Regulatory Impact Statement

Funding New Zealand's international oil stockholding obligation

Agency Disclosure Statement

1 This Regulatory Impact Statement has been prepared by the Ministry of Business, Innovation and Employment (**MBIE**).

2 It provides an analysis of options to address the rising cost of New Zealand's treaty obligation as a member of the International Energy Agency (**IEA**) to hold 90 days of net imports of oil stock.

3 MBIE has considered the following options for responding to these rising costs: non-compliance with the obligation (or withdrawal from the IEA); building domestic stockholding; placing a mandate on industry to hold stock; and different options for funding the current regime. A forecast of the cost of meeting the current regime is based on forecasts of a number of variables and sensitivities to these forecasts are tested. The costs and benefits of each option are compared to arrive at MBIE's preferred option: to continue to meet the IEA obligation via the current regime, but to implement a 'user-pays' system to meet costs.

4 The preferred option is to impose a levy of 0.113 cents per litre on fuels (which amounts to 4.5 cents for a 40 litre tank). The forecast revenue is $20.540 million over the next three fiscal years.

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Status Quo

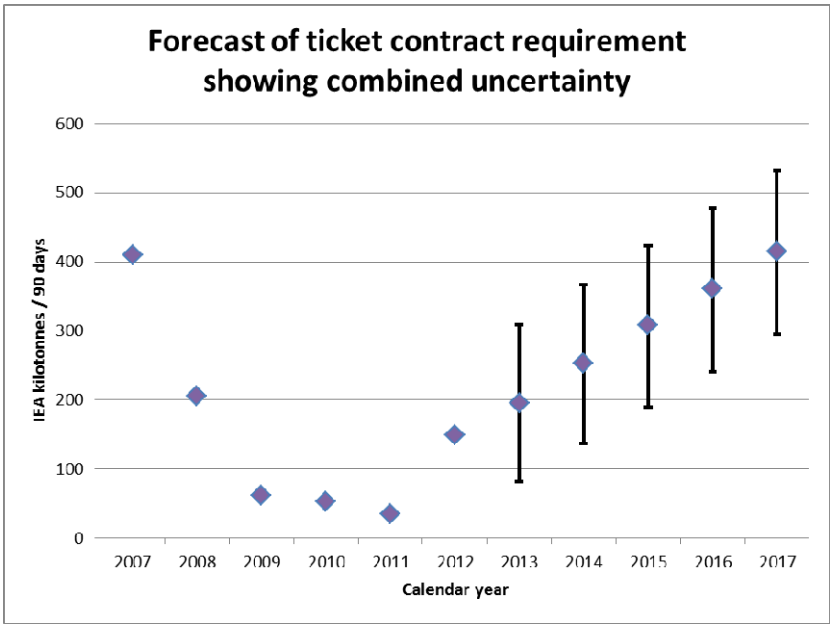
5 New Zealand has a treaty obligation under the Agreement on an International Energy Programme to contribute 90 days of net oil imports to the IEA oil stockholding. The collective stockholding mitigates the market power of oil-producing countries, and releasing stock during an IEA-declared oil supply emergency helps to moderate extreme oil price spikes.

6 Normal commercial inventories held by oil companies in New Zealand contribute to New Zealand's obligation. The remainder of the obligation is met through the Crown entering into "ticket contracts" with oil companies/traders in other IEA countries. Tickets are an option, in return for an annual fee, to purchase specified quantities of stock at market prices in the event of an IEA-declared oil supply emergency.

7 Tickets must be backed by a government-to-government agreement that stipulates that the host country will not impede the release of the stock in the event of an IEA emergency. To date, New Zealand has entered agreements with, and held tickets in, Australia, Japan, the Netherlands, and the United Kingdom. New Zealand concluded a further agreement with Denmark in 2012 and expects to conclude an agreement with Spain in 2013.

8 A forecast of New Zealand's ticket requirement is shown in Figure 1.[1] The full analysis for this forecast, and the below forecast of the cost of the ticket requirement, is contained in Annex 1. The rise in the ticket requirement is principally due to a forecast decline in domestic oil production in the medium-term (which increases the stock that New Zealand is required to hold).

Figure 1



9 The forecast cost of New Zealand's ticket requirement is shown in Table 1. The cost of tickets is presently met through a Crown-funded Vote Energy appropriation which is set at $3 million per annum for outyears. Thus, the present outyears appropriation is insufficient to cover expected future ticket costs.

[1] The error bars represent the uncertainty in the forecast arising from uncertainty in the forecasts of New Zealand's domestic oil production and New Zealand's fuel consumption.

Table 1: Forecast of ticket contract costs

Fiscal year	*2013/14*	*2014/15*	*2015/16*	*2016/17*
Cost (NZD million)	5.185	6.697	8.658	10.579

Problem Definition

10 The forecast cost of the current method of meeting New Zealand's IEA stockholding obligation (the ticketing regime) will not be fully funded by the existing Vote Energy appropriation. In the absence of further intervention New Zealand would become non-compliant with its IEA treaty obligation.

Costs/benefits of non-compliance with oil stockholding treaty obligation

11 Non-compliance with New Zealand's treaty obligation is likely to result in significant damage to New Zealand's international reputation. It is likely that a number of New Zealand's closest partners would perceive New Zealand to be free-riding on the collective international oil security arrangements, and would exert pressure on New Zealand to comply. Oil security is closely linked to security generally, and oil security is a key driver of the foreign and security policies of many IEA/OECD countries. Non-compliance may, for example, have implications for trade arrangements with those countries.

12 The benefit of non-compliance would be the saving from not entering ticket contracts (forecast to be NZD20.540 million over the next three fiscal years). Although difficult to quantify, it is likely that the economic cost to New Zealand from the reputational damage from non-compliance would outweigh this benefit.

