Independent Pricing and Regulatory Tribunal

Ethanol mandate

Options to increase the uptake of ethanol blended petrol

Other — Addendum to May 2015 Final Report
October 2015

IPART
New South Wales

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1 Executive Summary

In January 2015, the Premier asked IPART, under section 9 of the *Independent Pricing and Regulatory Tribunal Act 1992* (the IPART Act), to identify and assess options to increase the uptake of ethanol blended petrol in NSW, to meet the mandate of ethanol comprising 6% of all petrol sold in NSW. The Terms of Reference (ToR) for this review are provided at Appendix A of this Addendum.

As per the ToR, IPART was not required to consult with the public. However, we did engage in targeted consultation with stakeholders, including relevant government departments and agencies, volume fuel sellers, ethanol producers and industry associations and bodies.

We considered a range of options, including broadening the mandate (extending its coverage), introducing premium ethanol petrol blends, reducing the availability of ethanol-free petrol, introducing specific measures to increase the demand for ethanol blended petrol (EBP), strengthening enforcement of the mandate, and regulating the price of ethanol.

Drawing on our targeted stakeholder consultation and available data, we assessed the costs, benefits and likely ethanol uptake of these options. We delivered our Final Report, titled *Ethanol mandate: Options to increase the uptake of ethanol blended petrol* (Final Report), to the Premier in May 2015.

On 24 September 2015, we were asked by the NSW Department of Premier and Cabinet (DPC), on behalf of the Premier, to assess some additional options to increase the uptake of ethanol. Our assessment of these additional options is outlined in this October 2015 Addendum to our May 2015 Final Report.

The sections below provide an overview of the key findings of our Final Report, the additional options we have been asked to assess, our approach to assessing these additional options and our key findings in relation to this additional task.

Chapter 2 of this addendum provides more detail of our assessment of the requested additional options.

1.1 Key findings of our May 2015 Final Report

Of the options we assessed for our Final Report, **no option would achieve the 6% mandate and result in a positive net benefit to the NSW community.**

Our Final Report identified three broad directions the Government could take:

- Retain the status quo – no additional costs would be incurred, and the current level of ethanol uptake would likely continue to gradually decline to about 2% by 2024-25.

- Conduct a consumer education campaign – would likely increase ethanol uptake to some extent and achieve a net benefit for the NSW community, but would not achieve the 6% ethanol mandate. A consumer education campaign would be more effective if combined with price regulation of ethanol to deliver value for money for consumers.
- Implement costly measures to achieve the 6% ethanol mandate – options to achieve the 6% mandate would come at a net cost to the NSW community and remove consumer choice. Such measures would need to be accompanied by price regulation of ethanol to ensure value for money for consumers. The following options could achieve the 6% mandate, but at a net cost to the NSW community, and the Government would need to consider any legal issues arising from these options:
  - require ethanol in almost all fuel grades up to a maximum of 10%
  - require wholesalers to purchase ethanol equal to 6% of their total NSW petrol sales, and
  - tighten the conditions for exemptions from the mandate and require all service stations to offer an ethanol blended product.

1.1.1 Cost-benefit analysis of options considered in our Final Report

Table 1.1 below summarises the results of the analysis in our Final Report.

The reported 'Ethanol/total petrol sales' is the projected share of ethanol as a proportion of the total volume of petrol sold in 2024-25, if the option is implemented, compared to our projected 'business as usual' baseline share of 2% by 2024-25. The effects on ethanol uptake from individual options are **not additive**.[1]

[1] Reported ethanol uptake is the projected share of ethanol as a proportion of the total volume of petrol sold in 2024-25 under the scenario defined by a particular Option. It should be assessed against the 'business as usual' baseline uptake of 2% by 2024-25. The baseline is the same across all Options. The incremental uptake of ethanol under each Option is the difference between the uptake of ethanol under that Option and the baseline uptake of 2%. The effect of combining several Options is in general non-linear – ie, the Options are non-additive. Separate scenario analysis would be required to model the simultaneous application of several Options and the effects of interaction between the Options.

Table 1.1 Summary of cost-benefit analysis to 2024-25 (net present value $ million, $2014-15)[2]

Option	Ethanol/ total petrol sales by 2024-25[a]	PV of costs	PV of benefits	Overall NPV[b]
Status quo	2.0%	-	-	-
Supply side				
Option 1 – Broaden the mandate				
▾ Option 1a – Reduce the qualifying number of controlled service stations from 20 to 5[c]	Negligible			
▾ Option 1b – Require all service stations to offer an ethanol blended product	3.0%	130	45	(85)
▾ Option 1c – Require all service stations that sell more than 3 million litres of petrol a year to offer ethanol blended product	2.3%	41	15	(26)
▾ Option 1d – Require all stations offering two or more petrol grades to offer ethanol blended product	2.8%	110	37	(73)
Option 2 – Introduce premium ethanol blends[d]				
▾ Option 2a – Require E10 blended in NSW to conform to PULP standard	Negligible	-	-	-
▾ Option 2b – Require all primary wholesalers to offer at least one premium ethanol blend	Negligible	-	-	-
Option 3 – Increase local supply competition by fast-tracking development approvals or other incentives[e]	Negligible	-	-	-
Option 4 – Reduce availability of ethanol-free petrol				
▾ Option 4a – Require ethanol in all fuel grades,(except diesel) up to a maximum of 10%[i]	10.0%	1,490	301	(1,189)
▾ Option 4b – Remove all RULP and replace with E10[i]	3.7%	145	76	(70)
▾ Option 4c – Require all wholesalers to purchase ethanol equivalent to 6% of their total petrol sales[i]	See options 4a or 4b, and/or 5[j]			
Demand side				
Option 5 – Consumer education campaigns	2.2%	5	61	56
Option 6 – Government motor vehicle fleet convert to flex-fuel vehicles.	2.3%	123	33	(90)

2 IPART, *Ethanol mandate: Options to increase the uptake of ethanol blended petrol - Final Report*, May 2015, Table 1.2, p 6.

Option	Ethanol/ total petrol sales by 2024-25[a]	PV of costs	PV of benefits	Overall NPV[b]
Enforcement				
Option 7 – Tighten the conditions for exemption and definition of reasonable steps[i]	2.6%	351	71	(280)
Option 8 – Increase penalties for non-compliance[f]				
▾ Option 8a – Set higher court imposed penalties	Negligible	-	-	-
▾ Option 8b- Set volume based penalties for non-compliance	Negligible	-	-	-
Price				
Option 9 – Regulate price of ethanol				
▾ Option 9a – Price based on energy parity value	2.2%	258	259	2
▾ Option 9b – Price based on international benchmarks	2.3%	413	412	(1)
▾ Option 9c – Regulate price charged by Manildra Group	-	-	-	-
Option 10 – Set an ethanol target rather than a mandate[g]	Negligible	-	-	-
Option 11 – Blend E10 at 9.5%[h]	Negligible	-	-	-

[a] Proportion of ethanol to total volume of petrol sold at the end of 2024-25.
[b] Brackets indicate negative NPV (ie, a net cost). Totals may not add due to rounding.
[c] Negligible impact on ethanol uptake because small number of operators affected.
[d] Negligible impact on ethanol uptake because ethanol-free petrol would still be available, and customers are averse to ethanol blended petrol.
[e] Negligible impact on ethanol uptake because there is perceived regulatory uncertainty.
[f] Negligible impact on ethanol uptake because volume fuel sellers are able to seek exemptions from complying with the mandate.
[g] Negligible impact on ethanol uptake. Some stakeholders indicated they would provide less E10 without the mandate.
[h] Potential risk of breaching the 10% cap set under Australian fuel standards.
[i] Exemptions under the Act would be removed.
[j] Separate cost benefit analysis not conducted as likely impact covered under Option 4a / Option 4b / Option 5.
Source: IPART analysis.

