

Department of Industry

Energy White Paper – Green Paper

Santos submission | November 2014

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Executive summary

A proudly Australian company, Santos is a leader of the Australian natural gas industry, with 60 years of gas exploration and production across the nation, including almost 20 years of coal seam gas (CSG) operations in Queensland.

This submission responds to the Energy White Paper – Green Paper. Santos is pleased to note that the Green Paper recognises the significant role of gas in meeting Australia's energy needs and as a driver of prosperity through the development of a world-ranking export industry. Natural gas is critical in powering homes and businesses across Australia and in supporting a lower carbon economy – and CSG is a key part of that story. Over 90 per cent of Queensland's gas now comes from coal seams.

The Australian natural gas industry has \$200 billion worth of new projects under construction, which supported 100,000 jobs in 2013. In Queensland, the US\$18.5 billion Santos GLNG project employed 6,800 people at peak construction. By 2020, Australia's natural gas projects will deliver almost \$13 billion a year in royalties and taxes, while revitalising regional economies and producing energy that releases up to 70 per cent fewer emissions than other fossil fuels.

This is an industry that Australia should be proud of and excited about.

This Green Paper lays the foundations for the successful growth of the natural gas industry, and Santos supports many of its initiatives. This submission provides responses to the goals outlined in the Green Paper, while placing a particular emphasis on the following issues:

- Efficient regulation
- Gas markets
- Future development and innovation

Efficient regulation

Santos is a strong supporter of high regulatory standards, particularly around safety and protecting the environment. However, we also support the government's initiatives to remove unnecessary duplication of regulation between different levels of government. Duplicative regulations add costs and time delays without improving community or environmental outcomes.

In particular, the proposed one-stop-shop would reduce the time and cost of approvals and assist the industry's development. The streamlining of the regulatory requirements of the *Environmental Protection and Biodiversity Conversation Act 1999* (EPBC Act) and the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGGS Act) has been well received by industry and has not compromised environmental outcomes. The removal of the water trigger in the EPBC Act, which directly duplicates existing requirements, would be another worthwhile streamlining opportunity.

Santos also supports the work that has been undertaken to harmonise regulation across jurisdictions. In some areas this is well advanced and we encourage governments to continue working together to bring this to a successful conclusion.

However, while cross-jurisdictional consistency is important, so is regulatory certainty. Some jurisdictions have implemented outcomes-based regimes and kept them stable over time, notably South Australia, Western Australia and increasingly Queensland. This creates a climate that has and will attract further investment. Other jurisdictions have implemented prescriptive regimes and constantly adjusted the regulatory settings, most particularly in New South Wales (NSW) and also in Victoria. This creates a climate that is less likely to attract investment.

Less investment means less supply, fewer jobs, lower royalties and ultimately higher prices for consumers. Santos strongly supports regulatory regimes that are based on peer-reviewed

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science and empirical data. The industry now has years of data, which has been provided to regulators, that demonstrates the safety and sustainability of the natural gas industry. This includes techniques such as hydraulic fracturing, which have been used internationally for over 60 years and by Santos in Australia for over four decades.

Santos will continue to work with all jurisdictions to use this data to implement efficient, effective and predictable regulatory regimes. This will benefit companies, government and the community.

Gas markets

Santos is strongly committed to the domestic market. We have been supplying Australian businesses and households for almost 50 years and intend to continue doing so. We believe that the size of Australia's natural gas resource means that it is not a question of domestic market versus export market. There is sufficient resource to service both if investment in new production can be attracted and is encouraged.

Santos supports much of the Green Paper's analysis of the existing gas market and its proposals for improvements. We agree that there is potential for near term supply constraints in the eastern Australia gas market as demand from the new LNG plants increases. The only long term solution to this challenge is to remove unnecessary impediments to, and encourage the acceleration of, the development of more supply.

