

## ADDITIONAL ADVICE: TICKET MARKETS

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## 1.0 Introduction

This paper provides the Department of Industry (the Department) with some additional advice regarding ticket markets should Australia choose to use ticket stock as a strategy to assist with meeting its International Energy Agency (IEA) commitments<sup>1</sup>. This is a supplementary paper to previous work Hale & Twomey has completed for the Department on tickets including:

- Australia's Emergency Liquid Fuel Stockholding Update 2013: Ticket Markets
- Ticket Market Pricing Update (April 2014)

This paper covers the following:

- Ticket markets – market update and which countries are generally ticket buyers and which are generally ticket sellers;
- Options for developing ticket markets in non-European IEA countries; and
- Options for developing ticket markets in non- IEA countries within this region.

## 2.0 2013 Report and 2014 update

The 2013 report covered the ticket market in detail with a specific focus on developing ticket markets in non-IEA countries and developing an internal ticket market in Australia. There have been a number of changes in the ticket market since the 2013 report, and a supplementary paper on ticket markets was written in April 2014.

The reports to date have highlighted that with the substantial amount of stock Australia needs to acquire to be compliant, if all the stock was secured using ticket contracts it is likely to push all ticket prices higher. This would increase the cost to Australia and other countries that use, and are net buyers of tickets.

This supplementary paper looks at how Australia might expand the supply of tickets (increase the market size) so its entry into the market would have a smaller impact. In addition, there is a focus on developing markets for product tickets given the change in Australia where product imports are increasing at the expense of crude imports.

## 3.0 Ticket market update

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<sup>1</sup> Ticketed stock (tickets) is the name given to a stockholding arrangement under which the seller agrees to hold (or reserve) an amount of oil on behalf of the buyer in return for an agreed fee. The buyer is purchasing an option to purchase physical oil that can only be exercised in an oil supply emergency declared by the International Energy Agency (IEA). The purchaser of the ticket gets the right to count the reserved stock as part of its IEA stockholding commitment, and the seller of the ticket does not count the stock in its commitment. Tickets were developed in Europe as a flexible way for companies to manage volatility in their compulsory stock obligations.

### 3.1 Market update (from April 2014 Report)

The ticket market in Europe has continued to trade at relatively low levels - if anything slightly lower than covered in the April update report. Crude oil tickets have been trading either at or just under USD1.00/tonne/month, close to a level where sellers start to question whether there is value in entering into contracts. Product tickets contracts are higher with petrol up to around USD1.50/tonne/month and gasoil/diesel tickets around USD2.00/tonne/month.

The market continues to be influenced by a ready supply of Any Oil tickets. The Dutch central agency COVA is no longer actively selling tickets, although a similar issue (agency holding too much stock) has now impacted the Belgium central stock agency. It has recently issued tenders to sell ticket stock after earlier being in the market buying ticket stock. The change for the stock agency in Belgium was apparently due to a change of classification against European Union requirements, not with meeting IEA commitments.

### 3.2 IEA countries using ticket stock

The IEA publishes information about which countries allow ticket stock to be held, both domestically and abroad. This information along with a summary on ticket use is shown Table 1, sourced from a recent IEA Report. The column indicating Tickets Abroad in this table, refers to whether industry or stock agencies within the country are allowed to hold stock in another country, not whether they can hold stock for other countries. There are countries that do not allow their industry to hold stocks abroad, but do allow them to hold stock for other countries. These include:

- Hungary
- Japan
- Norway (some uncertainty on this as they are not an EU country)

In addition, there are some countries that in theory allow offshore tickets to be held but do not currently use this facility who also hold stock for other countries. These include:

- Finland
- France
- Germany
- Poland
- Spain

These countries, together with the Netherlands are net sellers of tickets. It is a surprise to see the Netherlands shown as holding offshore ticket stock as our understanding is it is able to hold physical stock offshore, but tickets must be held on stock within the Netherlands.

We also understand Portugal is actively holding tickets offshore, not as shown in Table 1.

