

**Caltex submission on the discussion paper, “Towards a clean energy economy: achieving a biofuel mandate for Queensland (June 2015)”**

**3 July 2015**

**Executive summary**

*Key issues*

- Caltex welcomes the opportunity to comment on the Department of Energy and Water Supply (DEWS) Discussion Paper on options for achieving a biofuel mandate for Queensland. Caltex has extensive experience in biofuels policy and operational experience in the supply of biofuels in Australia, so is well placed to advise on policy design and implementation.
- The framework proposed in the discussion paper is similar to the regulatory framework underpinning the 6 per cent ethanol mandate in NSW, which from a compliance point of view has been a policy failure. It is essential that Queensland does not follow the mistakes of NSW regulation but adopts its own regulatory framework that learns from the NSW regulatory failings.
- The declining ethanol market penetration in NSW is a result of the continued existence of choice between regular unleaded petrol (RULP) and E10 (contrary to the original mandate legislation), a lack of consumer demand for E10, and a compliance regime based on fuel wholesalers and major retailers rather than individual retailers.
- The proposed wholesaler/major retailer model would probably achieve a 2% mandate based on existing E10 offers and the fact that the major retailers Woolworths and Coles have a large petrol market share. However, there would be a significant number of sites that have no mandate liability under this model, making higher mandate percentages more difficult to achieve because, on the basis of NSW experience, they will not purchase E10 for resale.
- Caltex advocates retailer liability, as it overcomes many of the deficiencies of the wholesaler/major retailer model proposed in the discussion paper. However, compliance with even a 2% mandate under either model will create major implementation challenges because of the cost of site conversion, including the need for tank farm replacement in some cases, and the need in most cases to remove one grade premium petrol (or possibly diesel) from sale (the “grade problem”).
- If E10 were available at each retail site (allowing for some reasonable exemptions for small sites), we project that a 2% mandate (ethanol as a percentage of regular grade sales) is achievable for about 90% of these sites. However, increasing the mandated percentage beyond 2% without a ban on RULP would lead to greater compliance complexity as retailers face greater difficulty in complying despite all reasonable steps having been taken and requests for exemptions increase.
- A ban on ULP, although politically more difficult, avoids the “grade problem” (because regular grade E10 substitutes for regular grade ULP) and overcomes the problem that wholesalers lack operational control over many sites. Removal of choice at sites is necessary to achieve overall mandate levels of 3% or more. Introduction of such regulation could be linked to the timing of compatibility of most vehicles in the fleet

with E10, as advised by manufacturers. This may be around 2020, although vehicle fleet modelling is required to determine a likely date.

- Mandatory compliance targets for retailers are problematic, as the difficulties of site conversion clash with the legal requirement for ethanol target compliance. A phased approach would be much better: an aspirational overall government target with an initial requirement for all retailers to sell E10, followed by consideration of applying a mandatory target to each retailer. The market outcomes and practical experiences of the first phase would inform target setting and compliance regulation in the second phase. However, we note that if the principle of choice at every site is to be applied, a regulated mandate percentage is not relevant: consumers, if necessary informed by a government-led and financed information campaign) will determine the outcome.
- There is no place for regulation of either E10 retail prices or biofuels producer prices. The wholesale and retail fuels markets are highly competitive, as demonstrated by many ACCC monitoring reports, and retail prices will reflect biofuels costs. We have some concerns about the highly concentrated markets for ethanol and biodiesel supply, particularly as import competition has been removed by tax settings, but as a matter of principle oppose regulation of producer prices; a better policy is to provide retailer exemptions if producer prices exceed energy parity with petrol and diesel prices.
- Biofuels mandates effectively subsidise biofuels producers at the expense of fuel suppliers and consumers. Governments may decide to support various industries but the burden should be equitable (for example, subsidised from the budget), not fall on particular groups. There is a strong economic and equity case for the government to provide conversion subsidies to offset the costs imposed on fuel retailers by the biofuels mandate.

