plan should be a living document this extreme turn around in a decade is rather ridiculous. Qld did not believe in its CSG resources at a time when many companies pursuing those resources did believe in them.
4. Qld has suffered in the past due to poor or simple policies regarding the gas industry and it is perhaps time for Qld to adopt a comprehensive energy policy that involves gas. While Qld was a leader in the promotion of greater gas fired power generation it has essentially dropped the ball on most other gas related matters.
5. Qld has exhibited an ad hoc approach to gas matters in the past – the PNG gas project is a shining example of this
  - a. Government support had been indicated by Ministerial statements, by signing a Memorandum of Understanding with the PNG and Commonwealth Governments, by signing of tentative contracts for 170 PJ/ annum of gas (effectively the entire supply expected from the field) and by the proposed involvement of Queensland Government-owned-corporations (Energex and Ergon) as marketing agents for the project before Chevron was replaced by Exxon-Mobil as the project operator).
  - b. In May 2001, a new Minister for State Development indicated that the government would not be willing to underwrite all of the gas from PNG to

make the pipeline viable. The earlier understanding had apparently been that Chevron would deal only with the Queensland Government who would buy all of the gas and then find customers; PNG pipeline has been dealt a near fatal blow by decision to source gas for Townsville power station from state owned Enertrade - using coal seam methane from Bowen Basin (Wisenthal S and Strutt S. 'Beattie deals bitter blow to PNG project', *FR*, 5/6/02); Queensland's reversal of its earlier indication that gas for the Townsville Power Station (potentially an important customer) would be purchased from the PNG gas pipeline appeared to surprise and upset the project promoters - who were reportedly seeking an explanation (see Wisenthal S and Strutt S. 'PNG pipeline chiefs want answers on Townsville', *Financial Review*, 11/6/02).

- c. Posted at 20:50 on 23 May, 2003 UTC. The Queensland State government has renewed its strong support for the proposed Papua New Guinea-to-Australia gas pipeline. Premier Peter Beattie threw his weight behind the project in a joint statement with PNG's Prime Minister Sir Michael Somare. The two leaders said, after their brief meeting in Brisbane, that the project was very important for PNG and Queensland. They said the construction of the pipeline and the development of the facilities in PNG would create a substantial number of jobs and economic activity.
6. The sale of gas exports to overseas markets is again a right that is granted by Governments of exporting countries or regions such as Australia and Qld, as the case may be, and this right should not be confused with the obligation by gas producers to first look after the domestic market of the exporting country or region. For example, Canada has been a large exporter of gas to other countries (Mexico and the USA) since the late 1950's. Canada's practice requires export permits and export price tests to ensure that the domestic market is not disadvantaged in any way from the exporting of gas. Furthermore, the export market is served as a second priority to the domestic market in terms of reliability. This policy has not hindered the exporting of gas from Canada as is illustrated from the following graph. The exporting of Canada's onshore gas production far exceeded its national gas consumption in 2003. In excess of 500 PJ's of working gas underground storage capacity with a peak day deliverability exceeding 11 PJ/d has been developed in Canada to ensure supply reliability to both the export and domestic markets served by gas. Most of this gas storage is located in Alberta and serves primarily the export gas market.

## Canada's Historic Gas Production Compared to its Domestic Consumption



8. What the Government must do is to consider what policy change is required to enable the market forces to work and ensure that exports are a privilege and not a right. The domestic market must always come first and it must benefit from the tremendous resources owned by the people of Qld. Australia not long ago banned inter-state trade of gas and now it may embrace exports over its own domestic regional market and perhaps its own state market! The policies seem to be ad hoc and not well thought out or founded on principles that are commonly found in OECD countries. The Prospective Gas Production Land Reserve concept and policy delivers nothing to the domestic market for it can be gamed in many ways by the producers. The whole concept of dedicated gas and controlling where gas reserves go is an outdated concept that only works when there is one pipeline connecting one gas supply to one unsophisticated market that does not have a material STTM component. It is impossible to track gas production to consumption in an open gas market. What is required are tools that drive efficiency and policies that ensure that the domestic market is served as a priority to any export market. That is how any other exporting OECD country works. The issue of whether Qld is served on a first priority basis by Qld gas or equally with all other states and territories is another matter to resolve.