We found that most options to increase ethanol uptake would increase the cost of an already expensive policy, with little economic gain for the NSW community.

We also found that the major benefits of measures to increase ethanol uptake would accrue to producers of ethanol. The magnitude of other benefits (environmental benefits through greenhouse gas abatement and health impacts through improved air quality) was much smaller than the increase in producer surplus.[3]

[3] We used the transferred benefit approach to estimate the external benefits of fuel ethanol, referring to the range of estimates reported in academic and policy literature.

Further, we found that the majority of the costs of measures to increase ethanol uptake would be borne in the first instance by businesses required to comply with or implement these measures, which would ultimately pass these additional costs on to consumers through higher prices.

Chapter 5 of the Final Report discusses the methodology used in our cost-benefit analyses.

1.1.2 Current barriers to achieving the ethanol mandate

The *Biofuels Act 2007* (NSW) (the Act) imposes an ethanol mandate on major fuel sellers, who must ensure that the volume of ethanol sold accounts for 6% of the total volume of petrol sold. The ethanol mandate was set at 6% in 2011 and has never been met. The proportion of ethanol to total volume of petrol sold (referred to as 'ethanol uptake' in this report) has been declining in recent years. It was about 3.2% at December 2014.[4] Based on recent data, ethanol uptake has continued its decline, standing at 2.9% at June 2015.[5]

Our Final Report identified a number of barriers to achieving the ethanol mandate and significantly increasing the uptake of EBP. These are outlined below.

Consumer preferences

The key barrier to increasing ethanol uptake is consumer aversion to ethanol blended petrol, as demonstrated by consumers switching to premium petrol blends in order to avoid E10, when regular unleaded petrol is no longer available.[6]

Limited degree of volume sellers' control over final demand

The Act requires volume fuel sellers to ensure ethanol accounts for 6% of their total petrol sales in NSW. Volume fuel sellers include primary wholesalers (those that sell fuel from an oil refinery or major shipping terminal) and major retailers (those that control more than 20 service stations). However, only about 39% of the service stations in NSW are controlled by volume fuel sellers.[7] Therefore, volume fuel sellers do not fully control product supply and availability to the consumer.

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4 IPART, *Ethanol mandate: Options to increase the uptake of ethanol blended petrol - Final Report*, May 2015, p 1.

5 NSW Fair Trading, http://www.fairtrading.nsw.gov.au/biz_res/ftweb/pdfs/Businesses/Biofuels_industry/Biofuel_results_2Q_2015.pdf, accessed on 14 October 2015.

6 IPART, *Ethanol mandate: Options to increase the uptake of ethanol blended petrol - Final Report*, May 2015, p 2.

7 IPART, *Ethanol mandate: Options to increase the uptake of ethanol blended petrol - Final Report*, May 2015, p 23.

Exemption provisions

The Act exempts wholesalers and major retailers if they can demonstrate they took reasonable steps to comply with the mandate. Given that the volume fuel sellers do not control final demand, additional measures to tighten the exemptions would add to businesses' costs, but would likely have only a marginal effect on the uptake of ethanol, if consumer preferences remain unchanged.

Pricing of ethanol blended petrol

The current price of E10 often does not represent value for money on an energy efficiency basis. Ethanol contains 31.6% less energy per litre than petrol and, on average, using E10 increases fuel consumption by about 3%. The loss of energy content in the ethanol blend is not compensated by the price discount offered on E10 in the market. To be price competitive, E10 needs to be about 3% cheaper than regular unleaded petrol. However, at the time of our assessment for the Final Report, the market average discount was only about 1.5%.[8]

1.1.3 Other key observations and findings of our May 2015 Final Report

Other key observations and findings of our Final Report are outlined below.

Market power in fuel ethanol market

We found that measures to increase ethanol uptake by reducing consumer choice would strengthen Manildra Group's already substantial market power in the ethanol market with the fuel ethanol mandate.

There is little prospect of competition from imported ethanol in the foreseeable future, given the Australian Government's concessionary excise arrangements for local ethanol producers.

We found that the price of ethanol in NSW is higher than the international market price, and that the Manildra Group's cost of supply is likely lower than its Australian competitors given its integrated production process, which includes using a waste starch product.[9]

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8 Based on data from April to June 2014, see IPART, *Ethanol mandate: Options to increase the uptake of ethanol blended petrol - Final Report*, May 2015, p 4.

9 IPART, *Ethanol mandate: Options to increase the uptake of ethanol blended petrol - Final Report*, May 2015, pp 78-79.

Demand side measure - consumer education

We identified a consumer education campaign as an option that may deliver net benefits. A targeted education campaign to inform motorists about the compatibility of E10 with their vehicles, if based on strong evidence and supported by the motor industry, might be effective in reversing the flight of consumers towards premium petrol blends and alleviating consumer aversion to E10.

We did not assess the effectiveness of a potential consumer education or public awareness campaign. Our calculations are based on the assumption of 10% effectiveness of the campaign in reversing consumer aversion.[10] That is, we assumed about 10% of the volume of petrol purchased by customers who choose PULP to avoid ethanol blended petrol would be replaced by E10 as a result of the campaign.[11] The consumer aversion to ethanol blended petrol has been demonstrated by the notably higher share of PULP in total petrol sales in NSW compared to the rest of Australia.[12]

We noted that, as a first step, market research could determine the type of customers averse to ethanol and their reasons, to target the campaign.

A consumer education campaign should only be undertaken if it is evidence based, including evidence on the compatibility of vehicles with E10. For instance, if the campaign refers to environmental or other benefits of E10, these references need to be supported by strong evidence. The education campaign should be more than just an E10 promotional campaign.

A consumer education campaign may be more effective if it were to be accompanied by some form of price regulation of ethanol (ie, to ensure that E10 is sold at an energy parity price to Regular Unleaded Petrol and represents value for money for customers). See Chapter 7 of the Final Report for further discussion.

10 IPART, *Ethanol mandate: Options to increase the uptake of ethanol blended petrol - Final Report*, May 2015, p 63.

11 We estimated the *total volume of petrol purchased by customers who choose PULP to avoid ethanol blended petrol* to be the proportion of PULP purchased in NSW (the only state with an ethanol mandate) above the national average. We then assumed that the education campaign would transfer demand for 10% of this additional PULP volume in NSW to E10.

12 IPART, *Ethanol mandate: Options to increase the uptake of ethanol blended petrol - Final Report*, May 2015, pp 27-28.

1.2 Request for assessment of Additional Options

As mentioned above, DPC, on behalf of the Premier, has asked IPART to assess additional options to increase the uptake of ethanol. Specifically, we were asked to assess the following:

A1. The estimated uptake of E10 if all stations that offer 3 or more fuel types were required to offer Ethanol Blended Petrol (EBP), and:

a) service station regulated by the Act must make E10 pumps at least as available as the most popular non E10 fuel; or

b) if a bowser at a service station regulated by the Act dispenses two or more fuel types, then at least one must be E10 fuel.

A2. The total estimated uptake of E10 if the following options, taken from the Ethanol Mandate IPART Report, were combined:

i. Option 1d/1b (combination of these options to the effect that all stations offering 3 or more fuel types must offer EBP)

ii. Option 5 (Consumer education campaign)

iii. Option 9a (Price Regulation on energy parity).

A.3 An indication of the potential costs that currently regulated and newly regulated service stations would incur to meet the above options. This includes an indication of the incremental costs of Options A1a and A1b for stations that are currently operating under the mandate.