The root cause of the rising obligation cost is being addressed by a number of government policies

13 The root cause of the rising cost of the IEA obligation is the forecast decline of domestic oil production in the medium-term. MBIE expects the recent increase in petroleum exploration activity to result in an upturn in domestic oil production in the medium-to long-term, which will result in a downturn in ticket costs.

14 Similarly, the current ethanol fuel excise exemption is intended to encourage the uptake of ethanol as a fuel. Increased uptake of ethanol would have the effect of reducing New Zealand's net import obligation and thus result in downward pressure on ticket costs.

15 Notwithstanding the above, the problem of rising ticket costs in the medium-term must be addressed.

Objectives

16 The objective is to maintain compliance with New Zealand's IEA obligation, thereby avoiding the damage to New Zealand's international reputation that would result from non-compliance, and to fund any associated costs of maintaining compliance.

17 The following criteria are taken into account for the options assessed below[2]:

a. **Equity**: beneficiaries should pay for any benefits.

[2] Criteria b to e are based on the Treasury's *Guidelines for setting charges in the public sector,* December 2002.

b. **Low cost**: any mechanism should be administratively simple and low-cost to operate.

c. **Low avoidance**: it should be difficult for liable parties to avoid paying dues.

d. **Future-proof**: the mechanism should be flexible enough to cope with changing costs and changes in market structure.

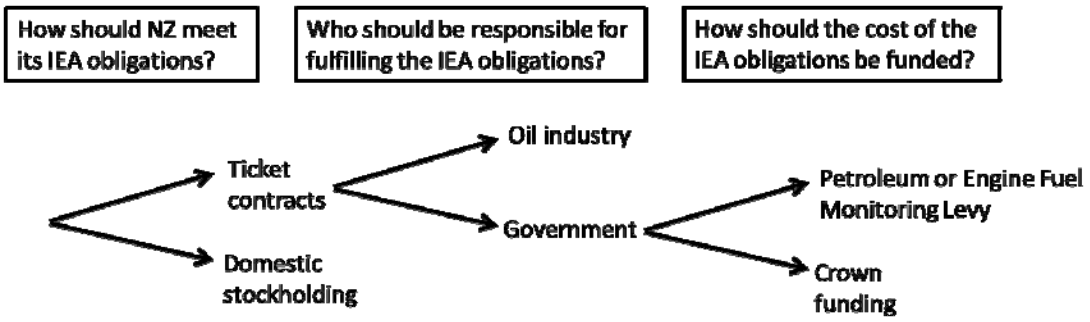
e. **Efficient allocation of resources**: consumption decisions that are consistent with the efficient allocation of resources should be encouraged.

18 A further consideration for an intervention is timing. To ensure compliance from April 2013, further ticket contacts must be finalised in February 2013.

Options

19 Figure 2 sets out the options that will be assessed in a decision tree format.

Figure 2



Options analysis

	Option	Costs	Benefits
1	Building domestic stockholding	$24.3 million per annum if a 140,000 tonne tank is built[3] (annualised over 40 years with 8% discount rate).	Savings from tickets: ~$3 million only during periods that commercial inventories are insufficient to meet obligation. Avoided costs of non-compliance.
2	Imposing a stockholding mandate on industry (assume industry purchases ticket contracts since these are cheaper than building stockholding)	Loss of economies of scale of single purchaser (government). Extra administrative costs from multiple parties purchasing ticket contracts. Costs of setting up compliance regime, and regime to allocate share of obligation to industry players.	Avoided costs of non-compliance.
3	Fund ticket regime from general taxation	In present fiscal climate a bid for general tax funding will compete with existing priorities. There is a significant risk that the bid would fail, resulting in the status quo and associated costs of non-compliance.	If bid is successful then costs of non-compliance are avoided.
4	Funding ticket regime through revenue generated by increasing the Petroleum or Engine Fuel Monitoring Levy (**PEFML**)	Small administrative costs arising from changing levy rate, and possibly from changing fuel coverage of PEFML.	Avoided costs of non-compliance.

20 Options 2 – 4 assume that the obligation will be met via tickets. Given the relatively high cost of building stockholding, option 1 will certainly have lower net benefits than options 2 – 4.

21 Option 2 will have higher administrative/compliance costs than option 4 since new compliance and administrative regimes will be required, whereas the additional administrative cost of altering the PEFML will be marginal. Further, option 2 would result in losses of economies of scale and reduced administrative costs of having a single purchaser. Another consideration weighing against option 2 is that the governments with which New Zealand has government-to-government agreements are likely to want continued direct New Zealand government involvement in ticket contracts.

[3] New Zealand Institute of Economic Research (2012): *New Zealand Oil Security Assessment Update, NZIER Report to Ministry of Economic Development*, p.31.

22 There are two benefits to consider when considering the equity of the options: the oil security of the stockholding, and the avoided cost of non-compliance. It can be argued that option 4 should be preferred over option 3 since it better targets the cost of oil security at the direct beneficiaries of that security. Conversely it can be argued that option 3 should be preferred over option 4 since the benefit of the avoided cost of non-compliance has public good characteristics, and so should be funded from general taxation. Ultimately these considerations are outweighed by the risk that the bid under option 3 would fail, resulting in the costs of the status quo. Accordingly, MBIE's preferred option is option 4.

Risks of preferred option

23 Since the inception of New Zealand's ticketing regime in 2007, New Zealand has procured sufficient ticket contracts to maintain compliance with its IEA obligation. However, there is a risk that New Zealand will not be able to procure sufficient ticket contracts in the future to meet its obligation, particularly as the obligation rises.

Withheld under section 9(2)(j) of the Official Information Act 1982

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MBIE expects that, barring anomalous ticket market conditions, there will be sufficient ticket supply in the future for New Zealand to maintain compliance with its obligation.