#### *Modelling of policy scenarios*

Caltex has undertaken modelling of the Queensland petrol market and ethanol mandate scenarios based on the limited information currently available. While this modelling provides policy insights and quantification of scenarios, it also underlines the need for mandatory data collection prior to finalisation of regulation design and implementation. Caltex modelling of various cases produces the following outcomes (note these are indicative due to data limitations):

| Scenario                              | Ethanol volume (ML p.a.) | E100 % of regular grade petrol |
|---------------------------------------|--------------------------|--------------------------------|
| Current market – base case (Model 1)  | 35                       | 1.6                            |
| All sites sell E10                    | +49                      | +2.1                           |
| Only sites > 1 ML pa (all grades)     | +43                      | +1.9                           |
| Only sites > 1 ML and > 3 fuel grades | +34                      | +1.5                           |
|                                       |                          |                                |
| Current market - base case (Model 2)  | 35                       | 1.6                            |
| All sites sell E10                    | +57                      | +2.5                           |
| Wholesaler/major retailer liability   | +29                      | +1.3                           |

Note: Model 2 is the same as Model 1 but explicitly considers supermarket sites

Some observations on the modelling estimates:

- If only wholesalers and major retailers were liable under the mandate, the current ethanol volume would increase by about an estimated 29 ML (+/- 5 ML), and average market penetration would increase from 1.6% to 2.9%
- If all retailers were included in the mandate, ethanol volume would in theory increase by a further 28 ML, and average market penetration would increase to 4.1% (This is based on Model 2 - Model 1 gives a similar estimate, within model error, at 3.7%)
- In practice, smaller sites would require exemptions, reducing the theoretical ethanol gain by 15 ML, so (depending on the model used) the net gain from an ethanol mandate is estimated at 35-40 ML and the market share of ethanol is 3 to 3.5%
- These market shares are averages and will vary greatly from site to site (see Appendix 1 for Caltex NSW data)
- **Note: modelling does not take account of the substantial, complex design and implementation issues discussed in this submission, except as specified in particular scenarios.**

## **Recommendations**

### *Summary*

Recommendations related to mandate design are detailed in the following section. At the broadest level, they include:

- An initial mandatory data collection period (prior to July 2016)
- Individual retailer liability (not wholesaler/major retailer liability)
- A two-phase approach to implementation: no target or an aspirational target; then consideration of individual site targets if believed necessary
- A two-tier exemption framework: automatic and discretionary
- Annual reporting for compliance purposes
- A two-stage approach to industry engagement: informal advice on design and implementation; followed by formal advice on compliance issues

### *Detailed recommendations*

1. An initial data collection phase, which would allow essential policy design information to be collected
  - a. Nomination of the defined retailer i.e. person with ultimate legal control over what fuel is sold at a site
  - b. A person who is not the person physically operating a site (e.g. franchisor) could nominate as the retailer; in other cases, the retailer definition will be a commercial matter (e.g. related to who is responsible under commercial agreements for regulatory requirements relating to equipment and maintenance at the site)
  - c. Data would include fuel offered for sale by grade at the reporting date, volumes sold by grade in the preceding year, and any other information relevant to automatic exemption criteria
2. Individual retailer liability so that all service stations are covered (this avoids the fundamental flaw in NSW legislation)
  - a. A retailer is a person who offers fuel for sale to customers from a retail site (as proposed in the discussion paper)
  - b. As a consequence, the mandate applies only to retail sales of petrol and diesel (including blends) i.e. not commercial sales direct to the customer's tanks
  - c. There would be no wholesaler/major retailer obligations as these are unnecessary if there is retailer-based compliance
3. No mandate target for individual sites
  - a. Mandate requirement is offer of E10 for sale – no specific target
  - b. If a site targets are imposed, companies operating multiple sites (directly or as part of a group) would be able to consolidate volumes across sites to calculate their total ethanol volumes for compliance purposes.
4. A two-tier exemption framework
  - a. Automatic exemptions (but not exclusion) e.g. for small sites and sites not capable of selling more than three grades of fuel
    - i. Small sites would have sold less than a threshold volume of petrol (all grades) in the preceding year (about 23% of Caltex sites sell less than 1 ML p.a.)
    - ii. The threshold would be determined following the collection of site data and consideration of the site volume/red-tape trade-off