**Table 1: Provision and usage of ticket stockholding<sup>2</sup>**

Country	Domestic tickets		Tickets abroad	
	Allowances	Usage	Allowances	Usage
Australia	Not applicable		Not applicable	
Austria	Not allowed		Not allowed	
Belgium	Allowed	Yes	30% of public stocks	Yes
Canada	Not applicable		Not applicable	
Czech Republic	Not allowed		Not allowed	
Denmark	Allowed	Yes	30% of obligated industry stocks and 5% for FDO	Yes
Finland	Allowed	*	20% of obligated industry stocks	No
France	Allowed	Yes	Allowed	No
Germany	10% of EBV's stockholding obligation maximum	Yes	10% of EBV's stockholding obligation maximum	No
Greece	Not allowed		Not allowed	
Hungary	Not allowed		Not allowed	
Ireland	Allowed	No	Allowed	Yes
Italy	Allowed	Yes	Allowed	Yes
Japan	Not allowed		Not allowed	
Korea	Not allowed		Not allowed	
Luxembourg	Allowed	No	Allowed	Yes
Netherlands	Allowed	Yes	Allowed	Yes
New Zealand	Allowed	No	Allowed	Yes
Norway	Not allowed		Not allowed	
Poland	Allowed	*	5% of obligated industry stocks, not allowed for ARM	No
Portugal	Allowed	*	Allowed	No
Slovak Republic	Not allowed		Not allowed	
Spain	Allowed	Yes	Allowed	No
Sweden	Allowed	Yes	20% of obligated industry stocks	Yes
Switzerland	Not allowed		Not allowed	
Turkey	Not allowed		Not allowed	
United Kingdom	Allowed	Yes	Allowed	Yes
United States	Not applicable		Not applicable	

Note: \* Information on the use of domestic tickets in Finland, Poland and Portugal was not available at the time this paper was drafted.

*"In practice, the proportion of stocks held abroad in the form of tickets is small for the IEA as a whole, amounting to just above 1% of the total stocks held by member countries. However, tickets can represent a significant portion of stock cover for some countries. For example, tickets play an important role in New Zealand. Since the country places no minimum stockholding obligation on industry, rising import dependency over the past decade resulted in the country being temporarily non-compliant with regard to the IEA obligation. In response, the New Zealand government has acquired stocks in other IEA member countries, in the form of ticket reservations.*

<sup>2</sup> Table from International Energy Agency Insights Series 2013: Costs, Benefits and Financing of holding Emergency Oil Stocks

*As a result of the common market, the use of bilateral tickets is relatively common among European IEA member countries. However, the prominence of such ticket arrangements differs among countries. While bilateral tickets accounted for a share of merely 3% of total European stocks in 2011, they account for a much higher share in countries like Belgium, Ireland, Italy, and Luxembourg. Luxembourg represents an extreme example. Since decades, over 80% of Luxembourg's obligation is met with stocks held outside the country, for the most part in the form of short-term ticket agreements. On the contrary, abundant storage capacity in the Netherlands often serves for the benefit of other countries under bilateral agreements.<sup>3</sup>*

### 3.3 Size of ticket market

There is no easy measure of the size of the ticket market, especially with much of the ticket trade being carried out between affiliates of the same parent company rather than on the open market. The IEA is informed of bilateral tickets<sup>4</sup> but does not publish ticket specific volume information. Rather it publishes the amount of total stocks (physical and ticket combined) that each country holds abroad (split between industry stocks and public stock). The data for March 2014 is shown in Appendix 1. This allows us to estimate the amount member countries might be buying but gives no information on volumes that each country is selling.

Putting the reported stock data together with information on each country's use of ticketing, an estimate of possible ticket volumes held bilaterally can be calculated. The countries, or industries within those countries, that hold stock abroad using tickets includes Belgium, Ireland, Italy, Luxembourg, New Zealand, Portugal and the United Kingdom. Estimates for maximum possible volumes held are shown in Table 2 from largest to smallest.