We were asked to provide our findings in relation to the above options to the Premier by **22 October 2015**.

Also, we were advised that, in order to expedite the request, the collection of new data and further stakeholder engagement was not expected. Further, we were advised that, consistent with our review which produced our May 2015 Final Report, the additional work would be confidential and not involve public consultation.

Our Terms of Reference for this additional task is provided in Appendix B to this Addendum Report.

1.3 Our approach to this request

The request is in relation to:

- A **supply side** measure extending the current scope of the ethanol mandate, combined with two **Point of Sale** (POS) measures, prescribing the way in which E10 must be offered at the service stations under the extended scope (labelled Additional Options A1a, A1b, or referred to collectively as Additional Options A1).

- A combination ('**package**') of options evaluated in our Final Report and Additional Options A1 (this package is labelled Additional Option A2).
  - For the tasks A1 and A2, we are required to estimate the **uptake of E10**. Consistent with our Final Report, we report the uptake of ethanol as a proportion of ethanol to the total volume of petrol sold in NSW at 2024-25.[13]

Task A3 requires us to discuss indicative costs of implementing Additional Options A1 and A2.

In undertaking this additional task, we match options from the Final Report to the Additional Options to establish **lower and upper bounds** for:

- The **number of new stations** under Additional Options A1a and A1b.
- The **uptake of ethanol** from the extended scope under Additional Options A1a and A1b.
- The **uptake of ethanol** from combining some of the options assessed in the Final Report and either Additional Option A1a or Additional Option A1b into a package of options (labelled Additional Option A2).
  - We consider four 'packages' of options, to provide a range of estimates for ethanol uptake. Each package comprises a combined application of a supply side option (using one of either Final Report Option 1d, Final Report Option 1b, Additional Option A1a or Additional Option A1b), a consumer education campaign and price regulation of fuel ethanol.

We also:

- present other findings and general observations on the additional tasks, where applicable
- provide an indication of the potential costs, qualifying separately:
  - the incremental costs to current stations under the mandate resulting from the additional POS measures, and
  - the costs to newly regulated stations
- discuss data limitations and other factors influencing our assessment.

We have not collected new data or conducted new cost-benefit analysis of the additional options. Rather, we have used the data and analysis of comparable options in our Final Report to draw conclusions on the likely effects of the Additional Options.

13 In our modelling for Final Report, we assumed that all fuel ethanol is blended as E10.

1.4 Key additional findings

Based on our analysis, the Additional Options would not achieve the 6% ethanol mandate and would add to the costs of the current policy. The additional cost burden would initially fall disproportionately on smaller service stations, and would be ultimately passed on to consumers through higher prices.

The findings of our Addendum report are as follows:

1	Broadening the ethanol mandate to require all stations that offer 3 or more fuel types to offer Ethanol Blended Petrol, combined with Point of Sale (POS) measures (Additional Options A1), might increase the total uptake of ethanol to between about **2.8% to 3.7%** of all petrol sales by 2024-25, but is unlikely to achieve the 6% mandate.	17
2	An unintended consequence of the Additional Options may be an impact on the biodiesel mandate.	19
3	A package of options including broadening the ethanol mandate to require all stations that offer 3 or more fuel types to offer Ethanol Blended Petrol, combined with Point of Sale (POS) measures (Additional Options A1), a consumer education campaign (Option 5 of Final Report), and price regulation of ethanol on energy parity (Option 9a of Final Report) might increase the total uptake of ethanol to about **3.3% to 4.3%** of all petrol sales in NSW by 2024-25, but is unlikely to achieve the 6% mandate.	20
4	Broadening the ethanol mandate to require all service stations that offer 3 or more fuel types to offer Ethanol Blended Petrol, combined with Point of Sale (POS) measures (Additional Options A1 on their own or as part of package in Additional Option A2), would likely impose greatest incremental costs on newly regulated stations. This would impact negatively on small and medium businesses, especially in regional and rural areas.	28
5	Incremental costs of Additional Options A1 and A2 on current stations under the mandate can vary, depending on the size, configuration, age and refurbishment schedule of the station.	28
6	More precise analysis of the likely uptake of ethanol and the indicative costs is limited by availability of data.	29
7	The Additional Options would not achieve the 6% ethanol mandate and would add to the costs of the current policy. The additional cost burden would initially disproportionately fall on smaller service stations, and would likely ultimately be passed on to consumers through higher prices.	29

Table 1.2 Summary of assessment of total ethanol uptake and indicative costs for Additional Options

Additional Option	Ethanol/ total petrol sales by 2024-25[a]	Potential costs to service stations
Status quo (baseline)	2.0%	
Supply side options (A1)		**Current stations** (incremental costs – POS measures).
Additional Option A1a – All stations offering 3 or more fuel types to offer E10, and E10 pumps made at least as available as most popular non-E10 fuel	2.8% - 3.7% [b]	**A1a –** could be just additional compliance costs (eg, reporting E10 sales, etc) if there are sufficient ethanol compatible infrastructure, otherwise additional costs incurred such as potentially changing underground pipework; remodelling the forecourt (including foregone revenue); and purchasing ethanol compatible hoses and nozzles etc. **A1b –** could be similar to above.
Additional Option A1b – All stations offering 3 or more fuel types to offer E10, and all bowsers dispensing 2 or more fuel types to offer at least one E10 fuel	2.8% - 3.7% [b]	**Newly regulated stations** (combination of converting tanks to be E10 compatible + POS measures). **A1a** - infrastructure costs (refurbish or install new ethanol compatible tanks, $12,500-$200,000; changing underground pipework; remodelling forecourt (including foregone revenue); purchasing ethanol compatible hoses and nozzles etc) and compliance costs (reporting E10 sales etc). **A1b –** could be similar to above.
Packages of options (A2)		
Package I Option 1d (extend to two petrol grades or more) + Option 5 (consumer education) + Option 9a (price regulation of ethanol)	3.3%	**Current stations –** minimal incremental costs (baseline). **Newly regulated stations –** infrastructure costs similar to 'Newly regulated stations A1a' above.
Package II Option 1b (extend to all stations) + Option 5 (consumer education) + Option 9a (price regulation of ethanol)	3.5%	**Current stations –** minimal incremental costs (baseline). **Newly regulated stations –** infrastructure costs similar to 'Newly regulated stations A1a' above.
Package III Additional Option A1a + Option 5 (consumer education) + Option 9a (price regulation of ethanol)	3.3% - 4.3%	**Current stations and newly regulated stations –** as per 'Additional Option A1a' above.
Package IV Additional Option A1b + Option 5 (consumer education) + Option 9a (price regulation of ethanol)	3.3% - 4.3%	**Current stations and newly regulated stations –** as per 'Additional Option A1b' above.

[a] Proportion of ethanol to total volume of petrol sold at the end of 2024-25.

[b] We estimate the same range for the potential uptake of E10 for both Additional Option A1a and A1b. However, within this range, the point estimates of ethanol uptake may be different between these two options.

Note: 'Newly regulated stations' are service stations that would be brought into the scope of the Biofuels Act under the proposed options, while previously not subject to the mandate.

2 IPART's analysis of additional options

As per our additional ToR, we have evaluated:

- A1 – uptake of ethanol
  - under a **supply side** measure extending the current scope of the ethanol mandate, combined with two **Point of Sale** (POS) measures, which prescribe the way in which E10 has to be offered at the service stations under the extended scope (labelled Additional Options A1a and A1b).
- A2 – uptake of ethanol
  - under a combination ('**package**') of some options evaluated in our Final Report and either Additional Option A1a or A1b (labelled Additional Option A2).
  - the package includes the combined application of a supply side option with POS measures, a consumer education campaign and price regulation of fuel ethanol.
- A3 - indicative costs of implementing Additional Option A1a, A1b and Additional Option A2, qualifying separately:
  - the costs to current stations under the mandate resulting from the additional POS measures, and
  - the costs to newly regulated stations.