Withheld under section 6(a) of the Official Information Act 1982

Consideration of fuel coverage for PEFML

25 The PEFML is currently set at a maximum of 0.045 cents per litre on petrol, diesel, biodiesel, and ethanol and is collected by the New Zealand Customs Service. It currently covers certain IEA-related costs (including acquiring energy data), as well as fuel quality and safety monitoring.

26 Amending the PEFML to cover the costs of holding IEA oil stocks would require an amendment to the Energy (Fuels, Levies and References) Act 1989 to widen the purposes of the levy. The fuels that can be levied are presently specified in the Act, as is the maximum levy rate[4]. MBIE proposes that the Act be amended to provide for the Minister of Energy and Resources to make regulations that specify the fuels that can be levied and the levy rate.

27 In principle, the PEFML could be expanded to cover all fuel consumers that benefit from the IEA stockholding, i.e. consumers of petrol; diesel; jet fuel; fuel oil; other petroleum products, such as LPG, bitumen, and solvents; biodiesel; and ethanol[5]. However, jet fuel for international travel is exempted from tax under the Convention on International Civil Aviation. The PEFML then covers 82 percent of the remainder of fuels that could be levied in-principle.

[4] The Act provides for a lesser levy rate to be prescribed.
[5] Assuming biofuels are perfect substitutes for petroleum products, the benefit to biofuel consumers from the IEA stockholding is the same as for petroleum product consumers.

28 MBIE's preliminary view was that the coverage of the PEFML should not be extended to cover the remainder of fuels that could be levied in-principle because:

a. it is relatively complex and costly to administer a levy on all "other petroleum products" given the small quantities involved and the involvement of various suppliers other than the main oil companies

b. ensuring accurate separation and reporting of domestic and international sales of jet fuel and fuel oil may raise practical difficulties and add administrative costs.

29 However, following submissions on the oil security discussion document, MBIE is investigating whether the PEFML should be extended to cover domestically consumed jet fuel and fuel oil. These fuels comprise nine percent of fuels that could in-principle be targeted for cost recovery of tickets. Final decisions on fuel coverage would be made when regulations are promulgated to set the levy rate and fuel coverage.

Consultation

30 MBIE released a discussion document containing the levy proposal on 30 October 2012 and received 15 submissions. Of these, 10 contained direct comments on issues relating to the IEA obligation (from six oil industry members[6], the Automobile Association, Air New Zealand, the Bioenergy Association of New Zealand, and the Sustainable Energy Forum).

Submissions on the IEA obligation proposal

31 MBIE notes that the vast majority of submitters either agreed with, or were neutral to, the overall proposal to meet the IEA obligation through PEFML funded ticket contracts.

32 Of the 10 abovementioned submitters:

a. One submitter (Air New Zealand) disagreed that New Zealand should maintain membership to the IEA and continue to meet its stockholding obligation, stating that the money spent on tickets would be better invested in domestic infrastructure resilience. MBIE's view is still that the potential damage to New Zealand's international standing from withdrawal from the IEA far outweighs the cost of meeting the obligation via tickets.

b. One submitter (Bioenergy Association of New Zealand) disagreed that the IEA obligation should be met using tickets, arguing that while tickets are effective in the short-term, a long-term solution should be developed that incorporates indigenous biofuel production using forestry resources. MBIE notes that the scope of the international oil security section of the discussion document was confined to measures to improve short-term emergency oil supply disruption preparedness, and does not consider long-term structural issues.

c. No submitters explicitly disagreed with the proposal that government should purchase tickets rather than place a stockholding mandate on industry.

d. One submitter (the Automobile Association) disagreed with the proposal to fund tickets through a levy on fuel, noting that funding from general taxation would be more equitable because security benefits flow on to the entire economy. MBIE's view is that there are good equity arguments for and against a levy over general taxation[7], but that the significant risk of not securing the required funding from general taxation heavily weighs against funding from general taxation.

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[6] Refining NZ, Wiri Oil Services Limited, Chevron, Z Energy, Gull, and the Motor Trade Association.
[7] See paragraph 22 above.

e. Two submitters disagreed that only petrol, diesel, biodiesel, and ethanol should be covered by the levy.

   i. Z Energy recommended that the levy not apply to biofuel produced from indigenous feedstock, noting that domestically-produced biofuels strengthen New Zealand's onshore stockholding position. MBIE notes that, given biofuels are a substitute for liquid fossil fuels, biofuel consumers benefit from the IEA stockholding similarly to liquid fossil fuel consumers, and so should pay under a "user-pays" approach. Further, while it can be argued that biofuel production reduces the net import obligation and so should be rewarded for doing so, similar arguments can be made for domestic crude production. MBIE decided to use a "user-pays" approach for allocating IEA obligation costs, and still considers that this is the best approach.

   ii. Gull suggested that, if biodiesel and ethanol are to be covered by the levy, domestic jet fuel, fuel oil, LPG and bitumen should also be covered. It noted that excluding LPG and bitumen because of the small quantities involved seems to be inconsistent with the inclusion of biodiesel and ethanol, which make up a very small portion of fuel demand. MBIE notes that the main reason that biodiesel and ethanol are included over LPG and bitumen is that they are sold by the major oil companies and so are easy to capture.

   iii. Gull also noted that domestic jet fuel is separated from international jet fuel under the GST and emissions trading scheme regimes, and suggested that the same methodology could be used for the PEFML. MBIE intends to investigate options for including domestic jet fuel and fuel oil in the PEFML. A final decision on fuel coverage will be made when regulations are promulgated to set the rate and fuel coverage of the PEFML.

33 Z Energy questioned whether host countries would actually release ticketed stock to New Zealand during an international supply disruption. MBIE notes that tickets are backed by government-to-government agreements, a number of them being international treaties. Further, the government would only actually import stock to New Zealand if oil companies in New Zealand were unable to secure their own stock on the international market. The mostly likely scenario following an IEA-declared emergency is that the government would release the stock to the foreign company holding it on the government's behalf, thereby fulfilling its obligation to release stock.