**Table 2: Estimates of ticket volume held offshore**

Country	Held by	Estimated maximum volume (March 2014)
United Kingdom	Industry	4,000,000
Italy	Industry	2,500,000
Belgium	Industry and Public stocks	900,000
Luxembourg	Industry	700,000
Ireland	Public stocks	<100,000 (more allowed)
New Zealand	Public Stocks	150,000
Portugal	Industry and public stocks	150,000

Note both the United Kingdom and Italy have or are about to set up a centralised stock agency. This is expected to see a shift of some ticket volumes into physical stock and more being held within country. Some of the countries listed above could also hold ticket stock for other countries, so the net position could be lower than the maximum volume held offshore shown in the table.

### 3.4 Impact of rising ticket prices

<sup>3</sup> International Energy Agency Insights Series 2013: Costs, Benefits and Financing of holding Emergency Oil Stocks pg. 36

<sup>4</sup> Tickets between two countries.

The countries listed in Table 2 are those likely to be impacted if the market prices were to go up significantly. A USD1/tonne/month increase in price could cost industry in the United Kingdom up to USD48 million/year (and the cost increase could be four times this amount). For countries not on the list but which allow trading of tickets between companies within their borders (e.g. Denmark, France, Germany, Netherlands), there could be companies that benefit at the expense of others from the increased cost of tickets.

The Netherlands is likely to be the country that would benefit most from an increase in the cost of tickets as it is thought to be the largest seller of tickets by a considerable margin, being the petroleum trading centre of Europe.

### **3.5 Ticket sellers**

In all countries, the sellers of tickets are commercial entities within those countries. Most countries where a stock obligation is put on industry allow domestic tickets to be traded between companies (Japan and Korea are exceptions). This is because the stock position of each company will be different. It also means that while a country might be a net buyer of tickets (e.g. the United Kingdom) there will still be companies within that country which are sellers of tickets.

Stock agencies are common in Europe and have generally been set up to manage a country's obligation where it is either not passed or only partially passed on to industry. Stock agencies are normally only buyers of ticket stock (as they are meeting a stock obligation). There is the occasional exception where stock agencies have sold tickets but this follows a miscalculation of the stock requirement which has resulted in the agency holding too much stock for a period. CORES in Spain is a possible seller of tickets but this is as a commercial operator of infrastructure and holder of stock rather than as part of an agency function. Agencies should not be relied on as sources of ticket stock.

## **4.0 Non-European IEA countries**

### **4.1 United States**

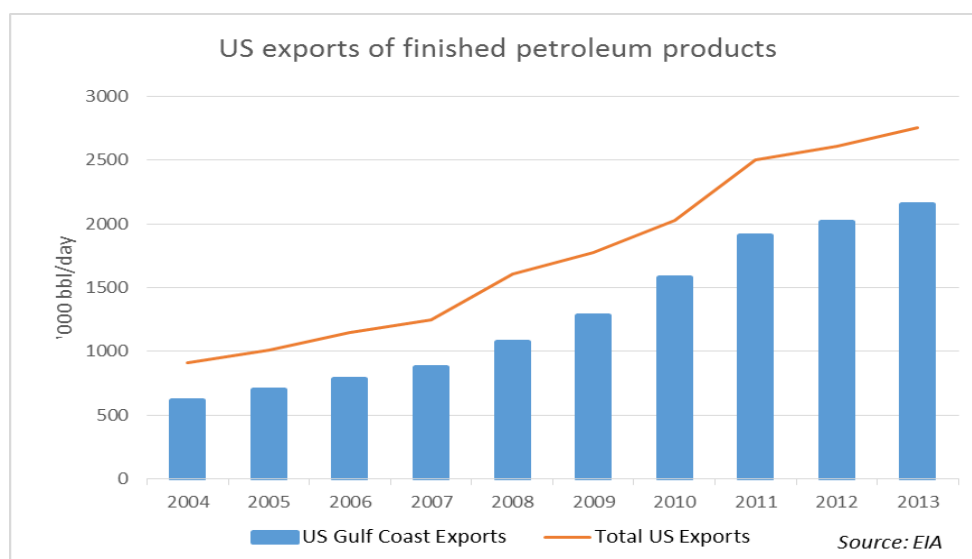
With rising oil production from technological advances unlocking shale oil production, coupled with demand well off its 2005 peak, the daily net import requirement for the United States (US) is dropping (down 15% for 2013 versus 2012)<sup>5</sup>. The shale oil boom is also increasing crude inventories which, together with a declining target, is resulting in an increase in stock days cover. As at March 2014, the US had 115 days cover of industry stocks and 91 days of public stocks (appendix 1).