This Chapter is structured to address each of the above tasks.

2.1 A1 – New supply side measures (broadening the ethanol mandate)

Additional Option A1a and A1b extend the scope of the mandate to include all stations offering 3 or more *fuel types*. We were asked to assess the likely impact on ethanol uptake from the following options:

- Additional Option A1a – Require all stations that offer 3 or more fuel types to offer Ethanol Blended Petrol (EBP) and make E10 pumps at least as available as the most popular non E10 fuel, and
- Additional Option A1b – Require all stations that offer 3 or more fuel types to offer Ethanol Blended Petrol (EBP) and ensure that at each bowser that dispenses two or more fuel types, at least one must be E10 fuel.

The above options are aimed at prescribing the way in which E10 has to be offered at the service stations under the extended scope, through additional Point of Sale (POS) measures.

Point of Sales measures under the Additional Options A1

The POS measure in Additional Option A1a would require E10 to be made at least as available as the most popular non-E10 fuel. This would require the station owner to:

- Establish what the most popular fuel type is at the station level.
- If E10 is already the most popular fuel type, take no further action.
- If E10 is not the most popular fuel type, or is not supplied, assess the 'availability' of the most popular fuel type.
  - Eg, by calculating the number of bowsers or nozzles supplying this most popular fuel type.[14]
- If E10 is supplied but is not the most popular fuel or not as available as the most popular non-E10 fuel, modify the product offering and layout so that E10 is available at the same number of bowsers or nozzles as the most popular non-E10 fuel.
  - In order to comply with this measure, the owner might need to change the use of the underground tank and connected dispensers so that E10 takes the place of the 'most popular' fuel type at the bowser.
- If E10 is not supplied, then the station has to first be made compatible to supply E10, and then to comply on a 'per nozzle/bowser' availability basis.

As discussed further below, there are number of potential implementation issues (apart from direct costs) that need to be considered in relation to this option, including:

  - Consideration of the timeframe to establish the 'most popular' fuel type, and the frequency of its review. This may be significant if there is some variability in the 'most popular' fuel type, particularly given an element of rigidity in the technical layout of a station and its fuel dispensing system.

The POS measure in Additional Option A1b would require that, for a service station under the ethanol mandate, each bowser dispensing two or more fuel types must dispense E10 as one of these fuels. This would require the station owner to:

- Take no further action if E10 is already supplied at each bowser dispensing two or more fuel types.

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14 Bowsers are also known as fuel dispensers (or petrol pumps), and are used to pump fuel into the tanks within vehicles, and calculate the financial cost of the fuel transferred to the vehicle. Depending on the technology, the pump can be either within the bowser (suction pumps) or immersed inside the underground fuel storage tank (submersible pumps). Nozzles are attached to the bowser via flexible hoses, allowing them to be placed into the vehicles' filling inlet. See eg, http://www.epa.nsw.gov.au/mao/servicestation.htm and http://www.epa.nsw.gov.au/resources/air/vapourecov09758.pdf, accessed on 14 October 2015.

- If E10 is not supplied at each bowser dispensing two or more fuel types, undertake activities to connect or otherwise make E10 available at each of these bowsers. As outlined below, this might:
  - include replacing the pipework under the station forecourt
  - reduce the availability of other fuel types, limiting consumer choice and impacting on consumer convenience.

We note that the POS measure in Additional Option A1b appears to be more prescriptive than that in Additional Option A1a. However, in order to make E10 at least as available as the most popular non-E10 fuel, service stations may be required to make it available at every bowser; and making E10 available at every bowser that dispenses two or more fuels types is likely to result in E10 being at least as available as the most popular non-E10 fuel.

2.1.2 Likely ethanol uptake

We estimate that ethanol sales as a proportion of total petrol sales (ethanol uptake) under either Additional Option A1a or A1b could potentially be between 2.8% to 3.7% by 2024-25 (relative to a base case of 2.0%) – although, actual uptake may be different for each Additional Option within the range. This is based on our assessment of Option 1d, Option 1b and Option 4b in our Final Report:

- **Option 1d – This option would require all service stations offering two or more petrol grades to offer ethanol blended petrol**. We estimated that this option would increase ethanol uptake to about 2.8% by 2024-25, or 0.8 percentage points above our baseline estimate of 2% for 2024-25, at a net cost of $73 million (in NPV terms).
- **Option 1b – This option would require all service stations to offer an ethanol blended petrol**. We estimated that this option would increase ethanol uptake to about 3.0% by 2024-25, or 1.0 percentage points above our baseline estimate of 2% for 2024-25, at a net cost of $85 million (in NPV terms).
- **Option 4b – This option was to replace all Regular Unleaded Petrol (RULP) with E10**. We estimated that this option would increase ethanol uptake to about 3.7% by 2024-25, or 1.7 percentage points above our baseline estimate of 2% for 2024-25, at a net cost of $70 million (in NPV terms) (see Table 1.1 in Chapter 1).

Whilst Additional Options A1a and A1b are not exactly the same as Option 1d and Option 4b in our Final Report, there are substantial similarities between these options in terms of their likely effects on uptake. We therefore applied Options 1d, 1b and 4b of our Final Report to provide an indication of the potential uptake of E10 under the Additional Options A1a and A1b.

Lower bound estimate

Option 1d in our Final Report provides a lower bound estimate of ethanol uptake (2.8% by 2024-25) under Additional Options A1a and A1b. We estimated that Option 1d, which requires all stations offering two or more *petrol* grades to offer ethanol blended petrol (EBP), would extend the ethanol mandate to an additional 619 service stations. However, Additional Options A1a and A1b are more expansive that Option 1d, as they refer to three or more *fuel* types (see Box 2.1 below). This means, for example, a station offering only one petrol type but three fuel types (eg, RULP, diesel and LPG) would be subject to Additional Options A1a and A1b, but not Option 1d in our Final Report.

Box 2.1 Fuel type vs petrol type

The difference between 'types of fuel' and 'types of petrol' in the definition of Additional Options A1a and A1b is important as 'petrol' is a narrower category than 'automotive fuels'.

Automotive fuel types include petrol (of various types) as well as diesel, LPG (Liquefied Petroleum Gas) and CNG (Compressed Natural Gas).

Petrol types, in turn, include Regular Unleaded Petrol or 'RULP' (91RON), E10, Premium Unleaded Petrol or 'PULP' (95RON, 98RON) and potentially other blends (eg, 100RON, E85 and other proprietary blends). In our approach, we distinguish between fuel types if they require a designated storage and delivery system (eg, underground tank and piping).

Note: RON stands for Research Octane Number.

All 619 stations brought into the mandate under Option 1d in our Final Report offer at least *two petrol* types and at least *three fuel* types. Therefore, all of these stations would be subject to Additional Options A1a and A1b.

Using data obtained in producing our Final Report, we estimate that a further 64 stations would be subject to Additional Options A1a and A1b. These additional 64 stations offer three grades of *fuel* but only one grade of *petrol* – and were therefore not included in Option 1d.

Therefore, in addition to the number of stations currently subject to the mandate[15], the Additional Options A1a and A1b would subject a further **683** stations to the mandate.