- iii. Sites capable of selling three grades of fuel or less would typically be required to remove premium grade petrol from sale in favour of E10, which is considered inequitable as it would remove an important class of potential customers (about 34% of Caltex sites sell three grades or less)
    - iv. Remote geographical location.
  - b. Discretionary, case-by-case exemptions for all sites, which could be based on standard criteria or, if not covered by these standard criteria, case-by-case consideration
    - i. Uneconomic supply – inability to sell E10 at a reasonable discount to RULP, defined by fuel efficiency or energy equivalence (say, 2.5 to 3%, approximately 4 to 5 cpl at current prices)
    - ii. Unsuitable infrastructure – need for significant capital expenditure to introduce E10 (typically new tanks or major pipework)
    - iii. Depot-based supply chain, where depot does not stock E10 (it may be uneconomic for some depots to stock e10 due to lack of tankage for an extra grade of petrol)
    - iv. Financial hardship – inability to afford site conversion to E10 or infrastructure upgrades
    - v. Competitive disadvantage – arising from a competitor site having an E10 exemption and being able to take market share from a site with E10
    - vi. Primarily a diesel site but petrol volume above threshold
    - vii. Other reasons e.g. near term end of lease or site closure, that show all reasonable steps are being taken to comply with the mandate.
- 5. Annual reporting for compliance, including reporting against any exemption conditions
  - a. Exemptions granted for at least one year ahead
  - b. Compliance reporting is to verify E10 is offered for sale, or report against exemption conditions
  - c. Reporting is also to gather site-based volume data to inform policy
  - d. If regulation is amended to impose site-based targets, reporting would be against these targets
  - e. Ethanol volumes would include ethanol contained in any petrol grade, as well as E85
  - f. National reporting of aggregate sales will continue to be available from Australian Petroleum Statistics – to be upgraded in 2016 when based on excise data
- 6. Mandate volumes, including for any compliance purposes, must include ethanol and biodiesel sources from outside Queensland
- 7. Establishment of an informal advisory body comprising a wide range of government and industry representatives to advise on mandate implementation, including the need for a formal NSW-style “expert panel” or similar once the mandate is in operation
- 8. No controls on retail, wholesale or producer prices.

## **Comments on discussion paper**

### **1. Background**

Caltex was a supplier of petrol and diesel containing biofuels in Australia well before any mandate. Nationally, our product offering includes E10, EFlex ("E85") and biodiesel blends (retail diesel containing biodiesel, B5 and B20).

In NSW, 372 Caltex-branded sites sold E10 as at March 2015. These included: sites operated by Caltex; franchised sites, where franchisees operate the site and decide on the fuel offering; independently owned and operated sites; and 141 sites operated by Woolworths. In Queensland, 89 Caltex-branded sites sold E10 as at March 2015, including 57 Woolworths-operated sites. We also supply EFlex ("E85") fuel at nine Queensland sites.

An estimated total of 381 sites in Queensland (all brands) sell E10, equal to 28% of total sites.

Caltex has invested in ethanol blending infrastructure at our Lytton, Mackay and Cairns fuel terminals, and E10 storage tanks at some of our Queensland depots. Biodiesel blending is available at our leased Rocklea (Brisbane) facility.

### **2. Queensland ethanol mandate design recommendations**

#### **2.1 Individual retailer liability**

The discussion paper currently proposes that fuel wholesalers and major fuel retailers are liable under the mandate. A fuel wholesaler is defined as a person who sells petrol or diesel to a fuel retailer for resale to members of the public. Major fuel retailers are defined as fuel retailers who own or operate more than 10 service stations. This is very similar to the fundamentally flawed NSW legislation, which places the liability on fuel suppliers from terminals and major retailers.