The US ban on crude oil exports (some exports to Canada are allowed) that has been in place since the 1970s is being reconsidered. To date the oil industry has been divided over a change (producers want the ban lifted, refiners want it retained) so the government is yet to act. In the meantime the industry is getting around the ban by increasing refinery throughputs and exporting products. Exports of petroleum product have increased rapidly (Figure 1) and these are being sent to Europe and South America. Expansion of the Panama Canal currently underway may see US exports being more competitive into Asia-Pacific.

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<sup>5</sup> IEA/SEQ(2014)1

**Figure 1: United States finished product exports**



To give an indication of the scale of current US exports, Australia's 2012/13 total product import volumes were 400,000 bbls/day. While these are increasing they are less than 20% of the current level of product exports from the US Gulf Coast.

In terms of ticketing, the US has never been involved in the ticket market. New Zealand investigated a bilateral agreement with the US in 2006 but after finding that the US wouldn't be able to sign a non-impediments clause for transfer of the oil in an emergency due to internal laws, the approach was dropped.

One aspect that was never investigated is whether the bilateral agreement might only apply to product stock. There is no law restricting product exports as noted above. If products are still legally able to be exported when there was an oil supply disruption (i.e. assuming there is not a different law in place then) then there may be the possibility of a limited bilateral agreement with the US, only covering petroleum product stocks.

This could enable companies operating in the Gulf Coast that normally export products to start selling tickets on some of their stock. It would not be unexpected for Australia to get finished product from the US should there be disruption to oil markets in the Asia-Pacific region – in fact this would be more likely than Europe so there is a logic to having ticket stock in the US.

With no history or knowledge of ticketing in the US, if such an option was possible it would make sense to work through those companies that are also active in the European market to introduce the concept of ticketing in the US.

## 4.2 Canada

Canada is defined by the IEA as a net exporting country (i.e. produces more oil than it consumes). Canada did not show any interest in ticketing when approached by New Zealand in 2006.

As a net exporter it could be that Canada does not actually have significant in-country stocks (above what it needs to operate its industry). Also most of the oil infrastructure in Canada is in central Canada or off the east coast rather than the Pacific west coast. This makes it less useful for a Pacific country such as Australia to hold stock there. There are investigations and proposals to bring both oil and gas from central Canada to the west coast so it can get access to Asian



markets. Should such developments proceed, Canada may be more receptive to considering bilateral agreements covering ticket stock with countries in the Asia Pacific region.

### 4.3 South Korea

South Korea has substantial stocks, both for its own security and as a large refining centre, exporting significant volumes of finished product. As of March 2014, South Korea is holding 253 days of stock, 130 days by industry and 123 days in public stock. This is the highest days cover of any IEA country.

South Korea does not have bilateral agreements with any country but does allow foreign companies to lease spare stockholding facilities in the country. The reason for no bilateral agreements is that South Korea has a law indicating it has rights to all oil held in the country should there be an oil supply emergency. This covers foreign companies holding oil as well as Korean companies.

South Korea is looking to develop itself as the main trading centre for Northeast Asia. It plans to increase the country's commercial oil storage capacity to 36.6 million barrels by 2020<sup>6</sup>. If necessary to encourage development, it will lend part of its strategic oil reserves facility. To encourage this trade the authorities plan to reduce mandatory storage requirements for commercial operators<sup>7</sup> and provide oil traders with tax incentives. While the first storage facility for commercial trade was opened last year, these announcements are from March this year so are a recent development.

South Korea would be a logical place for Australia to hold ticket stock as it is already a source of significant product imports (~20% in 2012/13). South Korea is one of the largest product exporters in Asia, exporting about 1.2 million bbl/d in 2013<sup>8</sup> (Australia's 2012/13 total product imports were 0.4 million bbl/d). The issue is how to get around the restriction on exports in an emergency. A possible approach could be, like the US, to suggest a contract that restricts tickets to product stock. The agreement could then be framed as one that would help support the Korean refining industry and place South Korea as a reliable supplier to Australia both in normal times and when supplies are restricted. In addition, ticketing as a concept is an ideal addition to assist the promotion of South Korea as a trading centre - there is likely to be support from the trading companies it wants to encourage to operate there for such a concept.

