Australian Government
Department of Resources, Energy and Tourism

FACT SHEET

NATIONAL ENERGY SECURITY ASSESSMENT 2011

The 2011 *National Energy Security Assessment* (NESA) considers the main factors posing challenges to the adequate, reliable and competitive delivery of energy in each of Australia's liquid fuel, natural gas and electricity sectors.

The 2011 NESA is an important input into the development of government policy through the Energy White Paper process.

KEY MESSAGES

- Energy security remains a key priority for the Australian Government. Australia is a country well endowed with energy resources, but faces a period of unprecedented change as our liquid fuels, natural gas and electricity sectors invest to meet future energy demands while transitioning to reduce greenhouse gas emissions.
- The 2011 NESA updates the previous 2009 NESA and provides an important input to further assist the national policy development process in our energy sector.
- In the Australian context, energy security is defined as the adequate, reliable and competitive supply of energy to support the functioning of the economy and social development.
- Australia's overall energy security situation is expected to remain adequate and reliable, with energy security ratings similar to those in the 2009 NESA, but increasingly will be shaped by the strength of investment going forward and the price of energy, which are both being materially influenced by global trends.
- The ability to bring on appropriately sized and timed investment in energy infrastructure in the decades ahead will largely determine our level of future energy security; and highlights the importance of an appropriate investment environment to attract private sector capital to deliver necessary investment.
- However a number of emerging issues are arising that could all have implications for maintaining our energy security in the medium to long term. These issues include significant investment required as we seek to maintain reliability and transition to reduce greenhouse gas emissions, emerging gas market developments, and energy price pressures.
- For the first time, the assessment also includes hypothetical 'shock' scenarios to inform how our energy security may change in the face of supply chain disruptions. Major supply disruptions in imported liquid fuels from Singapore, pipeline gas into Brisbane, and the largest electricity generator in Victoria were extensively modelled.
- The 2011 NESA analysis found that the supply disruptions explored under the hypothetical 'shock' scenarios continue to highlight the importance of supply diversity, interconnection and efficient markets in supporting a robust energy security environment for Australia.

SECTOR FINDINGS

Liquid fuels

Australia's liquid fuels energy security is assessed as ***high trending to moderate*** in the long term, as we have continued access to highly adequate and reliable supplies of liquid fuels at price levels that are manageable within the broader economy.

The moderate assessment rating in the long term recognises a likely trend of high crude oil prices driven by increasing global demand and an increased reliance on more expensive sources of supply; the significant global investment challenge required to meet rising demand; and the continued risks of geopolitical uncertainty in key oil-producing countries.

Natural gas

Australia's natural gas energy security overall remains ***moderate*** over the assessment period, reflecting a rapidly developing market – particularly driven by the growth of coal seam gas production – with distinct regional differences and challenges within Australia. The moderate assessment recognises the mixed influences on gas security brought about by the development of the coal seam gas to LNG export industry on the east coast, due to commence from around the middle of this decade. While this has increased the identified gas reserve levels in Australia, it also introduces a degree of competitive tension between the domestic and LNG export markets, and is likely to affect domestic gas prices in future years.

The moderate assessment also reflects the evolving supply–demand balance in Western Australia. While increasing demand has placed upward pressure on prices, the market is responding with increased supply from a greater diversity of sources that are planned to come on line in the short to medium term. Despite this, there is a risk that some downstream projects may be challenged in sourcing gas at historical prices, and this could lower the gas security rating.

Electricity

Australia's electricity energy security overall remains ***moderate*** over the assessment period. The electricity sector faces significant challenges during the assessment period, most notably the significant investment task required to maintain reliability while transforming the sector to reduce greenhouse gas emissions, with this investment driving associated price pressures. Market maturity and ongoing market reforms together with assistance mechanisms associated with the Australian Government's Clean Energy Future package, should allow the market to respond appropriately and flexibly to such challenges.

SHOCK SCENARIOS

The 2011 National Energy Security Assessment (NESA) examined Australia's energy security resilience by modelling a set of physical infrastructure and supply chain 'shocks' for each of the three sectors – liquid fuels, natural gas and electricity.

The scenarios are hypothetical and were designed to test the response arrangements and resilience of Australia's energy system. They are not assessments of actual infrastructure reliability or probability of failure, but rather apply a theoretical disruption in the system for the purposes of informing the NESA.

Liquid fuels – a major interruption to Singapore's ability to trade petroleum products with Australia

- This scenario was based on the temporary closure of shipping to and from Singapore and shutdown of Singapore's three major refineries.
- The interruption was modelled to last for around 30 days, and impacts were assessed under current conditions and then under the tighter global market conditions forecast for 2015-16.
- The scenario demonstrated that the global market and international supply chain could provide Australia with adequate and reliable supplies, albeit at higher prices.
- An immediate interruption to the Singaporean supply chain is estimated to increase global product prices by around 18 per cent on average in the first month, while prices decline somewhat from this initial spike in the second and third months as alternative supplies bridge the shortfall.
- Under the NESA methodology, the main impact on Australia's energy security would be on competitiveness due to the increase in global prices for petroleum products.
- Adequacy and reliability over the scenario period would be maintained through alternative supplies becoming available from other regional refineries, access to stocks in Australia and those already on water, and the ability to acquire petroleum products from the Asia-Pacific region that would normally be sold to other regions.