The fundamental issue with making wholesalers liable is that it does not address the issue of operational control and the various business structures under which service stations operate. Caltex cannot legally instruct its franchisees to sell a certain grade of fuel; that is, we do not have ultimate control over which grades of fuel are sold at each franchised site as the contractual arrangements are subject to the conditions of the Oilcode under the Competition and Consumer Act. We certainly have no ability to direct our independent retailers.

The problem with the major retailer part of the liability definition is that under a 10-site threshold there would be (potentially high volume) sites that would be excluded from compliance with the mandate, negatively impacting on total ethanol volumes and creating uneven local competition between sites with and without E10 liabilities.

Authoritative information on retailers in Queensland, including data on operational control, is not available, which is why Caltex recommends an initial data-gathering phase if a mandate is implemented. Comprehensive information is available on site numbers and brands but data is incomplete on other site characteristics such as grades on offer.

Table 1 provides information on service station numbers by brand in Queensland. The data is from Informed Sources Pty Ltd.'s NetWatch service.

| Brand          | Sites with grade data | Sites with no grade data | Total sites | % total sites |
|----------------|-----------------------|--------------------------|-------------|---------------|
| 7 Eleven       | 87                    | 6                        | 93          | 6.8           |
| BP             | 262                   | 87                       | 349         | 25.5          |
| Caltex         | 241                   | 34                       | 275         | 20.1          |
| Ctx Woolworths | 105                   | 5                        | 110         | 8.0           |
| Choice         | 14                    | 1                        | 15          | 1.1           |
| Coles Express  | 118                   | 10                       | 128         | 9.4           |
| Costco         | 0                     | 1                        | 1           | 0.1           |
| CQP            | 6                     | 1                        | 7           | 0.5           |
| Freedom        | 11                    | 32                       | 43          | 3.1           |
| Gull           | 2                     | 0                        | 2           | 0.1           |
| Independent    | 20                    | 84                       | 104         | 7.6           |
| Liberty        | 0                     | 7                        | 7           | 0.5           |
| Matilda        | 44                    | 10                       | 54          | 3.9           |
| Mobil          | 0                     | 46                       | 46          | 3.4           |
| Neumann        | 0                     | 7                        | 7           | 0.5           |
| Puma           | 23                    | 21                       | 44          | 3.2           |
| Shell          | 1                     | 37                       | 38          | 2.8           |
| United         | 8                     | 37                       | 45          | 3.3           |
|                | 942                   | 426                      | 1368        |               |

*Table 1*

Site location and brand information is available for all 1368 sites. However, information on fuel grades sold is available for only 942 sites. These are generally sites in urban areas where Informed Sources undertakes regular fuel price monitoring. The 426 sites for which there is no grade information are often “independent” sites (which may have their own branding) or branded independents e.g. Mobil, Shell, BP, Caltex.

The major brands are BP, Caltex, Coles Express, Caltex-Woolworths and 7Eleven, in that order. However, as discussed elsewhere in this submission, brand does not imply operational control of sites i.e. the legal and practical ability to determine which grades of fuel are sold at a site. For example, many Caltex-branded sites are independently owned and operated but all sites of some other brands may be company-operated.

The following table is from the ACCC’s 2014 petrol price monitoring report.