Santos also welcomes the Green Paper's strong rejection of domestic gas reservation as a solution to this challenge. Our modelling reflects that of the Bureau of Resource and Energy Economics (BREE), that while some manufacturers might benefit from the imposition of reservation in the short term, the overall Australia economy and Australians would be worse off.

However, increased production costs mean that gas prices are rising and this may present challenges for some customers. The days of cheap, easily accessible gas have largely been exhausted and the resource that is now available is technically more challenging, and thus more expensive, to access. The average cost of drilling an offshore well is now more than \$130 million, with no guarantee that the well will be successful. In the 1980s a typical well in the Cooper Basin would recover over 15bcf of gas, whereas more expensive and more complex wells in the Cooper are now likely to recover less than 3bcf.

Prices will also be impacted by the potential medium-term supply shortfall, particularly in NSW, brought about by delays in developing new gas supply and the increased demand from LNG projects.

Reserving gas will not make it cheaper or quicker to develop and it may discourage the investment needed to make new supply available. Instead, government can foster research and development, innovation, international technology transfer, data sharing and pre-competitive geoscience to help reduce the costs of development. The Green Paper flags a number of initiatives in this regard, which Santos supports.

In terms of the medium term supply shortfall, the best solution is for governments to facilitate the development of new supply in a timely manner. Governments must implement the stable, outcomes-based regulatory regime discussed above to attract the investment necessary to deliver new supply into the market. This will benefit local economies and consumers.

Santos also supports a transparent and competitive Australian gas market.

Competitive markets should not be protected from swings in supply, demand and price volatility. These are the mechanisms by which changes are accommodated and equilibrium is restored. As demand grows and spare production capacity is absorbed, prices rise. This triggers investment in new supply, which in turn exerts downward pressure on prices. The fact that some experience the consequences of that disequilibrium does not connote market failure: it is a necessary precursor for resolving imbalances. Price movements late in the last

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decade drove the biggest domestic gas development phase in WA since the 1980s, including the Santos Reindeer/Devil Creek project.

We note the Green Paper's suggestion of either an Australian Competition and Consumer Commission (ACCC) or Productivity Commission Review into the gas market. While Santos believes that the market is functioning effectively and that higher prices are being driven by factors unrelated to a market failure, we would support a Productivity Commission review. The Productivity Commission would be best placed to make recommendations to tackle the issues that are driving prices, which are costs and regulatory constraints on supply.

Fundamentally, Santos believes that any changes to the market must be subjected to a rigorous cost benefit analysis to ensure that they benefit the economy as a whole and not one part of the economy or industry over another. Only with thorough assessment of the costs and benefits will this outcome be achieved.

Santos' view is that the best way of bringing short term transparency to the gas market is through the trading hubs. The Wallumbilla Gas Supply Hub (GSH), although it only started trading in March 2014, is a good example of transparency in action. Santos is committed to establishing a Moomba GSH in 2016, though it would be prudent to standardise the existing systems before introducing new ones. The spot market in Melbourne bears little resemblance to the short term trading markets in Sydney, Adelaide and Brisbane or the Wallumbilla GSH. These differences increase the barriers to entry by increasing the level of complexity for participants in multiple markets.

Future development and innovation

Once the current wave of investment is completed, Australia will be producing 88 million tonnes per annum (mtpa) of LNG, making us the world's largest producer. However, over the next decade, Asia will demand 190mtpa of new LNG supply. This presents an incredible opportunity for the continuation of the investment, jobs and revenue growth that Australia has recently enjoyed – but there will be competition from North America and East Africa for this next wave of investment. How can Australia succeed?

The key will be learning from the experience of the recent LNG boom to stay ahead. Other countries are still developing their regulatory regimes; Australia's should be settled to provide long term certainty. Other countries are building relationships with Asian customers; Australia already has them, but we need to continue to welcome foreign investment, particularly from national oil companies and utilities. And other countries do not have the skills base that we have built up, but we need to ensure our labour market is flexible and we can tap into global expertise.