Natural gas – a major reduction in the capacity of the Roma to Brisbane natural gas pipeline

- This scenario involved a hypothetical reduction in the capacity of the Roma to Brisbane pipeline caused by an unspecified supply disruption. This pipeline is the only source of pipeline gas into Brisbane.
- The event was modelled to last for a period of 14 days and was assessed under current conditions and for 2015-16.
- The modelling results showed how supply disruption would impact a range of pipeline gas users (power generators and other consumers), and the importance of diversified supply in maintaining the energy security of both gas and electricity customers.
- The scenario found no issues for security of electricity supply caused by the curtailment of gas supplies on the pipeline as most generators had alternative gas supply options. Consequently, the overall impact on electricity prices was relatively minimal with the exception of the peak demand days in summer.
- For gas consumers, significant reduction in capacity on the pipeline results in either voluntary or involuntary curtailment of gas load. Voluntary curtailment is expected to be facilitated through the gas Short-Term Trading Market that was established in Brisbane on 1 December 2011. This will provide an opportunity for voluntary gas curtailment by those gas users who can curtail gas at least cost, helping to minimise impacts for other users.

Electricity – the sudden exit of the Loy Yang A power station from the National Electricity Market

- This scenario examined the impact of an unexpected exit from the market by the largest electricity generator in Victoria. Loy Yang A has a winter maximum capacity of 2,270 megawatts (MW).
- Two possibilities were examined: a 14-day temporary outage and a permanent exit. The modelling examined both non-peak and peak seasonal periods under current conditions and for 2015-16.
- The modelling indicated that the National Electricity Market (NEM) could be significantly challenged by such an event, and would place a greater reliance on the capacity of interconnectors in meeting demand.

- The illustrative outage of a major baseload power station results in high price events and higher-cost generation being required to meet demand, particularly on the high demand peak days, and is likely to breach the reliability standard[1] in Victoria, South Australia, and possibly New South Wales.
- Further increase in the likelihood of a reduction in reliability risks may emerge if a significant transmission outage should occur during the first two years after the unexpected and permanent exit of a large Victorian baseload power station (before investment can respond). This scenario illustrates the importance of the Government's energy security package associated with the introduction of the carbon price.
- The scenario analysis also shows that there is likely to be sufficient gas infrastructure capacity in the NEM region to manage the permanent exit or temporary outage of a large Victorian baseload power station – although there would be some short-term capacity constraints affecting particular gas infrastructure during peak gas demand periods in winter. However, this would not result in any significant reduction in security of electricity supply, but would likely increase the cost of meeting electricity demand.

BACKGROUND

The Australian Government has updated the National Energy Security Assessment (NESA) to consider the key strategic energy security trends and risks facing Australia currently and over the short, medium and long terms, covering the period 2011 to 2035.

The 2011 NESA continues and updates a process commenced with the inaugural 2009 NESA.

The NESA analysis considers the main factors posing challenges to the adequate, reliable and competitive delivery of energy in each of Australia's liquid fuel, natural gas and electricity sectors.

The 2011 NESA provides energy security ratings for each sector consistent with the previous NESA: ***High energy security*** is when the economic and social needs of Australia are being met; ***Moderate energy security*** is when the economic and social needs of Australia are being met, while there could be a number of emerging issues that will need to be addressed to maintain this level of security; and ***Low energy security*** is when the economic and social needs of Australia are not being – or might not be – met.

The 2011 NESA was one of the key inputs to the draft Energy White Paper, and the final White Paper will be released in 2012.

'Shock' scenarios

ACIL Tasman (liquid fuels) and Frontier Economics (natural gas and electricity) were commissioned to undertake modelling for three 'shock' scenarios as part of the 2011 NESA.

The 'shock' scenarios are intended to analyse supply chain impacts under current market conditions and those publicly forecast for 2015-16. While the NESA itself provides an assessment, these scenarios add context to what may materially change the assessment should a supply chain or physical disruption or threat occur. The scenarios seek to examine the impact on the adequacy, reliability and/or competitiveness of supply. They are not an assessment of a particular asset's resilience or a prediction of the likelihood of the disruption event.

Copies of the 2011 NESA and the three shock scenario reports are available on the Department of Resources, Energy and Tourism website, www.ret.gov.au.

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[1] The reliability standard provides a measurement against which to assess supply and demand conditions. The standard is the expected amount of energy at risk of not being delivered to customers due to a lack of available capacity.