15 We assume stations currently subject to the mandate will remain subject to the mandate under potential new measures.

Upper bound estimate

Option 4b in our Final Report provides a higher bound estimate of ethanol uptake (3.7% by 2024-25) under Additional Options A1a and A1b. Under this option, we assume that RULP is removed at all service stations and replaced with E10. RULP is E10's closest substitute in terms of properties and price. We also estimate that this option would subject an additional 703 stations to the mandate, which is effectively the same as requiring all stations to offer EBP (ie, Option 1b in our Final Report).

Our estimated range of ethanol uptake under Additional Options A1a and A1b, as mapped to comparable options in our Final Report, is presented in Table 2.1 below.

Table 2.1 Mapping Additional Options A1a and A1b to comparable options from our Final Report – Range for ethanol uptake by 2024-25

Additional Options A1	**Final Report Options (Supply Side)**		
	Option 1d – all stations offering 2 or more petrol grades to offer E10	**Option 1b –** all service stations to offer E10	**Option 4b –** Remove RULP
New stations under Final report option	619	703	703
New stations under Additional Options A1	**683**		
Additional Option A1a – All stations offering 3 or more fuel types to offer E10 **and** E10 as available as most popular non-E10 fuel	2.8%	3.0%	3.7%
Additional Option A1b – All stations offering 3 or more fuel types to offer E10 **and** All bowsers dispensing 2 and more fuel types to offer E10	2.8%	3.0%	3.7%
Range for ethanol uptake	Indicative uptake from extending the scope of the ethanol mandate		Indicative uptake from POS measures

Note: The lighter shade represents an indicative uptake from extending the scope of the ethanol mandate based on Options 1d and 1b from our Final Report. The darker shade represents the cumulative ethanol uptake from applying additional POS measures. Together, this provides a range estimate (2.8% to 3.7%) for ethanol uptake under Additional Options A1a and A1b.

Source: IPART analysis based on Final Report, Table 1.1, p 6.

Findings

1 Broadening the ethanol mandate to require all stations that offer 3 or more fuel types to offer Ethanol Blended Petrol, combined with Point of Sale (POS) measures (Additional Options A1), might increase the total uptake of ethanol to between about **2.8% to 3.7%** of all petrol sales by 2024-25, but is unlikely to achieve the 6% mandate.

2.1.3 Other observations and potential effects

Other POS measures

Additional Options A1a and A1b are supply side measures, extending the current scope of the ethanol mandate, combined with Point of Sale (POS) measures. These POS measures prescribe the way in which E10 must be offered at the service stations under the extended scope. The measures apply down to the physical characteristics of the service station, referring to the bowser (or fuel dispenser) and its type (eg, the number of different fuel types available at each bowser).

POS regulatory measures are highly prescriptive. In general, POS regulation applies in markets where there is a strong rationale for such regulation. For example, there are restrictions on the range of over-the-counter and prescription drugs, with the rules pertaining to the display and storage of drugs at the pharmacy.[16] There are restrictions on selling firearms and ammunition by licensed firearms dealers, applied at the point of sale.[17] There are legislated controls on the sale of tobacco products, including the ban on the display of tobacco and smoking products, and POS measures on the display of tobacco prices.[18] In all examples above, the rationale for the point of sale regulation is consumer protection or an externality such as public health. In all examples above, there is a licence, registration or notification associated with the supply of the relevant product, and non-compliance with the POS measures would constitute a breach of licence conditions.

We consider that any option that includes POS regulation of the supply of E10 should undergo an assessment to demonstrate the rationale for the proposed measure. It should be supported by cost-benefit analysis to ensure a best practice approach to regulation (see IPART, *Reforming licensing in NSW – review of licence rationale and design - Final Report*, September 2014).

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16 NSW Ministry of Health, Guide to poisons and therapeutic goods legislation for pharmacists, http://www.health.nsw.gov.au/pharmaceutical/Documents/guide-pharmacists.pdf, accessed 15 October 2015.

17 Eg, *Firearms Regulation 2006*, s 38.

18 http://www.health.nsw.gov.au/tobacco/Pages/tobacco-retailing-laws.aspx, accessed on 13 October 2015.

Implementation issues

There are likely to be implementation and enforcement issues associated with Additional Option A1a. These include, for example, the following:

- Depending on the costs and benefits of its various options, a station owner may have an incentive to:
  - withhold supply of the most popular fuel type within the reporting period, or
  - withdraw supply of a particular fuel type altogether to avoid the regime (eg, removing one petrol grade from offering to fall outside the defining criterion of '3 or more fuel types').
- There may be high costs of information reporting to the businesses, and compliance monitoring to the regulator. To ensure compliance, the regulator would need to audit detailed sales records for a large number of stations. Even if conducted using a risk-based approach, monitoring compliance and enforcement would incur a substantial additional cost to a regulator (of the ethanol mandate). This is further discussed in section A3 – Indication of potential costs.
- Consideration will need to be given to the timeframe used to establish the 'most popular' fuel type, and the frequency of its review. If the 'most popular non-E10 fuel' for a station changes at a subsequent review, the station may incur additional compliance costs if it consequently needs to change its layout and fuel supply system.

We note that Option A1b would be enforceable (compliance is observable), but is likely to have high implementation costs.

Potential impact on the availability of other fuels

At other stations, where E10 is currently not the most popular or available individual fuel type, additional action would be required to increase the availability of E10. In these instances, service station owners may reduce the availability of the most popular fuel (eg, diesel, RULP or PULP) to comply with additional POS measures.[19] This is more likely to be case at smaller stations. This might limit consumer choice and impact on consumer convenience.

Potential implications for the biodiesel mandate

Currently, there is a separate biodiesel mandate imposed on volume fuel sellers (2% of total diesel sales).[20] Additional Options A1a and A1b broaden the classification of stations subject to the mandate, potentially crowding out the availability of diesel at certain service stations. We note that currently there are more retail sales of diesel than of each petrol type in NSW (see Table 2.2 below).

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19 If a service station has an offering of both RULP and PULP, then it is more likely that E10 has replaced RULP, rather than PULP.

20 NSW Fair Trading, http://www.fairtrading.nsw.gov.au/ftw/Businesses/Specific_industries_and_businesses/Biofuels_ industry.page, accessed on 13 October 2015.

Table 2.2 Retail sales of petroleum products in NSW, July 2015

Fuel type	Retail sales - volume, kL	Retail sales – share
Premium unleaded (eg, 95RON)	1,161,843	14%
Proprietary brand[a]	1,273,685	16%
Regular unleaded	1,649,754	20%
Ethanol-blended fuel	1,727,201	21%[b]
Diesel	2,259,383	28%
Total (Petrol + Diesel)	8,071,866	100%

a Proprietary brand petrol is petrol sold under a company brand name. Each major company typically adds proprietary additives to the basic gasoline recipe, in order to provide or enhance performance features.

b This is not ethanol as a percentage of all petrol sold in NSW, rather it is a percentage of various petrol types and diesel.

Notes: The above table is not an exhaustive list of all fuel types sold in NSW, but is to compare diesel against petrol sales in NSW. LPG and CNG are excluded from the analysis.

The APS data does not identify sales to retailers for each petrol type, which would be a subset of petrol sales. However, it does not detract from the analysis that diesel retail sales are currently greater than each type of petrol sales.

Source: Australian Petroleum Statistics 2014-15, Table 3C (total for petrol and sales to retailers for diesel).

Given the separate targets for bioethanol and biodiesel in the Biofuels Act, any measures to increase the uptake of ethanol that affect the availability of diesel should be evaluated to ensure that there are no unintended consequences on the biodiesel mandate.