- At the moment there is no policy with respect to either of these fundamental issues and concerns.
9. The lack of a comprehensive underground gas storage policy and regulation in Qld is problematic and discourages investment in that sector. Qld has elected to focus on green house gas storage or CO<sub>2</sub> disposal and has neglected policies that support the development and operation of UGS facilities involving salt caverns and/or depleted reservoirs. There is a complete vacuum of legislation for salt cavern development and the legislation for depleted reservoir storage is very basic and not suitably comprehensive. A lack of policy promoting the development and commercial use of underground gas storage is another major impediment to a low cost reliable gas supply to the domestic gas market. UGS has been utilised since the 1960's in every OECD country with suitable geology. Qld has extensive underground salt deposits which are ideal for the brining of caverns for gas storage and it has onshore depleted reservoirs of which some would be feasible for conversion to UGS.
  10. It is the right of any gas producing region such as southeast Qld to have access to abundant low cost gas supplies. Qld is emerging as predominantly a gas producing region as the domestic gas market is and will continue to shrink as a percentage of total state gas production and the future growth of LNG exports are expected to dwarf the growth in the domestic gas market. All such predominantly producing regions of the world and especially those located in OECD countries have access to abundant low cost gas. One only has to observe the Gulf of Mexico ("GOM") region of the US or Western Canada. Both of these regions have exported gas to other predominantly gas consumption regions of the country and Mexico in the case of the GOM region and to the US in the case of Western Canada. Both regions attracted large feedstock gas industries such as petrochemicals since the prevailing market price for gas was relatively low for a long period of time compared to most OECD regions. Furthermore the gas price in the gas supply regions of Western Canada and the GOM was no related to the gas prices received from the other markets that they supplied. Gas prices tend to be depressed in and around the gas supply region as gas market outlets are restricted by pipeline capacity and in the case of southeast Qld by LNG export capacity. It is absurd to suggest, as the producers in Australia tend to do, that prices between export and domestic gas markets tend to converge without due regard to export capacity restrictions relative to the amount of excess deliverability that is available to the market. Since the economic and physical reach of gas is related to the cost of transportation infrastructure and the

available capacity on transportation infrastructure (either LNG liquefaction & ships or gas transmission pipelines) respectively, the prices realised by a gas producer at a given gas field or gas processing plant is derived from the net back calculation of the prevailing market prices for any specific market location or customer location served by that gas field or plant (i.e. the market price less all freight and other related charges). Gas to gas competition is always fiercest within the gas supply regions and therefore puts downward pressure on gas prices. As one gets farther away from the major gas producing regions, gas to gas competition lessens and gas to other alternative forms of energy competition becomes more relevant unless spare capacity exists on the gas infrastructure serving that market region.

11. Perhaps the largest barrier to a reliable gas supply to the domestic gas market is the lack of multiple sellers or gas suppliers. Any policy that embraces joint venture marketing of gas to the domestic gas market is bad policy. Gas producers need not sell their gas jointly except for the sole purpose of gaining market power to the degree that they have the means to set prices in Qld based on what they believe gas prices should be as opposed to the traditional position of being price takers. While the proliferation of CSG production and compression facilities in southeast Qld is encouraging in this regard, it is important to encourage all upstream joint venture participants to take their gas in kind and to market it accordingly in the domestic market. Western Australia is a great example of the consequences of embracing joint venture gas marketing by upstream JV's. It is clear that the gas producers in WA have gained sufficient market power to effectively eliminate gas to gas competition and thereby set prices in gas supply contracts and state the terms and conditions under which they will supply gas to the domestic market. This is rather unique to WA as other gas producing regions in OECD countries have various deterrents that prevent such a scenario. Qld would be wise to not travel the path taken in WA.
12. It has been proven overseas that as it pertains to the gas industry, a vibrant and competitive market is obtained by the achievement of all of the following conditions:
  - I. A Fungible Commodity downstream of the gas processing plants – gas molecules should be a homogenous fungible commodity to enable the free trade and movement of gas throughout the connected gas grid and into and out of any gas storage facilities. Long term contracts that tend to de-commoditise gas should be discouraged.
  - II. Access to Low Cost Infrastructure – transportation and reticulation services should be provided at the lowest cost consistent with the adequacy of

service, safety, and a return to the investor commensurate with risk. The recovery of capital costs should be on a depreciating asset with no recapitalisation of the asset regardless of who owns the assets. Furthermore tariffs should be non-discriminatory and cost based with no cross subsidisation among the various users.