Australia must also stay at the forefront of global technological innovation. BREE estimates that of Australia's 820 trillion cubic feet (tcf) of natural gas resource, 80 per cent is unconventional, including CSG and shale. To develop this resource efficiently, we need the support of government and the community and we need to embrace the technologies and skills that have been successful around the world. This will require effective information exchange and technology transfer. Governments and companies also need to continue investing in geoscience, sharing data and collaborating as appropriate.

This Energy White Paper is an opportunity to get the settings right to ensure Australia attracts the next wave of investment to grow Australia's economy, enhance Australia's energy security and help meet the future energy demands of the energy-hungry Asian region.

About this submission

This submission responds directly to each of the goals in the Green Paper that are relevant to Santos' operations. Santos is not involved in electricity supply, so there is no response to the electricity prices section.

About Santos Limited

A proudly Australian company, Santos is a leader of the Australian natural gas industry, with more than 60 years of responsible gas exploration and production across the nation, including almost 20 years of CSG operations in Queensland. Santos has been involved in CSG exploration in the north-west of NSW since 2008 and is the only company with significant CSG interests in both Queensland and NSW. Since its establishment as an oil and gas company in South Australia in 1954, Santos has a long track record of working productively with rural communities.

In Australia, Santos has operations in every major petroleum province and has the largest exploration portfolio by area of any company. The company has a strong identity in Western Australia, and is one of the largest producers of domestic gas and a major oil and condensate producer. Santos also has an exploration-led Asian portfolio, with a focus on three core countries: Indonesia, Vietnam and Papua New Guinea.

Santos is one of Australia's largest domestic gas producers, supplying natural gas to all mainland Australian states and territories, ethane to Sydney, and oil and other liquids to domestic and international customers.

The Cooper Basin oil and gas field in north-eastern South Australia and south-west Queensland, which Santos and its joint venture partners discovered and developed, is one of Australia's largest onshore resources projects. More than \$8 billion has been invested to date in the Basin.

Attracting energy resources investment

Goal:

Streamline environmental and other approvals to create more certain, timely and accessible approvals. Better regulation will lower costs to business, boost productivity and enhance Australia's international competitiveness.

Santos supports the government's efforts to create a favourable investment environment and in particular the emphasis on providing policy stability and certainty to maximize Australia's investment attractiveness. Santos supports high regulatory standards, but this is not achieved through regulatory duplication between different levels of government.

Santos welcomes the benefits of streamlined approvals through the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA). The proposal to further delegate authority to NOPSEMA from states and territories has the potential to further reduce delays and duplication, provided NOPSEMA is adequately resourced for the task.

Santos also strongly supports the government's commitment to create a one-stop-shop for approvals by delegating powers under the EPBC Act to states and territories. This would not cause any diminution in environmental outcomes as projects would still need to meet the requirements of the EPBC Act. It would simply mean that the same set of information is not assessed by two different groups of bureaucrats, creating unnecessary time delays and additional costs.

The government should also look to remove the water trigger in the EPBC Act, which was introduced by the former government. Santos is not opposed to the potential water impacts of resource projects being assessed. The water impacts of the Santos GLNG project in Queensland were thoroughly assessed by Queensland and Australian government regulators and the results of Santos' water monitoring are publicly available at www.santoswaterportal.com.au.

However, the water trigger is an example of federal regulation directly duplicating existing state and territory requirements. As such, it will create additional costs and potential time delays without adding anything to the rigorous scientific assessments that are already undertaken when considering proposals for major projects.

Santos also notes the proposal in the Green Paper for the Australian Government to provide technical and administrative support to state and territory governments to progress projects that strategically bolster supply. There may be benefits in this approach, however Santos would be concerned about Australian Government involvement in existing state and territory approval processes that are working well.

Ultimately, jurisdictions are responsible for the regulatory systems that they implement. Jurisdictions that implement outcomes-based regulatory systems and keep them stable over time will attract investment, employment and royalties. Jurisdictions that are prescriptive and create uncertainty will not, leading to less supply and higher prices for consumers. While the Australian Government can assist, in the end it is up to each jurisdiction to choose which path it wishes to pursue.