Findings

2 An unintended consequence of the Additional Options may be an impact on the biodiesel mandate.

2.2 A2 – Combination of measures

2.2.1 Options

Additional Option A2 is a package based on options from our Final Report. We are asked to provide an estimate of the uptake of E10 based on a combination of the following:

- Option 1d/1b (a ‘supply side’ combination of these options to the effect that all stations offering 3 or more fuel types must offer EBP).
- Option 5 (Consumer education campaign).
- Option 9a (Price Regulation of fuel ethanol on energy parity).

We have extended our analysis to include the options defined in Additional Options A1a and A1b above. We considered packages of options combining the supply side options with POS measures (Additional Options A1a and A1b), Option 5 (consumer education campaign) and Option 9a (price regulation of fuel ethanol).

2.2.2 Likely impact on ethanol uptake

We estimate that the ethanol uptake from Additional Option A2 could be about 3.3% to 4.3% by 2024-25 (compared to the base case business as usual estimate of 2.0%), based on our assessment of Additional Options A1a and A1b discussed previously, and of Option 5 and Option 9a carried out in our Final Report.

To arrive at this estimate we considered:

- Our estimate of the potential impact on E10 from Additional Options A1a and A1b discussed earlier above, 2.8% to 3.7%.
- The individual impacts of a consumer information campaign (assuming 10% effectiveness) and regulation of the ethanol price on the uptake of ethanol, compared with our baseline assumption.
  - Each of these options individually increases ethanol uptake by an additional 0.2 percentage points.
- The potential interaction between the options to increase the uptake of ethanol, although these are likely to be small.
  - Our assessment of the consumer education campaign focussed on consumers who could use E10 but were currently purchasing premium unleaded fuel due to an aversion to ethanol.
  - If the availability of E10 were to increase (availability of RULP to decrease), then there would be an additional switch to premium fuels due to some consumers' current aversion to EBP. The consumer education campaign (assuming 10% effectiveness) would alleviate this secondary impact.
  - The interaction effect is likely to add between 0.1 and 0.2 percentage points to the sum of the individual effects of the options comprising the package.[21]

Table 2.3 below provides a summary of our assessment of ethanol uptake under Additional Option A2 (packages of options).

Findings

3 A package of options including broadening the ethanol mandate to require all stations that offer 3 or more fuel types to offer Ethanol Blended Petrol, combined with Point of Sale (POS) measures (Additional Options A1), a consumer education campaign (Option 5 of Final Report), and price regulation of ethanol on energy parity (Option 9a of Final Report) might increase the total uptake of ethanol to about **3.3% to 4.3%** of all petrol sales in NSW by 2024-25, but is unlikely to achieve the 6% mandate.

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21 This is a conservative assumption based on our indicative modelling. As mentioned previously, the effect of combining several options is in general non-linear (the options are non-additive). A separate scenario analysis would be required to model the simultaneous application of several options, including the interaction between options.

Table 2.3 Mapping Additional Options A2 into comparable options from our Final Report – Range for ethanol uptake by 2024-25

Additional Options A2	**Final Report Options**				**Interaction of options**	**Indicative total ethanol uptake**
	Baseline uptake of ethanol	**Supply Side Option** (as per Package)	**Option 5 –** Consumer education campaign	**Option 9a –** Price regulation		
Incremental uptake from the Final Report option (above baseline)	2%		0.2%	0.2%		
Package I Option 1d + Option 5 + Option 9a	2%	0.8%	0.2%	0.2%	0.1%	**3.3%**
Package II Option 1b + Option 5 + Option 9a	2%	1.0%	0.2%	0.2%	0.1%	**3.5%**
Package III Additional Option A1a + Option 5 + Option 9a	2%	0.8% - 1.7%	0.2%	0.2%	0.1%-0.2%	**3.3% - 4.3%**
Package IV Additional Option A1b + Option 5 + Option 9a	2%	0.8% - 1.7%	0.2%	0.2%	0.1%-0.2%	**3.3% - 4.3%**

Source: IPART analysis based on Final Report, Table 1.1, p 6-7.

2.3 A3 – Indication of the potential costs

The ToR for the additional task asks us to provide an indication of the potential costs that currently regulated and newly regulated service stations would incur to meet Additional Options A1a, A1b, and A2, including an indication of the incremental costs of Additional Options A1a and A1b for stations that are currently operating under the mandate.

We provide below some general observations that we consider are important in assessing the potential costs of implementing the additional options.

2.3.1 General observations

Data requirements and limitations

In carrying out our analysis for the Final Report we found that, whilst information is available at an aggregate level (eg, total sales of various fuels, total sales of ethanol and indicative data on the total number of service stations in NSW), there is a lack of information on:

- configuration of stations (eg, number of pumps/bowsers and nozzles)
- how much additional underground pipework would be required to connect each bowser to E10 tanks (where already available)
- costs involved in converting pumps or changing fuel dispensing types to E10
- composition of sales (volumes by different fuel types) at a service station level.

In our consultation with stakeholders conducted for the Final Report, we found that volume fuel sellers were reluctant to provide fuel sales data at a service station level as it was considered to be commercially sensitive. They also indicated that there was no requirement for them to provide such data.[22]

Unavailability of data at the required level renders it difficult to accurately estimate the costs of implementing the Additional Options A1a, A1b and the packages of options under A2. However, we provide a qualitative assessment of these costs, including the incremental costs of additional POS measures on the stations currently under the mandate.

22 Confidential pers comm, 24 February 2015.

Different business arrangements

In our Final Report, we discussed different ownership arrangements for service stations. They broadly fall into the following categories:[23]

- Company owned and company operated sites – A volume fuel seller owns the service station and controls both the product offering and pricing.
- Franchisee sites – Service stations are operated by franchisees and can be either owned by the franchisee or by a volume fuel seller.
- Independent branded sites – Service stations are independently owned but bear a company brand.
- Independent non-branded sites – Service stations that are owned privately and are not affiliated with any particular company.

Due to these different ownership arrangements, the impact of required changes to product offerings at service stations could vary. The required changes may result in either temporary closures, whilst the necessary infrastructure changes (tanks, piping, etc) are carried out, or force stations out of business (more likely for smaller businesses due to potentially high costs).

2.3.2 Additional Options A1a and A1b – supply side options with POS measures

New stations under the mandate

We consider that the potential incremental costs for newly regulated service stations under Additional Options A1a and A1b would be substantially greater than for service stations currently under the mandate.[24] This is because newly regulated service stations are unlikely to already have ethanol compatible tanks. If the existing tanks are not ethanol compatible, they will have to be refurbished or replaced at a cost of between $12,500 to $200,000 per tank.[25] Additionally, replacing the underground pipework and fuel delivery components to address the requirements of Additional Options A1a or A1b may require closing the station forecourt and obtaining a development application approval at substantial costs to these businesses. These costs are in addition to the foregone revenue/profits during refurbishment.[26]

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23 IPART, *Ethanol mandate: Options to increase the uptake of ethanol blended petrol - Final Report*, May 2015, pp 22-23.

24 We define service stations that are 'currently regulated' as those that are controlled by the volume fuel sellers. We define 'new regulated service stations' as any service station that offers three or more fuel types and is currently not affected by the mandate.

25 IPART, *Ethanol mandate: Options to increase the uptake of ethanol blended petrol - Final Report*, May 2015, p 104.

26 We note, however, that certain service stations may incur marginally less costs, depending on the equipment used at the station. This may be particularly so for relatively modern service stations (modern tanks, piping and nozzles may already be ethanol compatible).

