Liquid fuel security is a topic of long-standing debate in Australia. It has recently been raised in relation to the Government’s plan to address non-compliance with Australia’s international obligations. During May 2018, there was also confirmation that the third National Energy Security Assessment (NESA) would be completed by mid-2019. One component of the NESA is an assessment of liquid fuel security that is to be completed by the end of 2018. The Parliamentary Joint Committee on Intelligence and Security has also recommended that measures are taken to ensure a continuous fuel supply to meet national security priorities.

Australia, as a member of the International Energy Agency (IEA), is a party to the International Energy Program and treaty that requires all member states maintain oil stocks equivalent to at least 90 days of the previous year’s daily net oil imports. The purpose of this requirement is to ensure that oil-importing countries can withstand disruptions to supply by releasing stockpiled oil.

At the time of joining the IEA in 1979, Australia was a net exporter of oil and was therefore exempt from the stockpiling requirement. Since then, Australia’s oil production has peaked and is currently in decline. Combined with a reduction in oil refining capacity and an increasing reliance on imported oil products, Australia became non-compliant with the stockholding obligation in 2012.

In contrast with many other IEA members, Australia has not maintained a public (or government-owned) stockpile of oil and has instead relied on commercially held stocks. As noted below, this may soon change. The Government has committed to develop a strategy to return to compliance by 2026; however, the full strategy is still being developed. Part of the strategy has involved changes to key legislation and the introduction of new reporting requirements for liquid fuels.

Many of the issues around liquid fuel security are an ongoing challenge. The first oil shock in 1973–74 helped precipitate the foundation of the IEA in 1974. Immediately following the second oil shock in 1979, Australia’s National Energy Advisory Committee recommended that:

[w]ith regard to supply insecurity … Consideration be given as a matter of high priority to the specific form and location of strategic stockpiles[,] the timing of their purchase, the methods of their release and their relationship to those required as a result of Australia’s IEA membership. Methods of financing or of providing incentives for such stockholdings should also be examined.
During 1986, the Energy 2000 Policy Review for petroleum recognised that:

> with a growing dependence on imports, Australia would also become more vulnerable to supply disruptions. The disadvantages of this vulnerability will never be easy to quantify and consequently it will be extremely difficult for Governments to decide what level of insurance against disruption would be appropriate.

This quick guide contains a list of key resources to provide context and assist understanding of Australia’s liquid fuel security.

**National resources**

**Key legislation**

- The Liquid Fuels Emergency Act 1984 provides the legislative basis for contingency planning and the management of liquid fuel emergencies in Australia, including the power to control industry-held stocks, production by Australian refineries and fuel sales. This Act was recently amended through the Liquid Fuel Emergency Amendment Act 2017 to enable the government to enter into commercial oil stock ticket contracts (see this Bills Digest).
  
  – An agreement was signed on 13 June 2018 to enable oil stocks held in the Netherlands under oil stock reservation contracts (‘tickets’) to be counted towards Australia’s 90 day IEA obligation. Details of this treaty with the Netherlands are available on the Joint Standing Committee on Treaties webpage and the associated National Interest Analysis.

- Mandatory reporting requirements for the production and stockholdings of liquid fuels, including petroleum, biofuels and other products, commenced from 1 January 2018 under the Petroleum and Other Fuels Reporting Act 2017 and associated Petroleum and Other Fuels Reporting Rules 2017. The associated Bills Digest provides additional information.

**Department of the Environment and Energy**

- The Australian Petroleum Statistics is a monthly report that provides data on ‘petroleum products, exports and imports of petroleum products and crude oil, production of crude oil and condensate, refinery input and output, and stocks of petroleum products’. These statistics are collected at the national and state level.

- The mandatory reporting of selected fuel data commenced on 1 January 2018. These statistics will be incorporated into the Australian Petroleum Statistics.

- The Australian Energy Statistics provides the overall production, consumption and trade statistics for energy in Australia, including the transport sector.

- The Department of the Environment and Energy supports the Energy Sector Group of the Trusted Information Sharing Network (TISN) for Critical Infrastructure Resilience. This group shares information on ‘security issues and practical measures to improve the resilience of energy infrastructure to all hazards’.