An interesting thing to consider in terms of these export restrictions, is that South Korea and Australia are both members of the IEA. Therefore in an oil supply emergency there ultimately may be some allocation of stock between the countries. If South Korea is also requested to release stock as part of an IEA action, Australian companies could well be buyers. It would make sense for South Korea to formalise what might happen anyway, and have the Korean companies or traders it wants to encourage, make some income out of their stock holdings in the meantime<sup>9</sup>.

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<sup>6</sup> [http://news.xinhuanet.com/english/world/2014-03/12/c\\_133181008.htm](http://news.xinhuanet.com/english/world/2014-03/12/c_133181008.htm)

<sup>7</sup> <http://english.yonhapnews.co.kr/business/2014/05/26/86/0501000000AEN20140526002200320F.html>

<sup>8</sup> US Energy Information Administration (<http://www.eia.gov/countries/cab.cfm?fips=KS>)

<sup>9</sup> We also note that New Zealand bilateral agreements (and therefore commercial contracts) also include a clause that allow the host country to request product be released should there be a domestic supply emergency in the host country. This may also ease some concerns regarding the bilateral agreement.

Another possible approach may be to suggest restricting the ability to provide tickets on stock to the new commercial trading areas South Korea is setting up. In this way it would not impact on its domestic suppliers.

With the importance placed on the laws restricting exports from South Korea any approach from Australia would need to be carefully thought through and considered at an appropriate government level (a combined approach with the New Zealand government could be a possibility). There may also be value in encouraging the IEA to support the approach. With South Korea promoting itself as a trading centre it would seem that the timing is ideal for such an approach.

#### **4.4 Japan**

Japan allows its companies to sell tickets on stocks they hold above their mandatory obligation (70 days). Japan's public stocks are held separately and are largely crude oil. As at March 2014 Japan's industry stocks were 65 days and its public stocks were 86 days. Japan reduced the stock obligation on companies in the wake of the 2011 tsunami and this may still be in place, hence the industry stocks being below the obligation.

With such a high obligation level on industry, any company selling a ticket on stock means they have to hold stock above the obligation level to cover the ticket. To date New Zealand has only had two Japanese companies willing to do this. The larger Australian volume may encourage more companies to be involved – it is possible an education campaign might be needed to encourage more Japanese companies to get involved in this trade.

The very low interest rates in Japan mean that companies should still be able to offer competitive ticket prices even though it will involve holding higher stocks than they normally might.

### **5.0 Update on non-IEA countries**

The 2013 Report investigated possible requirements if Australia wanted to hold ticket stock in a country that was not a member of the IEA. The report reviewed what might be necessary to enable this to happen and looked at Singapore as an example of a non-IEA country which might be able to provide ticket stock.

Singapore is a key link in Australia's supply chain due to its position as the main regional trading centre for product, and its location on the key supply routes for crude. The recent Market Resilience report Hale & Twomey produced for the Department of Industry expanded on the role and importance of the regional trading centre in providing resilience to the petroleum supply chains, along with its links to the other global trading centres. In this region, Singapore (supported by similar facilities in Malaysia) is the trading centre where companies hold stocks to support and provide resilience to their Asia-Pacific supply systems. At the end of 2012, Singapore was reported to have 55 million barrels of storage<sup>10</sup> with levels normally between 35-45 million barrels<sup>11</sup>. From the data this appears to only cover product storage so excludes crude stock and probably most refinery intermediate stock. This reported product stock level is similar to Australia's total stocks including all crude stocks.