A particularly positive example is the South Australian Government's *Roadmap for Unconventional Gas*, which brought together stakeholders to plot a course for the development of the unconventional gas industry in that state. Queensland has followed this model in planning for the development of a shale gas industry. These jurisdictions show what can be done when government, industry and the community work together to take advantage of the opportunities that come from further gas industry development.

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Finally, Santos notes that the Australian Government has commenced a review of the offshore oil and gas resource management framework applying in Commonwealth waters and will make a separate submission to that review.

Goal:

Drive better skills and workforce productivity, including access to skilled migration so industry has access to the skills it needs for timely and cost-effective projects, which will encourage future investment.

Santos welcomes the government's initiatives to improve labour productivity and skills. A productive, skilled workforce is critical to the continued growth of the oil and gas industry. Santos believes that skills shortages may be addressed by both government and industry in the following ways:

- Government providing greater access to flexible training funding to help offset the high cost of training and the increasing requirement for workers to be trained in new technology. Funding needs to cover training in courses which provide certificate IV and above qualifications. This training fund could also include the development of training materials to encourage industry collaboration and participation in knowledge sharing, for example, an LNG training package.
- Government developing employment and training programs for Aboriginal and Torres Strait Islander people that are developed in consultation with industry, are demand driven and respond to short, medium and long-term industry labour needs. A necessity is timely and adequately resourced pre-employment programs to assist long-term unemployed people to join the workforce, or to prepare new people to join the energy sector workforce. This will increase local employment opportunities and reduce industry's reliance on non-resident workers.
- Greater support is needed from government to build TAFE capability, including flexibility in industrial relations to enable TAFEs and other registered training organisations to attract and retain highly skilled staff.
- Initiatives involving industry and education to increase female participation in trades and tertiary education required for these roles.

These initiatives, along with those identified in the Green Paper, will assist in delivering the skills and flexibility needed for our industry to succeed.

Goal:

Create supply chain opportunities for local small-to-medium enterprises and create more Indigenous employment opportunities in the energy resources sector.

As noted above, Santos welcomes the government's support for Indigenous engagement in the oil and gas industry through the creation of employment and business opportunities resulting from our activities. This is a strong focus for Santos. Our Aboriginal Engagement Policy is supported by internal plans for increasing the number of employees in Santos and in Santos contractor companies. A number of Aboriginal businesses have secured tenders in civil construction, service delivery, cultural heritage and professional services and Santos has an ongoing strategy through its own and its contractor supply chain to provide further opportunity.

Santos also notes the government's intention to encourage investment and local business development. It will be important that any initiatives in this regard are implemented in close cooperation with industry. In Queensland, the various CSG proponents have worked together

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to make it easier for local suppliers to bid competitively for work. The experience in Queensland and elsewhere can be used as a model for future engagement of local industry in major projects.

Goal:

Enhance pre-competitive geoscience and improve access to environmental data to lower costs and exploration risk, reduce duplication and regulatory burden, improve community engagement, and better-inform decision-making and environmental management.

Santos strongly supports regulatory regimes that are based on peer-reviewed science and empirical data. The industry now has years of data, which has been provided to regulators, that demonstrates the safety and sustainability of the natural gas industry. This includes techniques such as hydraulic fracturing, which have been used internationally for over 60 years and by Santos in Australia for over four decades.

Santos welcomes initiatives to invest further in data collection, collation, sharing and open release, where this does not create competition issues or breach commercial in confidence requirements. Further pre-competitive work by Geoscience Australia would be particularly welcome, and government already holds a large amount of data that could be made publicly available.

Santos is proud to have led the industry when it comes to the public release of water data. The results of Santos' water monitoring program are freely available online at www.santoswaterportal.com.au. It is particularly pleasing that the monitoring results are conforming to Santos' modelling of predicted water impacts.