- III. Multiple Sellers – this means that gas faces competition in the domestic market from not only other sources of energy or feedstock, but also from gas from other sources. One would expect that intense gas to gas competition would be the primary source of market forces in WA’s domestic gas market.
- IV. Multiple Buyers – this means that transactions or gas trading takes place at each level of transaction from producer to consumer. While this may appear to be counterintuitive, gas should be traded many times prior to consumption in order for inefficiencies to be worked out of the value chain.

These conditions will generate an environment that attracts investment to all sectors of the gas industry and results in potential gas price volatility but long term health and stability in the industry.

13. An efficient gas industry is the product of market forces working diligently in the gas commodity market (i.e. gas trading and services) and strict economic regulation of any and all market participants who hold excess market power such as the owners/operators of midstream and downstream gas pipeline infrastructure and any other segment of the value chain that is not subject to market forces. This does not occur unless good policy and practices exist at the Government level and proper market power tests and solutions to mitigate such market power exist and are applied in a non-discriminatory manner. The proverbial ‘level playing field’ must be sought after.
14. An efficient gas industry is the product of market forces working diligently in the gas commodity market (i.e. gas trading and services) and strict economic regulation of any and all market participants who hold excess market power such as the owners/operators of midstream and downstream gas pipeline infrastructure and any other segment of the value chain that is not subject to market forces. This does not occur unless good policy and practices exist at the Government level and proper market power tests and solutions to mitigate such market power exist and are applied in a non-discriminatory manner. The proverbial ‘level playing field’ must be sought after in Qld’s gas industry.

An efficient gas market has many characteristics that are not as yet present in WA’s gas industry. Some of the features of an efficient gas market are as follows:

- a) Multiple gas transactions (buyers and sellers) at every stage in the value chain;

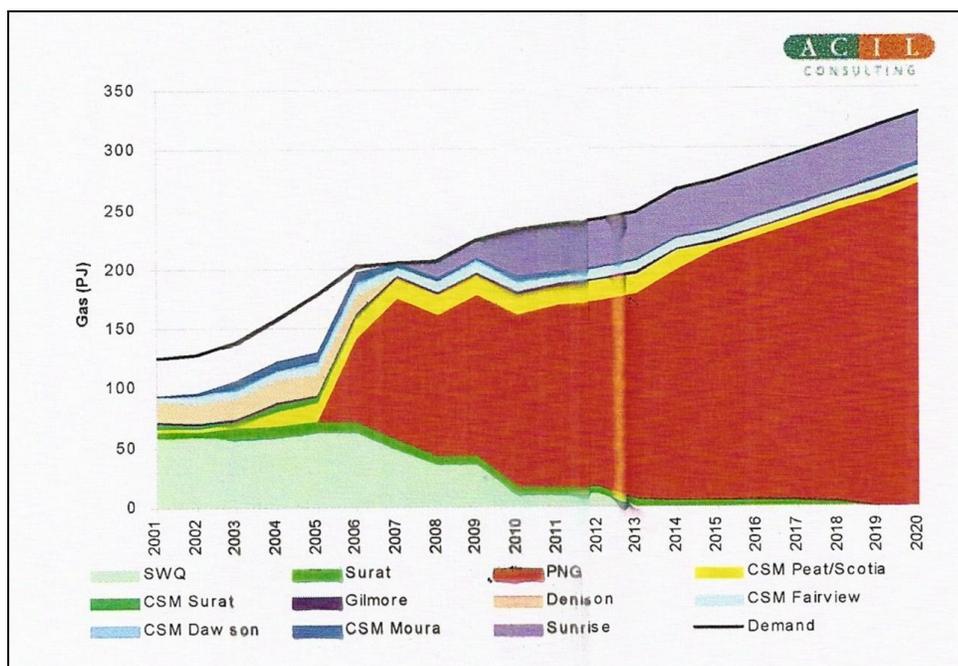
- b) Proliferation of services such as underground gas storage, hub services, and financial services;
  - c) A vibrant primary market and a vibrant secondary market. The short term trading of gas as a commodity and access to unused or surplus pipeline capacity is a pre-requisite for the secondary market as is sufficient depth in the market;
  - d) Inefficiencies are minimised and/or eliminated very quickly by market forces and the innovation and creativity of market participants. Market participants include a variety of service providers and are not limited to pipeline operators, retailers, gas producers and gas consumers as is the case in WA at present;
  - e) Gas flows hourly and daily to those willing to pay the prevailing market price somewhat like what occurs in the electricity market in Eastern Australia. Gas trade is not hoarded or encumbered by long term contracts with very restrictive terms and conditions but is swapped and exchanged freely throughout the gas value chain in order to meet all gas demand at the lowest possible price. Gas deliveries and withdrawals from underground gas storage facilities occurs continuously as the role of balancing the physical volatility of demand and supply is absorbed easily by gas storage facilities. Salt cavern gas storage is the most efficient type of gas storage for short term balancing and depleted reservoir gas storage is the most efficient type of gas storage for longer term and seasonal balancing;
  - f) Real time gas price signals indicate the physical balancing of the system and gas price volatility and the level of gas prices sends signals to various market participants that more or less facilities are required at various points along the value chain. For example, large gas price volatility will encourage gas storage developers and owners to expand existing facilities and or develop new ones. This is how market forces look after the needs of a gas industry in a competitive environment;
15. Since gas pipelines and reticulation facilities seldom, if ever, are subject to competitive forces their tariffs, services and policies must be scrutinised and regulated by a regulatory body in order to ensure that barriers to competition are minimised and hopefully eliminated. The regulation of gas pipelines across Australia has been at best dismal to date. The light handed regulation policies adopted generally in Australia for gas pipelines has not resulted in a level playing field nor open access to low cost infrastructure