- The Department of the Environment and Energy is responsible for the Liquid Fuels Emergency Act 1984 and the government response to any national liquid fuel emergency, including the National Oil Supplies Emergency Committee (NOSEC; within the COAG Energy Council) and the National Liquid Fuel Emergency Response Plan that details the agreement between the Commonwealth and the states and territories relating to the declaration and management of any liquid fuel emergency.
**Department of Industry, Innovation and Science**

- The [Resources and Energy Quarterly](#) from the Office of the Chief Economist provides details on both global and domestic oil production, consumption and forecasts. The Office also published the [Australian Energy Projections to 2049–50](#) (last updated November 2014) with longer-term projections of energy consumption, production and trade for economic sectors, including transport.

- The [Australian Liquid Fuels Technology Assessment](#) (October 2014) provides an overview of current and potential liquid fuel production technologies, as well as levelised cost estimates to 2050. In addition to an overview of 18 different production technologies, information is provided on the potential of the technology in the Australian context, and barriers and opportunities associated with each technology.

- The Department of Industry, Innovation and Science supports the development and investment in Australia's petroleum resources (within the ‘upstream petroleum’ sector).

- The [Offshore Petroleum Exploration Acreage Release](#) is used by the government to promote petroleum exploration in offshore waters. The [overview](#) of this program provides details on the roles, requirements and regulatory framework.

**Geoscience Australia**

- The [Australian Energy Resources Assessment](#) (last updated in 2018), provides details on Australia’s identified and prospective oil resources, production statistics and outlook. Several maps are available that provide summaries for liquid petroleum resources across Australia.

- General information on Australia’s [petroleum resources](#).

- A map of the [major petroleum resources and pipelines](#).

**Major industry representatives**

- The [Australian Institute of Petroleum](#) (AIP) represents the downstream petroleum industry that is involved in the refining, wholesaling and retailing of petroleum products. Details on the state of the industry and recent developments in the region are provided in their latest [Downstream Petroleum report](#) (2017). Several other resources and factsheets, including those on Australia refineries, fuel pricing and supply security and reliability are available on the AIP [website](#).

- The [Australian Petroleum Production & Exploration Association](#) (APPEA) represents Australia’s oil and gas exploration and production industry.

- The [Australian Pipelines & Gas Association](#) (APGA) represents the pipeline infrastructure sector, particularly gas pipelines, but also oil.

- The [National Roads and Motorists’ Association](#) (NRMA) commissioned Retired Air Vice Marshall John Blackburn to provide advice on Australia’s fuel security in 2013 and these reports formed part of the NRMA’s submission to the 2015 Senate inquiry (see below). The reports can be found as the two attachments to [Submission 18](#).

**Previous inquiries and reports**

The Senate Standing Committee on Rural and Regional Affairs and Transport held an inquiry into Australia’s transport energy resilience and sustainability and reported in June 2015. Among other topics, the [report](#) covered Australia’s liquid fuel stockholdings and supply chain, threats to liquid fuel security and the role of government in fuel security. [Submissions](#) to the inquiry were received from many key stakeholders.
The House of Representatives Standing Committee on Economics held an inquiry into Australia’s oil refinery industry (report tabled in 2013). Chapter 3 provides background and impacts of declining refinery capacity in Australia. Chapter 4 covers these issues in relation to energy security, self-sufficiency and stockholdings (among other topics).

National Energy Security Assessments were released in 2009 and 2011. The third assessment is in progress. The assessments consider ‘human and environmental threats to the adequate, reliable and affordable delivery of liquid fuel, gas and electricity to the Australian consumer’. They have typically examined the likely effects of a ‘shock scenario’ that results in disruption to the global supply chain and the effect this would have on Australia’s liquid fuel supply.

The Liquid fuels vulnerability assessment provides an overview of the liquid fuel situation, world oil outlook and an overview of oil shock vulnerabilities. This includes an analysis of a hypothetical major supply shock scenario (Singapore petroleum outage for 30 days). The adequacy and vulnerability of Australia’s liquid fuel stockholdings, including in relation to the IEA requirements, is also considered. This report by ACIL Tasman was published in October 2011 and was an update to their 2008 review.

Commissioned reports

Several reports have been commissioned to inform the government and assist in the development of policy on fuel stockholdings. Costings and other underlying assumptions were correct at the time of reporting and may have changed.