Goal:

Identify and address infrastructure bottlenecks so industry has access certainty, reducing infrastructure duplication and cost.

Santos notes the government's proposed significant investments in improved transport infrastructure. The growth of the oil and gas industry in some regions has placed pressure on transport networks and investment from government, alongside industry contributions, is important to improve safety and reliability.

Goal:

Promote Australia's energy products, technology and services exports to increase the export earnings of Australia's energy resources, products and skills.

Santos welcomes the government's work to promote Australia's energy exports. The establishment of a Consulate-General in Houston, United States of America, reflects the strong partnerships that have been built between the Australian and United States oil and gas industries. The free trade agreements with Japan and Korea are also particularly welcome as these are key markets for Australia's energy exports. Kogas of Korea is already a significant investor in, and customer for, the Santos GLNG project.

Once the current wave of investment is completed, Australia will be producing 88 million tonnes per annum (mtpa) of LNG, making us the world's largest producer. However, over the next decade, Asia will demand 190mtpa of new LNG supply. This presents an incredible opportunity for the continuation of the investment, jobs and revenue growth that Australia has recently enjoyed – but there will be competition from North America and East Africa for this next wave of investment. How can Australia succeed?

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The key will be learning from the experience of the recent LNG boom to stay ahead. Other countries are still developing their regulatory regimes; Australia's should be settled to provide long term certainty. Other countries are building relationships with Asian customers; Australia already has them, but we need to continue to welcome foreign investment, particularly from national oil companies and utilities. And other countries do not have the skills base that we have built up, but we need to ensure our labour market is flexible and we can tap into global expertise.

Australia must also stay at the forefront of global technological innovation. BREE estimates that of Australia's 820 trillion cubic feet (tcf) of natural gas resource, 80 per cent is unconventional, including CSG and shale. To develop this resource efficiently, we need the support of government and the community and we need to embrace the technologies and skills that have been successfully around the world. This will require effective information exchange and technology transfer. Governments and companies also need to continue investing in geoscience, sharing data and collaborating as appropriate.

Santos notes the government's commitment to implementing an Industry, Innovation and Competitiveness Agenda and looks forward to engaging in its development.

Building gas supply and improving market operation

Santos is strongly committed to the domestic market. We have been supplying Australian businesses and households for almost 50 years and intend to continue doing so. We believe that the size of Australia's natural gas resource means that it is not a question of domestic market versus export market. There is sufficient resource to service both if investment in new production can be attracted and is encouraged.

Santos supports much of the Green Paper's analysis of the existing gas market and its proposals for improvements. We agree that there is potential for near term supply constraints in the eastern Australia gas market as demand from the new LNG plants increases. The only long term solution to this challenge is to remove unnecessary impediments to, and encourage the acceleration of, the development of more supply.

Santos also welcomes the Green Paper's strong rejection of domestic gas reservation as a solution to this challenge. Our modelling reflects that of the BREE, that while some manufacturers might benefit from the imposition of reservation in the short term, the overall Australia economy and Australians would be worse off.

However, increased production costs mean that gas prices are rising and this may present challenges for some customers. The days of cheap, easily accessible gas have largely been exhausted and the resource that is now available is technically more challenging, and thus more expensive, to access. The average cost of drilling an offshore well is now more than \$130 million, with no guarantee that the well will be successful. In the 1980s a typical well in the Cooper Basin would recover over 15bcf of gas, whereas more expensive and more complex wells in the Cooper are now likely to recover less than 3bcf.

Prices will also be impacted by the potential medium-term supply shortfall, particularly in NSW, brought about by delays in developing new gas supply and the increased demand from LNG projects.

It is also true that eastern Australian gas prices are increasingly linked to the world price of gas, with new longer term domestic wholesale contracts being signed with oil linking provisions, which match the LNG pricing structure. These oil-linked contracts support further investment and potentially help unlock substantial resources. Without this linkage, additional development would not be economic.