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<sup>10</sup> US Energy Information Administration Singapore May 2013 update

<sup>11</sup> Credit Suisse Singapore Petroleum Inventories

While Singapore does not publish a lot of petroleum information (particularly on stock levels), import and export petroleum data is published. These numbers highlight that between 2005 and 2013, product imports doubled. Exports also increased over the period but not by the same amount as the refinery production dropped (probably due to more of the refinery production being used for petrochemical feedstock). This trend confirms what is described in the Market Resilience Report - the increase depth of activity in product trading around the trading centres.<sup>12</sup>

Singapore performs the same trading centre role that Rotterdam provides in Europe, and the Gulf Coast does in the United States. However both the Rotterdam and Gulf Coast trading centres are in IEA countries so countries that trade through and around those centres (particularly Rotterdam for European countries) get the benefit of stocks held as part of the supply chain dynamic supporting market supply (particularly for product trading). In the case of Rotterdam, the benefit is either through the Netherlands counting the stock itself or as a substantial supplier of stock holdings or ticket stock for other European countries.

The issue for Australia, is the stocks in Singapore that offer the same sort of resilience to the supply chain as Rotterdam stocks do for European countries, are not able to be counted because they are located in a non-IEA country. This puts Australia (and New Zealand) at a significant disadvantage compared to European countries in being able to call on stocks (whether directly or through ticket contracts) that are part of a system providing security to its petroleum supply chain. For Australia (and New Zealand) this is even more pronounced as the other major supplier of product stock, South Korea, is an IEA member but won't allow countries to have bilateral agreements that have no impediment to the transfer of stocks during in a supply emergency.

This argument may be worth raising with the IEA and its members should Australia consider the possibility of advocating for Singapore to be a host country from where companies can offer tickets on stocks they are holding.

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<sup>12</sup> The Energy Market Authority: Energising our Nation 2012 (pg. 9) highlights the same trend.

## Appendix 1: Closing Oil Stock Levels in Days of Net Imports (March 2014)<sup>13</sup>

Countries (click on the countries for more information)	TOTAL (1)	Industry (2)	Public (3)	Of which, held abroad (4)	
				Industry	Public
Canada	net exporter	0	0	0	0
United States	206	115	91	0	0
Total IEA North America	206	115	91	-	-
Australia	59	59	0	0	0
Japan	151	65	86	0	0
Korea	253	130	123	0	0
New Zealand	91	81	10	0	10
Total IEA Asia Pacific	153	74	79	-	-
Austria	116	25	91	12	0
Belgium	142	50	92	12	59
Czech Republic	129	31	98	6	4
Denmark	net exporter	0	0	0	0
Finland	218	90	128	0	0
France	105	33	72	0	2
Germany	142	37	105	5	1
Greece	103	103	0	0	0
Hungary	168	56	112	0	0
Ireland	125	35	90	0	34
Italy	121	121	0	17	0

<sup>13</sup> <http://www.iea.org/netimports/>

Luxembourg	90	90	0	78	0
Netherlands	186	100	86	0	44
Norway	net exporter	0	0	0	0
Poland	119	102	16	0	0
Portugal	118	83	35	3	3
Slovak Republic	148	60	89	0	0
Spain	108	57	51	1	0
Sweden	125	125	0	9	0
Switzerland	157	157	0	0	0
Turkey	94	94	0	0	0
United Kingdom	213	213	0	64	0
Total IEA Europe	127	74	54	-	-
Total IEA	200	115	85	-	-
Total IEA net importers	158	88	70	-	-

1. IEA stock levels in days of previous year's net imports using IEA methodology. Total may not equal sum of Industry and Public due to rounding.

2. The portion of total days of net imports covered by industry stocks. This includes stocks held for commercial and operational purposes as well as stocks held by industry to meet minimum national stockholding requirements (including stocks held for this purpose in other countries under bilateral agreements).

3. The portion of total days of net imports covered by government-owned stocks and stockholding organisation stocks held for emergency purposes (including stocks held in other countries under bilateral agreements).

4. The portion of a country's Total stocks which are held in another country under a bilateral agreement. In specific instances, member countries can count stocks held in the territory of other countries as part of their stocks to fulfil their minimum IEA stockholding requirements (see explanation on stocks held abroad). Sometimes these stocks are indeed owned by the entities having the stockholding obligation; in other cases these stockholding amounts are in the form of tickets (see explanation on tickets).

Days of net imports for regional totals include IEA net importers only.

Updated 13 June 2014