Global Oil Market – a review paper by Cape Otway Associates (November 2016) provides a comprehensive review of the oil market from the early 1970s onwards, plus an outlook for future developments and new challenges that the oil market may face in the next few decades.

Oil market responses to crises: an historical survey by ACIL Allen Consulting (June 2014) provides a review of oil markets and oil shocks and their effects, including effects on Australian policy.

The Review of market resilience to oil supply disruptions by Hale & Twomey (June 2014) is focussed on market disruptions that introduce significant pressure but don’t disrupt the market’s ability to function. This provides a review of the mechanisms available in the supply chain that promote resilience to disruption and how these are used by companies in Australia to manage disruption.

Australia’s maritime petroleum supply chain by Hale & Twomey (June 2013) provides an overview of how the maritime supply chain for oil operates in Australia. It also describes how the petroleum market interacts with the shipping supply chain and petroleum tanker dynamics.

The Stock on the water analysis by Hale & Twomey (February 2013) reports on the typical quantity of liquid fuel that Australia and New Zealand have in the ‘tankers at sea’ category (known as ‘stock on the water’). This includes where the stock is typically located based on an assessment of the route between the source location and the destination for import tankers. Stock that is held in tankers at sea cannot be counted towards the IEA stockholding obligation; however, due to the long supply chain for liquid fuels to Australia, they can comprise a significant volume of fuel.

The National Energy Security Assessment (NESA) identified issues: competitive pressures on domestic refining report by Hale & Twomey (June 2012) provides a review of Australia’s refining outlook in relation to regional developments and modelled the impact that structural changes to refining may have on Australian supply chains. This followed the 2011 NESA that recognised the significant competitive pressures being felt by Australia’s domestic refining industry.

NESA identified issues: Strait of Hormuz by ACIL Tasman (July 2012) provides an economic assessment of a significant disruption to shipping in the Strait of Hormuz, at the mouth of the
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Persian Gulf. The economic modelling was based on a relatively short disruption (full capacity was restored by the third week) that didn’t result in a physical disruption to liquid fuel supply in Australia.

*Australia’s emergency liquid fuel stockholding update 2013: Australia’s International Energy Agency oil obligation ‘main report’* by Hale & Twomey (October 2013) provides an overview of Australia’s compliance under the IEA stockholding obligations and some cost options for returning to compliance. It analyses four emergency stockholding options and provides some estimates of the stockholding compliance gap going forward to 2033. This was an update on the July 2012 report *National Energy Security Assessment (NESA) identified issues: Australia’s international energy oil obligation* that examines options for holding emergency stock to meet Australia’s oil IEA obligations. It reviews global stockholding models that may be suitable for Australia and the likely costs to implement.

*Australia’s emergency liquid fuel stockholding update 2013: oil storage options & costs* by Hale & Twomey (October 2013) provides an update to their earlier work on Australia’s oil stockholding obligations. It updates the options and costs associated with large scale emergency stock holdings, including the facility, stock and operational costs.

*Australia’s emergency liquid fuel stockholding update 2013: ticket markets* by Hale & Twomey (October 2013) provides an expanded discussion of a ticket market in Australia and associated costs. It analyses using a non-IEA country as provider of the ticket stocks and the creation of a domestic ticket market. This was updated in the *Ticket market pricing update* report (April 2014) to reflect new pricing in the international ticket market. Further information on ticket markets and options for developing ticket markets was provided in *Additional advice: ticket markets* (June 2014).

**International Energy Agency (IEA)**

The IEA provides a monthly report on *oil stock levels* in days of net imports for member countries.

The [World Energy Outlook](https://www.iea.org/publications/freepublications/iea/worldenergyoutlook.php) provides a global perspective to demand and supply projections to 2040 and discussion of major global trends in the energy sector.


The IEA recently published an in-depth *review* of Australia’s energy policies. Chapter 1 provides an overview of Australia’s energy statistics and policies. Chapters 2 to 5 covers oil, natural gas, electricity and the integration of renewables into the energy system. Part II of the report (Chapters 6 to 8) discusses transformation in the Australian energy system in relation to climate change policies, energy efficiency and renewable energy.

The IEA [oil website](https://www.iea.org/oil) contains information on global oil trends and links to other relevant reports and data. This includes their annual analysis and forecast for global oil demand, supply refining, and trade, in the *Market Report Series: Oil 2018* (analysis and forecasts to 2023).

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