Submissions on matters other than the IEA obligation

34 A number of submitters questioned whether more should be done to mitigate the risk of an international oil disruption beyond meeting the IEA obligation using tickets:

a. Four submitters (the Automobile Association, Z Energy, Air New Zealand, and Primeport Timaru[8]) suggested that government should take a more hands-on role in ensuring that there is sufficient domestic stockholding to cope with supply disruptions. MBIE notes that the New Zealand Institute of Economic Research study[9] that the discussion document is based on found that building further domestic stockholding in New Zealand is not an economic way to mitigate the risk of supply disruptions. Notwithstanding this, MBIE maintains a watching brief on the domestic stockholding situation in New Zealand.

[8] Primeport Timaru is a commercial port in Timaru.
[9] New Zealand Institute of Economic Research (2012): '*New Zealand Oil Security Assessment Update*'.

b. One submitter (the Sustainable Energy Forum) recommended that New Zealand should take steps to reduce its reliance on oil imports. It suggested that longer-term issues such as climate change and "peak oil" should be considered in the analysis of oil security. Liquid fossil fuel demand should be reduced through substitution with indigenously produced biofuels and replacement with electrical energy-based transport. MBIE notes again that the scope of the international oil security section of the discussion document was confined to measures to improve short-term emergency oil supply disruption preparedness, and does not consider long-term structural issues.

Feedback from sources other than submissions

35 Prior to the release of the discussion document, MBIE discussed the levy proposal with the following key stakeholders: Z Energy, Chevron, Mobil, BP, Gull, Refining NZ, Air New Zealand, the Automobile Association, the Motor Trade Association, and the Road Transport Forum. A number of these stakeholders noted that minimising the frequency of levy rate changes by smoothing the levy over a number of years would help to reduce compliance costs.

36 The Treasury, the Department of the Prime Minister and Cabinet, the New Zealand Customs Service, and the Ministry of Transport have been consulted on the levy proposal.

Conclusions and Recommendations

37 The preferred option is to continue to meet New Zealand's IEA obligation through government-procured tickets, and to fund the tickets via the PEFML. The existing appropriation would be increased to reflect the forecast rise in ticket costs, and the additional PEFML revenue would fully fund the appropriation. The levy rate should be smoothed over a period of three years. The appropriation and levy rate could be updated as necessary as forecasts of ticket costs are updated. Final decisions on the levy rate and fuel coverage would be made when regulations are promulgated.

Implementation

38 Table 2 outlines the envisaged timing of implementation.

Table 2: Implementation next steps

Step	Date
EGI considers final policy recommendations with Power to Act	12 December 2012
Legislation introduced for changes to the PEFML (contingent on legislation programme)	April 2013
Select Committee reports back	Mid-2013
Enactment and regulations made	Mid-2013
Customs effects levy rate change	By 1 January 2014

39 Customs has noted that any PEFML rate change would need to occur on one of the following days: 1 January, 1 April, 1 July or 1 October. Customs would also require three months notice to change the rate to allow time to update electronic collection and financial systems.

40 All parties liable for the PEFML would be notified by MBIE or Customs of the change at least one month before the change was effected.

41 Implementation risk is minimal given that Customs already has well-developed collection and auditing systems in place for PEFML. These systems would continue to ensure that the risk of revenue under-collection was minimised.

Monitoring, Evaluation and Review

42 MBIE will undertake an annual reassessment of the levy rate based on an updated forecast of ticket costs. The levy rate will only be altered if the existing levy rate would result in significant over-collection or under-collection.

43 MBIE envisages reviewing the levy-funded ticket model within five years of implementation to ensure that it continues to be the best option for meeting New Zealand's IEA obligation.

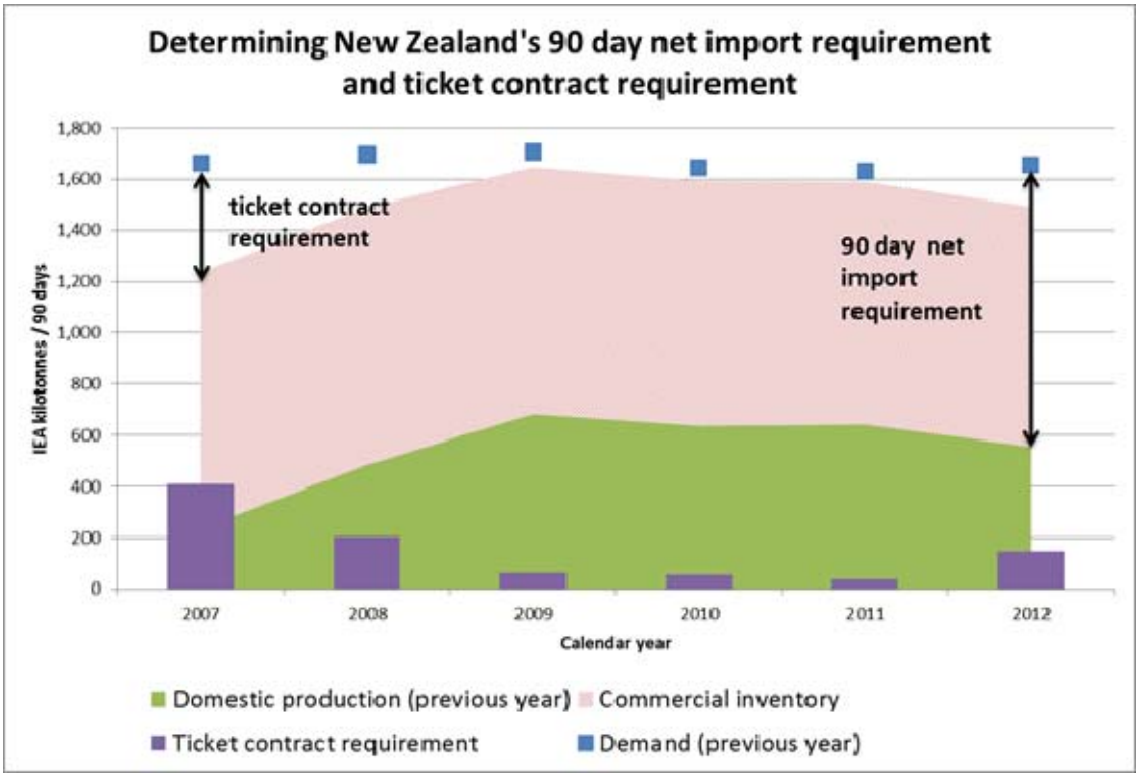
Annex 1: Forecast of ticket contract requirement and costs