For smaller stations, especially older stations in regional and rural areas with a small customer base and low turnover, the costs to convert could be prohibitive, forcing them to go out of business.[27]

For newly regulated stations, there would be additional costs to comply with fuel price sign requirements. These costs would involve either adding E10 to the price sign, or replacing an existing fuel with E10.[28]

We note that in other countries, such as Sweden, legislation introduced to increase the amount of biofuels available at a service station level was correlated with an increase in the number of stations that went out of business. In other cases, it resulted in severe economic strain for owners who had to finance their capital costs.[29]

Current stations under the mandate

For service stations currently affected by the mandate, they would either be offering E10 or would have done so previously.[30] Therefore, these stations would already have at least some ethanol compatible storage tanks.

Additional Options A1a and A1b would then mainly involve costs to adjust the station's underground piping system to comply with the POS measure (eg, either generally increasing the availability of E10 to match the most popular non-E10 fuel or to make E10 available at every bowser dispensing two or more fuel types).

These costs of complying with the POS measures could potentially be substantial, as the piping systems are underneath the forecourts, and so the forecourt may need to be closed and remodelled, which would also involve foregone revenue. There would also be additional costs such as relabelling of fuels and purchasing ethanol compatible nozzles, if not already available at the service station.[31]

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27 We modelled the closure of smaller stations due to the high conversion costs in our cost-benefit analysis of Option 1b of our Final Report, see Final Report, p 106.

28 NSW Fair Trading, http://www.fairtrading.nsw.gov.au/ftw/Consumers/NSW Fair Trading, Buying_goods/Petrol.page, accessed 15 October 2015.

29 https://www.riksdagen.se/Global/dokument/utskotteunamnd/200910/Pumplagen_eng.pdf, accessed on 14 October 2015. The report indicated that while it is not possible to conclude that all closures can be attributed to the legislation, it may have been a contributing factor in some cases. It also noted that a number of closures (or conversions from manned to automated filling stations) were the result of structural rationalisations by the petrol companies.

30 In gathering information for our Final Report, we found that certain volume fuel sellers were removing E10 and reintroducing RULP, due to a lack of demand. These volume fuel sellers were granted partial exemptions from meeting the 6% ethanol mandate.

31 We note, however, that the costs may vary depending on the age of the stations – see discussion above.

In summary:

- Potential **incremental costs** of Additional Options A1a and A1b include:
  - the costs of remodelling the station forecourt
  - refurbishing/replacing the tanks
  - changing underground pipework to the bowser (dispenser), and/or
  - re-labelling and making compatible the nozzles to dispense another fuel type.
- These costs **vary** depending on the age/degree of technical modernisation of the station and its 'business as usual' refurbishment schedule.
  - Stations that have completed modernisation (within the past decade) might already be using infrastructure capable of storing and delivering various products, including E10 (and hence would incur lower costs).
  - Stations that could time required changes to coincide with a major 'business as usual' refurbishment would also reduce their costs.
- For relatively **modern stations** that have technology to enable them to be more flexible in their fuel offering mix, minimum costs of POS measures are the **change-over costs**, including:
  - temporarily shutting down the station (could be up to several days)
  - emptying the underground tanks
  - steam cleaning the tanks and the piping
  - relabelling the nozzles
  - changing signage on fuel pumps
  - recalibrating the pumps if required, and/or
  - changing signage on the price display board, etc.
- For relatively **old stations**, minimum costs of POS measures are substantially higher and include:
  - loss of profits due to lengthy business closure
  - costs of significant remodelling of the forecourt, including
    - refurbishing/replacing the tanks
    - changing underground pipework to the bowser (dispenser), and/or
    - re-labelling and making compatible the nozzles to dispense fuel.
- The costs of the measures would in the first instance be borne by stations, and then likely be passed on to consumers through higher petrol prices.
- The costs to comply with Additional Options A1a and A1b might be such as to drive some smaller stations out of business.

2.3.3 Option A2 – package of options

We assume there are no additional costs to stations resulting from the implementation of the education campaign (Option 5 of our Final Report) and price regulation of ethanol (Option 9a of our Final Report).

As indicated in our Final Report, the education campaign could be funded by:

- The NSW Government, given it is a government ethanol mandate, and/or
- Ethanol producers, given they benefit from an increase in ethanol uptake.[32]

The costs of price regulation of fuel ethanol would be borne by the NSW Government or the regulated industry (ie, ethanol producers).

However, if there are any additional requirements associated with the implementation of the consumer education campaign and point of sale regulation at the station level (eg, some additional requirements on product labelling or price displays/comparisons), there might be additional costs to the businesses resulting from the implementation of the package of options.

We note that in our Final Report we did not assess the effectiveness of a potential consumer education or public awareness campaign. Our calculations are based on the assumption of 10% effectiveness of the campaign in reversing consumer aversion.[33] That is, we assumed about 10% of the volume of petrol purchased by customers who choose PULP to avoid ethanol blended petrol would be replaced by E10 as a result of the campaign.[34] The consumer aversion to ethanol blended petrol has been demonstrated by the notably higher share of PULP in total petrol sales in NSW compared to the rest of Australia.[35]

In our Final Report, we noted that, as a first step, market research could determine the type of customers averse to ethanol blended petrol and their reasons, to target the campaign.

A consumer education campaign should only be undertaken if it is evidence based, including evidence on the compatibility of vehicles with E10. For instance, if the campaign refers to environmental or other benefits of E10, these references need to be supported by strong evidence. The education campaign should be more than just an E10 promotional campaign.

32 IPART, *Ethanol mandate: Options to increase the uptake of ethanol blended petrol - Final Report*, May 2015.

33 IPART, *Ethanol mandate: Options to increase the uptake of ethanol blended petrol - Final Report*, May 2015, p 63.

34 We estimated the *total volume of petrol purchased by customers who choose PULP to avoid ethanol blended petrol* to be the proportion of PULP purchased in NSW (the only state with an ethanol mandate) above the national average. We then assumed that the education campaign would transfer demand for 10% of this additional PULP volume in NSW to E10.

35 IPART, *Ethanol mandate: Options to increase the uptake of ethanol blended petrol - Final Report*, May 2015, pp 27-28.

A consumer education campaign may be more effective if it were to be accompanied by some form of price regulation of ethanol (to ensure that E10 is sold at an energy parity price to Regular Unleaded Petrol and represents value for money for customers). See Chapter 7 of the Final Report for further discussion.

2.3.4 Implementation and compliance costs

Additional Options considered in this report are associated with additional on-going reporting and compliance costs.

Information reporting costs

Depending on the enforcement and compliance regime established around these additional options, they may impose additional reporting costs on stations. For example, if Additional Option A1a were to be implemented, service stations may have to report regularly on sales of the most popular non-E10 fuel and on the number of pumps for the most popular fuel and E10. These additional reporting costs would proportionately constitute a greater administrative and red tape burden on smaller service stations that are currently not under the mandate.

Other costs

There also may be unintended consequences from implementation of the Additional Options, resulting in additional costs to consumers and businesses:

- Additional POS measures may reduce the availability of other fuel types, limiting consumer choice and resulting in a loss of convenience to customers.
- There could be slower turnover of E10 compared with the fuel it replaced, resulting in less profit, and a deterioration of the service station's financial position.

2.3.5 Indicative benefits

As outlined in our Final Report, the major benefit of measures to increase ethanol uptake is producer surplus, and much of this is likely to accrue to ethanol producers.

Other benefits are greenhouse gas abatement and positive health impacts through improved air quality.

Findings

4 Broadening the ethanol mandate to require all service stations that offer 3 or more fuel types to offer Ethanol Blended Petrol, combined with Point of Sale (POS) measures (Additional Options A1 on their own or as part of package in Additional Option A2), would likely impose greatest incremental costs on newly regulated stations. This would impact negatively on small and medium businesses, especially in regional and rural areas.

5 Incremental costs of Additional Options A1 and A2 on current stations under the mandate can vary, depending on the size, configuration, age and refurbishment schedule of the station.