Reserving gas will not make it cheaper or quicker to develop and it may discourage the investment needed to make new supply available.

In Western Australia (WA), where Santos is exclusively a domestic gas producer, the state's reservation policy is a potential barrier to further domestic gas exploration and development, despite the company's strong desire to access more of the market. The policy delivers a level of uncertainty that does not exist in a normal market, obscuring a clear line of sight to what that market looks like. Santos does not want to run the risk of making an investment in domestic gas development only to have, a short time later, an LNG producer's domestic gas reservation obligation crystallise and undermine our investment case. This also means, potentially, smaller offshore gas fields ideally suited for the domestic market, fields not viable for LNG, are at risk of sitting, forever, undeveloped. The market distortion of reservation also threatens the development of WA's significant onshore reserves.

Instead of reservation, there are practical things government can do. Fostering research and development, innovation, international technology transfer, data sharing and pre-competitive geoscience will help to reduce the costs of development. The Green Paper flags a number of initiatives in this regard, which Santos supports.

Santos is not alone in its opposition to gas reservation policies, multiple reports and comments have been submitted on this, including the Federal Government's own comments in the Green Paper.

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Two other such comments have come from the Chairman of the Australian Competition and Consumer Commission (ACCC), Rod Sims, who noted in a speech on 13 October 2014:

...it is important that we not seek a 'quick fix' that distorts the competitive operation of gas markets. Forms of gas reservation, for example, distort market signals, and the development of new gas supply.

As well as the Western Australian Economic Regulation Authority (WAERA), in their report "Inquiry into Microeconomic Reform in Western Australia" has recommended the domestic gas reservation be rescinded as soon as practicable as it has the following negative consequences:

- Reduces the incentive for investors to invest in the gas industry in the longer term, reducing future levels of gas available for domestic or international use.
- Perpetuates the existence of industries that may not have a comparative advantage in WA at the expense of investment in other industries.
- Inhibits dynamic efficiency and technological innovation. For example, the policy artificially depresses domestic prices, which discourages domestic gas users from investing in technologies to lower or substitute their gas consumption.
- Increases the reliance on subsidised gas prices, leading to over consumption of the resource

In terms of the medium term supply shortfall, the best solution is for governments to facilitate the development of new supply in a timely manner. Governments must implement the stable, outcomes-based regulatory regime discussed above to attract the investment necessary to deliver new supply into the market. This will benefit local economies and consumers.

Goal:

Bring on new gas supply to avoid potential supply shortages so that domestic gas users do not pay higher prices than necessary.

Santos agrees that given the scale of LNG projects compared to the domestic market, even small deviations from schedule could have short term implications for the eastern market. Upstream delays or underperformance will cause LNG proponents to compete for extra supplies in the domestic market.

As noted above and in the Green Paper, the best solution to this challenge is to facilitate the timely development of Australia's abundant gas resource. Removal of regulatory barriers to development will also lower the costs of production, meaning supply will be more plentiful and affordable.

The Green Paper flags the development of a strategy to support the responsible development of the CSG industry and other unconventional gas resources, in consultation with state and territory governments. Santos is cautious about this initiative.

In Queensland, Santos has built strong community relationships based on decades of safe, sustainable operations in the Roma region. Any national strategy must draw on this experience, and the experience of other stakeholders. It would not help bring on further supply if the approach of states such as NSW and Victoria was applied to jurisdictions such as South Australia and Queensland. Consistency is valuable, but so is certainty, and the positive relationships fostered in South Australia and Queensland should not be compromised because NSW and Victoria have not supported the development of their domestic industry.

If a national strategy is developed, it will be important to have industry and other stakeholders around the table from the beginning and to ensure that the potential benefits outweigh the risks of disruption in jurisdictions where development is already proceeding successfully.

Goal:

Improve the availability and quality of market information to improve market transparency and competition so gas sellers and buyers have more certainty about the availability of supply and pricing.