History and forecast of New Zealand's IEA ticket contract requirement

New Zealand's ticket contract requirement fluctuates significantly due to fluctuations in domestic production

44 New Zealand's relatively small demand means that new domestic production coming online can significantly change its net imports and hence its 90 day requirement. Figure 3 illustrates this (all graphs are normalised to 90 days): The bottom area plot (green) shows New Zealand's production profile from 2007 to 2012. The square markers along the top show New Zealand's demand profile. The gap between the production profile and the demand profile is New Zealand's IEA net import requirement.[10] The second area plot (red) is the commercial inventory held in New Zealand. It can be seen that this makes up the majority of New Zealand's 90 day obligation requirement. The gap between the commercial inventory and the demand profile represents the volume that New Zealand makes up via ticket contracts. This ticket contract volume is plotted in the bar graph along the bottom.

Figure 3



[10] Stock changes within the country will have a relatively small effect on New Zealand's net imports.

How forecasts for demand, commercial inventory, and domestic production are made

45 A forecast of the ticket contract requirement is necessary to estimate the future cost of the ticketing regime. To forecast New Zealand's ticket contracting requirement it is necessary to forecast:

a. demand for oil products

b. commercial inventory

c. domestic production.

46 For this analysis the oil product **demand forecast** developed by MBIE as contained in its *Energy* Outlook *2011* is used.

47 Levels of **commercial inventory** have been relatively stable over recent years as the period of infrastructure rationalisation following fuel market deregulation has tailed off. Because compliance with the 90 day obligation is checked by the IEA every month, the commercial inventory forecast of a given year must be for the lowest month of that year. This ensures that sufficient ticket contracts are purchased that New Zealand is compliant with its obligations for every month of that year. The forecast is based on historical minimum commercial inventories.

48 **Production forecasts** could be made up of two components:

a. a forecast based on estimated production profiles of known fields that are supplied to MBIE by companies operating in New Zealand

b. a theoretical forecast of production profiles of yet undiscovered reservoirs.

49 Theoretical forecasts of new petroleum discoveries are highly uncertain. While the government expects that the recent increase in exploration will result in new discoveries, given that lead times for development are usually at least three to four years, and given that production usually takes a number of years to ramp up, it is not necessary to take production from new discoveries into account for forecasts out to about five years.

50 For this analysis a forecast of ticket contract requirements is made only out to five years, and hence only production profile estimates provided by oil companies are used. Beyond 2017, an estimate of ticket contract costs at the extremes (when New Zealand becomes a net exporter, and when New Zealand domestic production is zero) is provided.

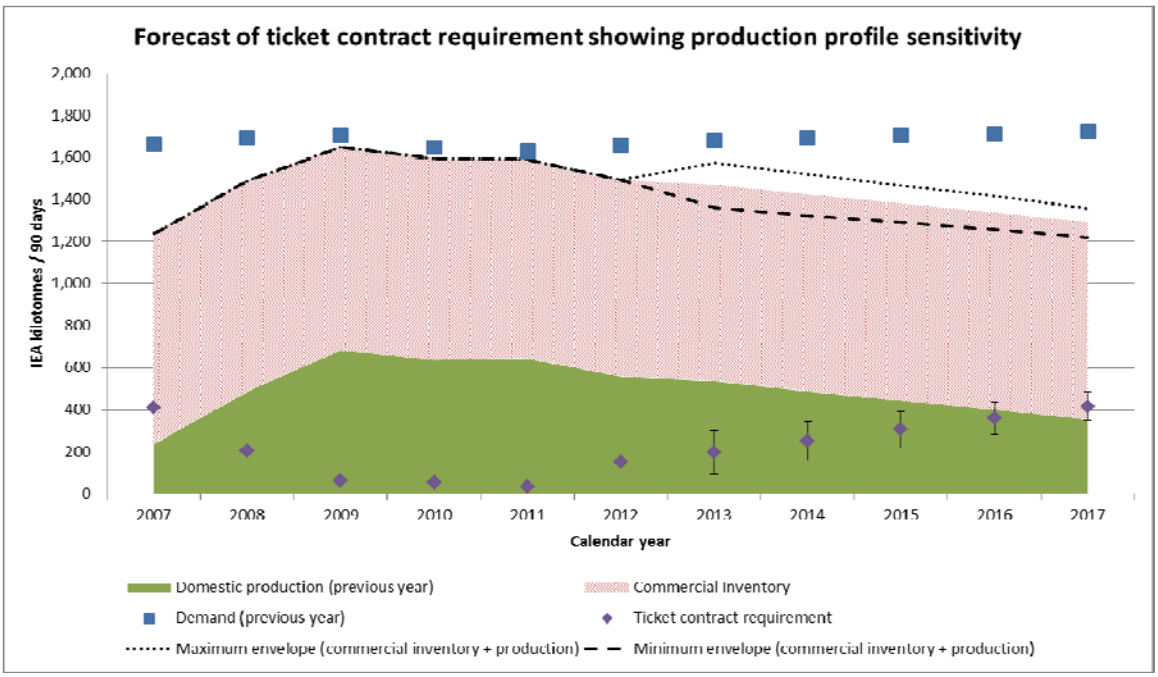
The forecast reduction in production in the short-term results in a large increase in ticket contract requirements but also has the largest uncertainty

51 With no large new oil discoveries in recent years production from known fields is forecast to continue to decline over the next five years putting upward pressure on New Zealand's net import obligation and hence its ticket contract requirement.