2.4 Limitations of our analysis

We have provided an estimate of the potential uptake in ethanol and a qualitative assessment of potential costs based on the information we collected for our Final Report. As per the ToR, we have not collected new data, nor have we undertaken further stakeholder engagement. Therefore, we have provided estimates in ranges to provide an indication given the limited data that we have to properly assess the additional options.

Whilst closely related to the options assessed in our Final Report to broaden the mandate, the options in this Addendum Report are not identical and so further data would be required for more in-depth and comprehensive analysis of them.

For a comprehensive assessment, we would require:

- **For Additional Option A1a** – station-level data on the composition of sales.
  - This data is not currently available at station level. Volume sellers have reported to the Office of Biofuels on an aggregate level only.
  - Data would be required for stations currently under the mandate and the newly regulated stations.
- **For Additional Option A1b** – detailed information on the technical configuration of service stations, both currently under the mandate and new stations, including:
  - number of bowsers
  - number of nozzles per bowser
  - number of fuel types dispensed at each bowser, and/or
  - configuration of pipework from underground fuels storage tank(s) to bowsers.

We also note that there is a lack of evidence and information on the impact of higher visibility/availability of E10 on consumer demand for E10 (although our report indicates there is consumer aversion to E10).[36] Therefore, further market research and analysis on the relationship between higher visibility of E10 and consumer demand for E10, would be required before introducing any POS measures.

Findings

6 More precise analysis of the likely uptake of ethanol and the indicative costs is limited by availability of data.

Despite the data limitations, mapping the Additional Options to the options quantified in our Final Report enables us to provide a range estimate for the potential ethanol uptake. We find that the additional measures are unlikely to reach the 6% ethanol mandate, and they would impose additional costs on the NSW community.

As indicated in our Final Report, we consider the key barrier to increasing ethanol uptake is a lack of consumer demand for ethanol blended petrol, due to some consumer aversion to this product. A consumer education campaign might have an impact on alleviating the aversion, but its efficiency is uncertain and the duration of the effect is unclear. Robust scientific evidence and factual information should underpin any consumer education campaign on this issue.

Findings

7 The Additional Options would not achieve the 6% ethanol mandate and would add to the costs of the current policy. The additional cost burden would initially disproportionately fall on smaller service stations, and would likely ultimately be passed on to consumers through higher prices.

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[36] IPART, *Ethanol mandate: Options to increase the uptake of ethanol blended petrol - Final Report*, May 2015, p 2.

A Final Report – Terms of Reference

Premier of New South Wales
Minister for Western Sydney
Minister for Infrastructure

IPART
Doc No D15/828
File No

RECEIVED
15 JAN 2015
INDEPENDENT PRICING & REGULATORY TRIBUNAL

Reference: A1039594

09 JAN 2015

Dr P J Boxall, AO
Chairman
Independent Pricing and Regulatory Tribunal
PO Box Q290
QVB Post Office NSW 1230

Dear Dr Boxall

I write in relation to the Independent Pricing and Regulatory Tribunal undertaking an assessment of measures the Government could take to meet the requirement under the Biofuels Act 2007 for a volume fuel seller to sell a volume of ethanol that is not less than 6% of total petrol sales by that seller in NSW.

Please find enclosed a reference under section 9 of the *Independent Pricing and Regulatory Tribunal Act 1992* for the Tribunal to undertake this assessment.

If your officers wish to discuss this matter they should contact Jane Mallen-Cooper, Director, Resources and Land Use Branch, Productivity and Sustainability Group, Department of Premier and Cabinet on 9228 4260.

Yours sincerely

MIKE BAIRD MP
Premier

GPO Box 5341, Sydney NSW 2001 ▪ P: (02) 9228 5239 ▪ F: (02) 9228 3935 ▪ www.premier.nsw.gov.au

Terms of Reference

I, Mike Baird, Premier, pursuant to Section 9 of the *Independent Pricing and Regulatory Tribunal Act 1992*, approve the Independent Pricing and Regulatory Tribunal (IPART) entering into an arrangement with the Department of Premier and Cabinet to provide services to the Department that are within IPART's area of expertise.

The *Biofuels Act 2007* imposes an ethanol mandate on major fuel sellers ('volume fuel sellers') who must ensure that ethanol blended fuel accounts for 6% of their total petrol sales in NSW. The overall 6% target has never been reached and a range of reviews have been carried out to look into reasons behind the shortfall and the costs and benefits of the policy, including a review by IPART in 2012.

In early 2014 the NSW Government undertook targeted consultation on two broad options for increasing ethanol consumption in NSW. These were to broaden the mandate by imposing a direct obligation on additional retailers and requiring ethanol to be added to 95 grade (premium) fuel.

The services to be provided by the Tribunal are:

- An assessment of the two broad options for increasing ethanol consumption in NSW that were the subject of this limited earlier consultation, namely:
  1. Broadening the ethanol mandate by:
     - Amending the definition of major retailers so that more retailers are subject to the mandate, or
     - Requiring all service stations to offer an ethanol blended product, or
     - Requiring service stations that sell more than a specified minimum annual volume of petrol to offer E10.
  2. Introducing premium ethanol blends by:
     - Requiring E10 blended in NSW to conform with the Premium Unleaded Petrol (PULP) standard or
     - Requiring all primary wholesalers to offer at least one premium ethanol blend petrol.
- An assessment of the opportunity for stronger enforcement of the mandate, and the costs and benefits of such an approach.
- An assessment of any other measures the government could take, singly or in combination, to increase the uptake of ethanol in NSW.

This assessment should have particular regard to the likely effectiveness of a measure (or a combination of measures) in reaching the 6% target and the direct and indirect costs to the NSW Government, consumers and businesses of implementing such a measure.

The assessment should make use of previous investigations into the ethanol mandate in NSW and other inquiries as the Tribunal sees fit and have regard to the impact of relevant Australian Government programs.

The Tribunal is to provide the final report to the Premier in May 2015 and is not required to consult with the public. The final report will be made publicly available.

B Additional Terms of Reference for Addendum Report

From: Paul Miller [mailto:Paul.Miller@dpc.nsw.gov.au]
Sent: Thursday, 24 September 2015 11:39 AM
To: Hugo Harmstorf
Subject: Options to increase the uptake of ethanol blended petrol

I am writing on behalf of the Premier to request an addendum to the report IPART has prepared on *Options to increase the uptake of ethanol blended petrol*.
Could IPART please provide advice, drawing on the findings and modelling for the above report, on the following items:

1. The estimated uptake of E10 if all stations that offer 3 or more fuel types were required to offer Ethanol Blended Petrol (EBP) and
   a) a service station regulated by the Act must make E10 pumps at least as available as the most popular non E10 fuel; or
   b) if a bowser at a service station regulated by the Act dispenses two or more fuel types, then at least one must be E10 fuel.

2. The total estimated uptake of E10 if the following options, taken from the Ethanol Mandate IPART Report, were combined:
   - Option 1d/1b (combination of these options to the effect that all stations offering 3 or more fuel types must offer EBP)
   - Option 5 (Consumer education campaign)
   - Option 9a (Price Regulation on energy parity)

3. An indication of the potential costs that currently regulated and newly regulated service stations would incur to meet the above options. This includes an indication of the incremental costs of Options 1a) and 1b) for stations that currently operating under the mandate.

Could this advice please be provided to the Premier by 22 October 2015. In order to expedite this request, the collection of new data and further stakeholder engagement is not expected. Further, consistent with IPART's review which produced the *Options to increase the uptake of ethanol blended petrol*, this additional work would be confidential and not involve public consultation.

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