## The Perils of Relying on Forecasts Performed by Consultants

1. Gas supply/demand forecasting by firms such as SKM/MMA must be recognised for what they are and treated accordingly. No forecasting is ever correct and the track record in Eastern Australia is rather appalling. One would have to question why Governments would pay a firm to forecast given their degree of accuracy.
2. The following are relatively recent examples of how wrong forecasts tend to be. The first example is an excerpt from ABARE's Q3 2002 Australian Gas supply & demand to 2019-20:

**“Despite a projected fourfold increase in coal seam methane production between 1999-2000 and 2019-20, existing gas supplies to Queensland will need to be supplemented from alternative sources in the near future.”**

The second example was contained in a 2002 Timor Sea Study for the NT Government performed by ACIL Consulting. This report contained the following scenario of gas supply forecast to the Qld gas market:



Source: ACIL Consulting 2002 Report to NT Government

While this gas supply forecast to the Qld gas market is only 9 years old, the mix of gas supply in the forecast to meet the 2010 gas demand is not even close to what exists today. Neither PNG nor Sunrise gas has entered the Qld gas market and the supplies

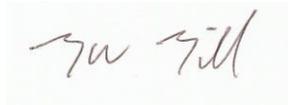
of CSG available are such that gas pipeline expansions to supply Qld CSG to the southern Eastern Australia gas market has materialised as has at least four major

## **Conclusion**

In conclusion, it is recommended that the Office of the Qld Gas Commissioner seek advice whereby it can state clear objectives for the gas industry and establish policy that assists in meeting those objectives. I doubt that the proposed report from SKM/MMA is very useful in that regard. Qld is quickly becoming the leading gas supply region in Eastern Australia and the export of LNG has the potential to become a major industry for Qld. The lack of a comprehensive energy policy has plagued most States and Territories of Australia and Qld should seek to avoid this pitfall. Western Australia serves as a great example of how the gas industry can become seriously distorted and unhealthy without well thought out policy and direction.

IEC appreciates the opportunity to offer these comments and offers them in the spirit of assisting the Qld Gas Commissioner Office in the task of formulating an environment that balances the state and industry interests. We hope that our views as expressed in this submission will be helpful toward that end.

Regards



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