Santos supports a transparent and competitive Australian gas market. We also note the concerns that have been expressed by some about the increasing cost of gas. As noted above, increasing costs of development and regulatory barriers to development are the most significant factors driving prices.

Competitive markets should not be protected from swings in supply, demand and price volatility. These are the mechanisms by which changes are accommodated and equilibrium is restored. As demand grows and spare production capacity is absorbed, prices rise. This triggers investment in new supply, which in turn exerts downward pressure on prices. The fact that some experience the consequences of that disequilibrium does not connote market failure: it is a necessary precursor for resolving imbalances. Price movements late in the last decade drove the biggest domestic gas development phase in WA since the 1980s, including the Santos Reindeer/Devil Creek project.

Santos also welcomes the Green Paper's recognition that gas prices are only one challenge for manufacturing. The high Australian dollar, comparatively high labour costs, rising input costs and import competition are also significant factors and interfering in the gas market will do nothing to change these realities.

The Green Paper argues that gas sellers have more market information and therefore more power than buyers. Santos would argue that while gas producers have information on their own contracts, we do not have any additional knowledge on the terms of bilateral contracts between our competitors and their customers. Customers have the same opportunity to access public available information on these contracts as producers do, for example by reviewing Australian Stock Exchanges releases or consultant estimates.

The Green Paper also argues that the lack of access to upstream drilling rates and well performance and the uncertainty around the future availability of gas makes price discovery difficult. While it is correct that drilling rates and well performance determine supply, and variations in supply/demand will influence gas prices, the uncertainty and risk in field performance is inherent to the gas business. Producers invest capital against this risk, and customers are welcome to invest in upstream development. Producers have a view on likely well performance, but we have no additional insight to the supply outlook for competing gas projects compared to our customers.

We also note that the Green Paper appears to express some concern about bilateral contracts and the apparent lack of transparency of these contracts. However, in Santos' view, bilateral contracts are effective in promoting gas supply, as the security of a bilateral contract underpins the confidence to invest in development and often assists to finance the project. The bilateral gas sales agreement with Sino Iron (a subsidiary of CITIC Pacific Limited) as a foundation customer was a prerequisite to the development of the Reindeer/Devil Creek project and delivered the security and certainty needed to make the \$1.1 billion investment.

It is also worth noting that price represents only a part of the total contract picture; price transparency will not tell the whole story. Gas prices determined in a competitive market are just one of a number of inter-related terms and conditions forming part of a negotiated contract between a buyer and a seller. It is inappropriate therefore to compare prices alone without considering the other terms and conditions, and just as inappropriate to infer that a higher price for one short-term, small volume contract, for example, is representative of all contracts.

There also appear to be some concerns about the LNG interests of some gas producers, such as Santos and Origin. However, manufacturers have the ability to vertically integrate by moving upstream in the same way that Santos and Origin have vertically integrated by

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moving downstream into LNG. Indeed, many of the customers of the LNG projects are also equity partners in those projects.

We note the Green Paper's suggestion of either an Australian Competition and Consumer Commission (ACCC) or Productivity Commission Review into the gas market. While Santos believes that the market is functioning effectively and that higher prices are being driven by factors unrelated to a market failure, we would support a Productivity Commission review. The Productivity Commission would be best placed to make recommendations to tackle the issues that are driving prices, which are costs and regulatory constraints on supply.

This view was supported by the Victorian Gas Market Taskforce, which recommended the Productivity Commission conduct a wide ranging review of the eastern gas market with the objective of increasing competition, liquidity and transparency, concentrating on market failures and barriers to the development of an efficient market.

Fundamentally, Santos believes that any changes to the market must be subjected to a rigorous cost benefit analysis to ensure that they benefit the economy as a whole and not one part of the economy or industry over another. Only with thorough assessment of the costs and benefits will this outcome be achieved.

Goal:

Reform gas markets to create more flexible and transparent marketing arrangements.