52 In the short-term it is likely that work will be done on existing fields that will lead to incremental increases in known reserves, thus resulting in upside uncertainty in the forecast. Further, even without these incremental increases, actual production profiles will vary from the estimates provided by companies. This uncertainty is estimated to be +/-20 percent from the forecast based on historical reassessments of reservoirs that have been made by companies.

53 Figure 4 shows forecasts out to 2017 for demand, commercial inventory and production, and shows how the forecast decrease in production leads to a large increase in New Zealand's ticket contract requirement. Also shown is a sensitivity analysis of the production profile using an envelope of +/-20 percent. The 20 percent uncertainty in the production profile results in a +/-28 percent change in the total ticket contract volume over 2013-2017.

Figure 4

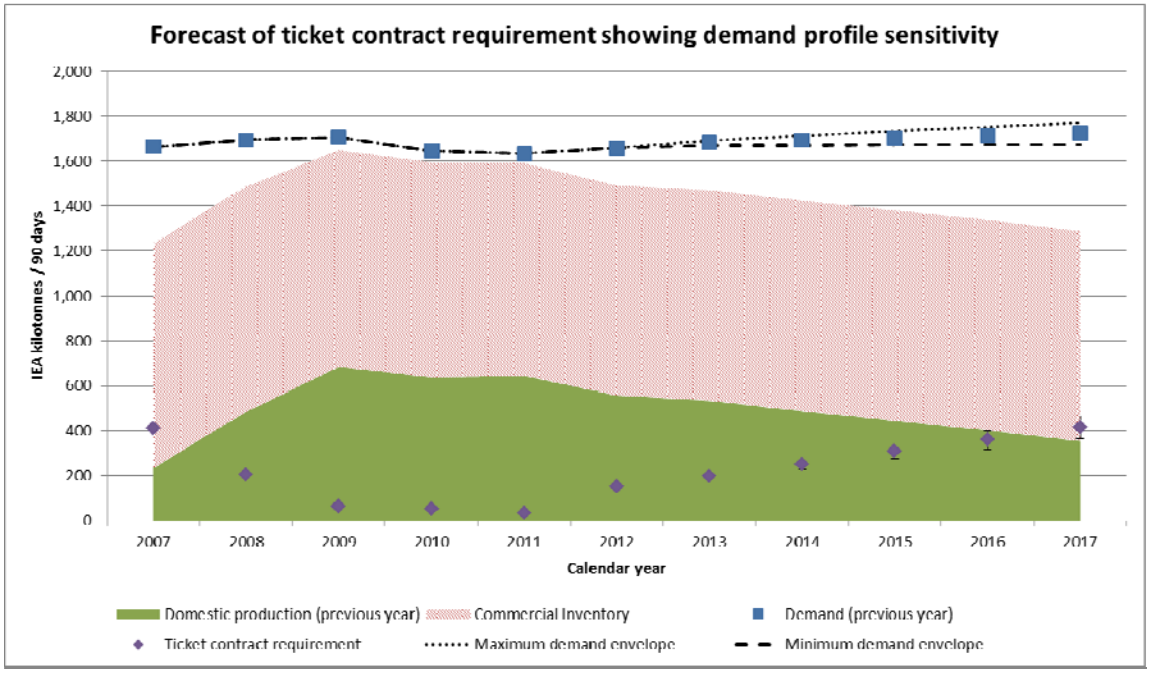


Demand is forecast to rise gradually and is sensitive to GDP

54 The MBIE *Energy Outlook 2011* forecasts a gradual rise in oil product demand. It also provides high and low GDP growth forecasts that are used here to test the sensitivity of the ticket contract requirement on the demand profile.

55 Figure 5 shows how the gradual rise in demand contributes to the increase in the ticket contract requirement. Also shown is the sensitivity analysis of the demand profile using the high/low GDP growth scenarios as a sensitivity envelope. The demand uncertainty results in a +10 percent/-11 percent change in the total ticket contract volume over 2013-2017.

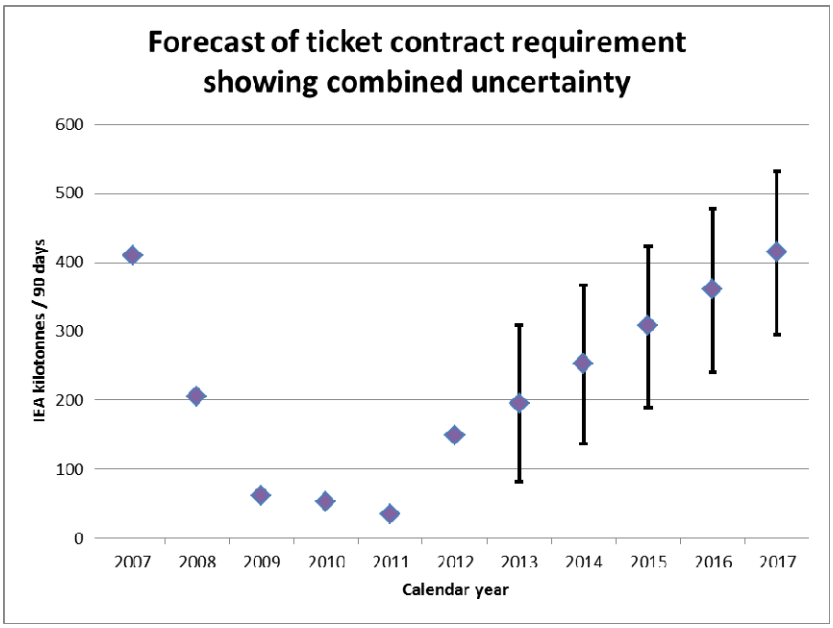
Figure 5



The combined uncertainty from the production and demand profiles is estimated to be 38 percent

56 Figure 6 shows the combined uncertainty in the ticket contract requirement from the uncertainties in the production and demand profiles. The combined uncertainty results in a +/-38 percent change in the total ticket contract volume over 2013-2017.