Santos' view is that the best way of bringing short term transparency to the gas market is through the trading hubs. The Wallumbilla Gas Supply Hub (GSH), although it only started trading in March 2014, is a good example of transparency in action. Participants can trade gas on a relatively simple and open system and the daily hub price can be tracked. Queensland customers prepared to take the price risk are already buying gas from the Wallumbilla GSH for the short term. Santos was an active participant in establishment of this hub and once participants are comfortable with the structure, we believe it could be the template for further hubs in the eastern market.

Santos is committed to establishing a Moomba GSH in 2016, though it would be prudent to standardise the existing systems before introducing new ones. The spot market in Melbourne bears little resemblance to the short term trading markets in Sydney, Adelaide and Brisbane or the Wallumbilla GSH. These differences increase the barriers to entry by increasing the level of complexity for participants in multiple markets.

However, supply hubs alone will not enable a competitive market if a company that buys excess supply at one of the hubs is unable to deliver it to their market of choice. To enable this, Santos agrees that a market for available capacity should be introduced, whereby companies that own pipeline capacity can choose to sell any available capacity in a traded market place. Santos also supports transparency in pipeline markets that interface with the domestic market, so capacity can be traded more actively.

Security, innovation and energy productivity

Goal:

Maintain secure, competitively-priced and reliable energy supplies so consumers have access to adequate and reliable energy.

Santos supports this goal and notes that measures to achieve this outcome in relation to natural gas are discussed extensively in Chapters 1 and 3 and have been address elsewhere in this submission.

Goal:

Improve energy productivity to increase domestic security and reduce greenhouse gas emissions intensity.

Most of the initiatives discussed in this section relate to energy consumers and are not relevant to Santos.

Goal:

Develop a better 'outlook' capacity so government is better prepared to respond to supply issues, to global market opportunities and to invest strategically in research. Industry will have access to better information, giving more certainty and encouraging investment.

Santos supports the government's efforts to better coordinate energy sector reporting and consolidate findings in regular 'outlooks'.

Goal:

Keep the range of energy options technology neutral by tackling regulatory barriers and making best use of research investments so Australia is able to choose from the broadest possible range of energy options. This will strengthen Australia's energy security.

Santos welcomes the Green Paper's recognition that natural gas is less emissions-intensive than other fossil fuels. Santos believes that there are enormous economic and greenhouse benefits that can flow from a prosperous and vibrant upstream gas industry. While not directly covered in the Green Paper, Santos will continue to work with the government on the development of the Direct Action Plan and the review of the Renewable Energy Target.

This section notes the development of the National Harmonised Framework for Natural Gas from Coal Seams. As noted above, Santos supports this work to harmonise regulation across jurisdictions. In some areas this is well advanced and we encourage governments to continue working together to bring this to a successful conclusion.

However, while cross-jurisdictional consistency is important, so is regulatory certainty. Some jurisdictions have implemented outcomes-based regimes and kept them stable over time, notably South Australia, Western Australian and increasingly Queensland. This creates a climate that has and will attract further investment. Other jurisdictions have implemented prescriptive regimes and constantly adjusted the regulatory settings, most particularly in NSW and Victoria. This creates a climate that is less likely to attract investment.

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Less investment means less supply, fewer jobs, lower royalties and ultimately higher prices for consumers. Santos strongly supports regulatory regimes that are based on peer-reviewed science and empirical data. The industry now has years of data, which has been provided to regulators, that demonstrates the safety and sustainability of the natural gas industry. This includes techniques such as hydraulic fracturing, which have been used internationally for over 60 years and by Santos in Australia for over four decades.

Santos will continue to work with all jurisdictions to use this data to implement efficient, effective and predictable regulatory regimes. This will benefit companies, government and the community.

Goal:

Look for relevant international technology engagement to benefit Australian industries from international experience.

Santos supports all initiatives to encourage international technology engagement. This is a priority for Santos and we have been building links with the oil and gas industry in the United States to learn from their shale gas experience as the Australian industry begins to develop. Further information in relation to this issue is provided above in the response to Chapter 1.