Figure 6



History and forecast of cost of ticket contracts

Ticket contract prices year-to-year depend on the state of the oil market when New Zealand goes to tender, on the volume that New Zealand tenders for, and on the exchange rate

57 The **oil market structure** is a significant determinant of the price of the ticket contracts that are offered when New Zealand goes to tender each year. For most of the past few years futures prices of oil have been higher than current prices. This gives companies an incentive to hold stock as they can lock in the market benefit. When current prices are higher than futures prices (called backwardation) ticket prices become higher.[11]

58 If the volume of ticket contracts that New Zealand tenders for is high then the average price of ticket contracts also generally becomes higher.

59 Lastly, the NZD/USD **exchange rate** is a determining factor for the cost of ticket contracts since tickets are offered in USD.

60 The average price of ticket contracts entered into by New Zealand between 2007 and 2012 has ranged from around USD0.79/tonne/month to USD1.86/tonne/month.

Forecasts of ticket contract costs depend of forecasts of ticket prices, exchange rate, and ticket requirements

61 The annual cost of ticket contracts is:

cost = average ticket price x exchange rate x requirement

62 This analysis uses the 2007-2008 average ticket price of about USD1.50/tonne/month as a **reference scenario forecast for the ticket price**. This is a reasonable assumption given that the forecast volume requirements for the next five years are comparable to requirements during 2007-2008.[12]

63 For the **reference scenario forecast for the NZD/USD exchange rate** the forecast of the New Zealand Institute of Economic Research is used.

64 The **ticket requirement forecast** developed above and shown in Figure 6 is used as the reference scenario for the ticket requirement.

65 These reference scenarios result in the reference ticket cost forecast in Table 3.

Table 3: Forecast of ticket contract costs

Fiscal year	*2013/14*	*2014/15*	*2015/16*	*2016/17*
Cost (NZD million)	5.185	6.697	8.658	10.579

[11] This was the situation during tender for 2012 ticket contracts.
[12] MBIE notes that historical prices do not necessarily provide an accurate estimate of future prices.

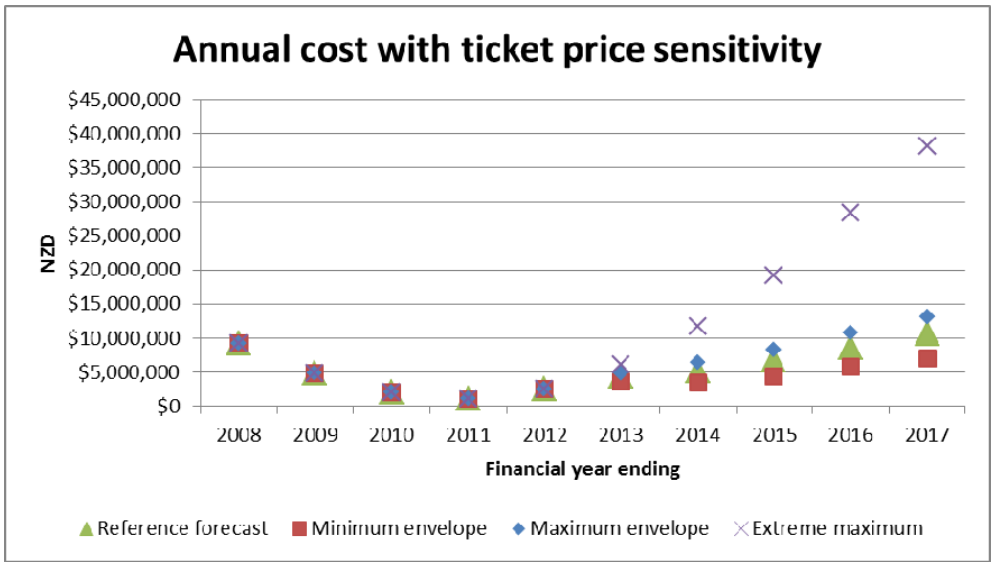
Ticket costs are sensitive to ticket prices, exchange rate, and ticket volume requirements

66 To test the **sensitivity of the ticket costs to ticket prices** a low price scenario of USD1/tonne/month and a high price scenario of USD1.86/tonne/month are used. To test an extreme scenario the 2012 ticket prices (which were unusually high due to the backwardation of the oil market at the time of tender) are used, but rather than using the average price paid in 2012, all prices offered are taken account of by incrementally accepting the more uncompetitive offers as the volume requirement increases over the next five years.

67 Figure 7 shows an increasing annual cost for ticket contracts which results from the increasing ticket contract requirement through to 2017. Also shown are the low and high price scenarios discussed above which change the average cost of ticket contacts over 2013-2017 by +22 percent and -31 percent respectively.

68 The extreme price scenario results in a rapid escalation of costs over the forecast period since New Zealand would have purchase relatively expensive tickets.

Figure 7



69 MBIE does not consider that the extreme scenario is likely for the following reasons:

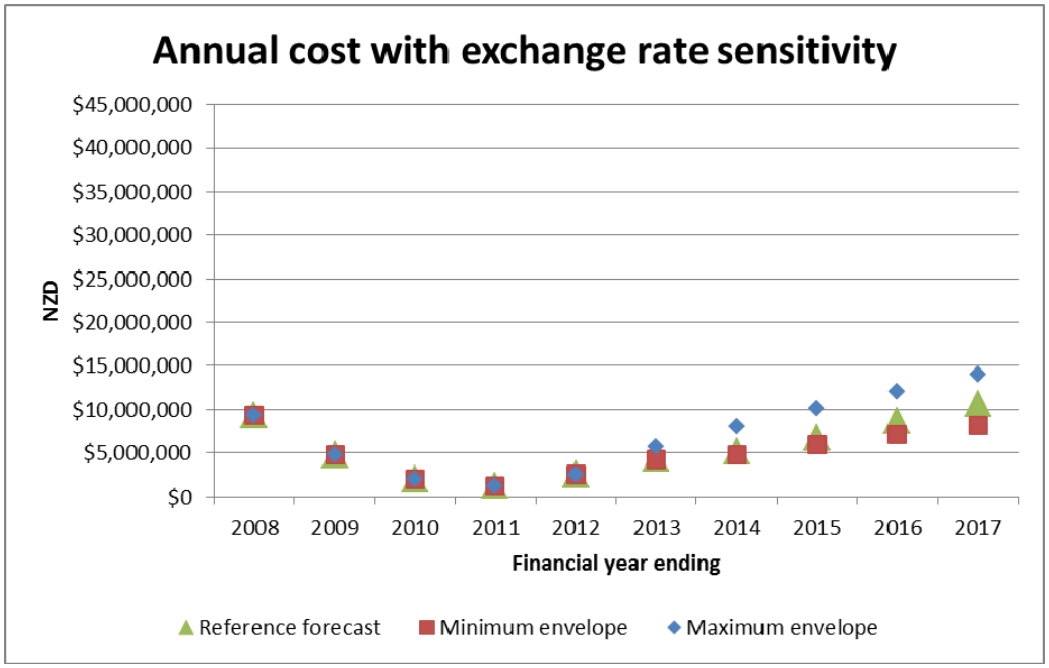
a. The tenders offered for 2012 were expensive due to the unusual level of backwardation of the oil market at the time of tenders.

b. Since the last tender New Zealand has entered into a further government-to-government agreement with Denmark thereby increasing the range of suppliers that New Zealand has access to.

c. A further government-to-government agreement is presently being finalised with Spain and New Zealand plans to approach further IEA members to gauge their interests in entering agreements.

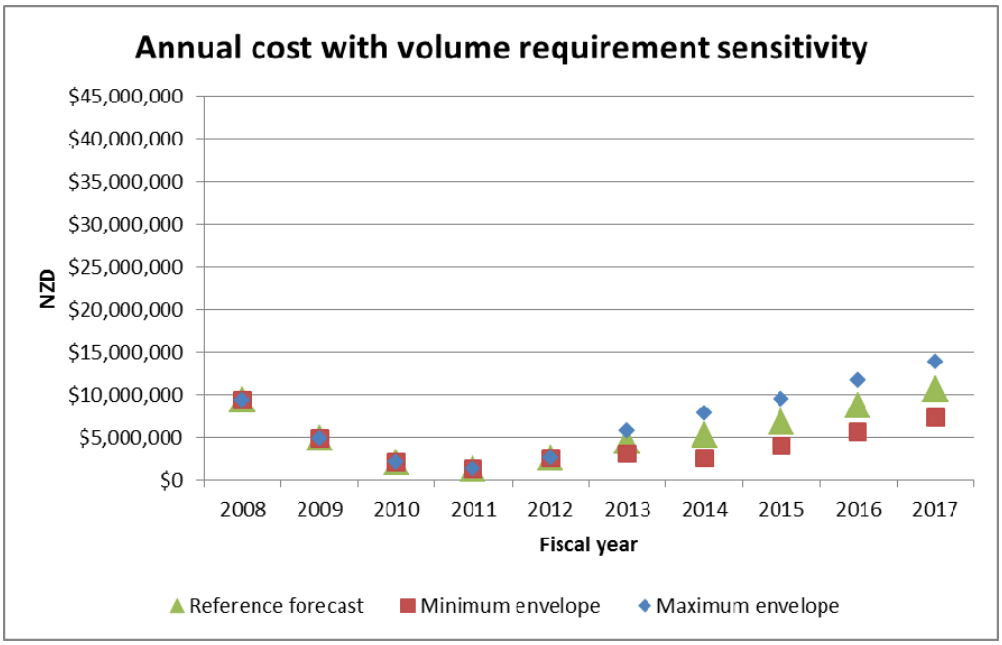
70 To test the **sensitivity of ticket costs to exchange rate** the 2009 low of approximately 0.50 NZD/USD and the 2011 high of approximately 0.85 NZD/USD are used. Figure 8 shows the low and high exchange rate scenarios. These scenarios change the average cost of ticket contacts over 2013-2017 by +40 percent and -15 percent respectively.

Figure 8



71 The uncertainty of the volume requirement (see Figure 6) is used to test the **sensitivity of tickets costs to the volume requirement**. Figure 9 shows the low and high ticket requirement scenarios. These scenarios change the average cost of ticket contacts over 2013-2017 by +36 percent and -37 percent respectively.

Figure 9



New Zealand's ticketing cost in the long-term

72 As discussed above, New Zealand's ticketing requirement in the long-term (beyond about 2017) is very uncertain mainly due to uncertainty in the production profile beyond five years. However, estimates of the limits of the annual cost of tickets can be made.

73 On one extreme the annual cost of purchasing tickets could be zero. This would occur if New Zealand increased domestic production to a point where net imports are covered by commercial stocks.

74 The other extreme is that New Zealand's production goes to zero. The forecast cost of tickets in 2020 would be approximately NZD18 million, assuming:

a. the forecast 2020 average 90 day demand of 1770 kilotonnes

b. commercial inventory stays stable at 936 kilotonnes

c. a ticket price of USD1.50/tonne/month

d. an exchange rate of 0.66 NZD/USD.

75 Beyond 2020 this would change gradually with change in demand.