**Table 3.7 Percentage of monitored retail sites by brand and business operator: 2013–14<sup>a</sup>**

| Brand                               | Business operated by: <sup>b</sup>     |   |                              |                              |                                       | Total<br>%   |
|-------------------------------------|--|---|------------------------------|------------------------------|---------------------------------------|--------------|
|                                     | Directly<br>Owned and<br>Operated<br>% | Distributor<br>Owned<br>Operations<br>% | Independent<br>Retailer<br>% | Franchisee <sup>c</sup><br>% | Commission<br>agent <sup>d</sup><br>% |              |
| BP                                  | 6.5                                    | 10.7                                    | 9.2                          | 0.3                          | 0.0                                   | 26.6         |
| Caltex                              | 1.9                                    | 7.3                                     | 2.1                          | 1.8                          | 7.3                                   | 20.4         |
| Mobil                               | 0.0                                    | 0.8                                     | 0.0                          | 0.0                          | 0.0                                   | 0.8          |
| Shell                               | 0.5                                    | 0.0                                     | 4.1                          | 0.0                          | 0.0                                   | 4.6          |
| Woolworths/Caltex<br>(co-branded)   | 12.2                                   | 0.0                                     | 0.0                          | 0.0                          | 0.0                                   | 12.2         |
| Coles Express/Shell<br>(co-branded) | 12.4                                   | 0.0                                     | 0.0                          | 0.0                          | 0.0                                   | 12.4         |
| Specialist retailers <sup>e</sup>   | 0.0                                    | 0.0                                     | 1.9                          | 7.9                          | 0.1                                   | 9.9          |
| Independent<br>wholesalers          | 0.0                                    | 0.9                                     | 3.2                          | 1.8                          | 7.2                                   | 13.1         |
| <b>Total</b>                        | <b>33.5</b>                            | <b>19.7</b>                             | <b>20.5</b>                  | <b>11.8</b>                  | <b>14.5</b>                           | <b>100.0</b> |

Source: ACCC analysis and estimates based on data obtained from firms monitored through ACCC's monitoring process.

Notes: (a) Data is only for monitored companies. Therefore, it does not include the total number of retail sites in Australia. Data is not comparable with data in previous monitoring reports due to site reclassifications by some monitored companies. Due to rounding some rows and columns may not equal the total.

(b) Sites are categorised by the operator of the business on the site, regardless of branding.

(c) Specialist retailers include those businesses operated by distributors, independent retail chains and other independents.

(d) Excludes supermarkets. Commission agents generally manage a business owned by a refiner-wholesaler or independent chain, and are generally compensated in the form of a commission based on the quantity of product sold. Franchisees rent a site or a number of sites and source fuel from the franchisor and brand it accordingly. They may also receive price support from the franchisor (wholesaler), providing some influence over the retail prices set by the franchisee.

The policy implication is that brand information is of limited use unless the underlying business models are understood, which requires government data collection before any mandate design is completed and implemented. Expansion of the above table with information on the business structure of each brand would provide useful information to understand the ability of a particular site to comply with a mandate requirement.

Legislation needs to define which legal entity has the compliance liability; this could be a major fuel retailing company, a franchisee or an independent operator. The most logical person to have the liability is the one who has the ultimate legal right to decide what fuels are sold at the site, which may be informed by both contracts and laws such as the Competition and Consumer Act. The definition would also depend on the commercial arrangements applying to a service station, which can vary greatly from site to site and company to company.

Unless the liability is placed on individual sites, there will be a large number of retailers, including large retailers with less than 10 sites, who refuse to sell E10 and undermine the mandate. This has been the experience in NSW, particularly since the ULP ban was removed.



## 2.2 Automatic and discretionary exemptions

### *2.2.1 Data collection*

At present, there is no comprehensive and accurate information on petrol retailers in Queensland that allows a mandate to be designed and implemented. Collection of this information is an essential first step and essential for ongoing administration of the mandate.

As a minimum requirement, all retailers need to submit information annually including total petrol volumes for the previous year and any other relevant information (e.g. in relation to automatic exemptions). This is particularly important in the initial stages of the ethanol mandate as these declarations will provide essential information on the make-up of the Queensland fuel industry and provide an accurate understanding of the total petrol, and therefore potential ethanol volumes, under the mandate. Volume data will provide guidance on the automatic exemption level, as discussed below.

### *2.2.2 Automatic exemptions*

Once all retailers are liable under the mandate, a compliance regime underpinned by a two-tier exemption framework will assist to carve out smaller sites that in total do not add significantly to the mandated ethanol volume but could suffer a considerable red-tape burden.

We propose that certain retailers could receive an automatic exemption based on the following criteria

- Sales of less than a threshold volume of petrol (all grades) in the preceding year (the threshold would be determined following the collection of site data and consideration of the site volume/red-tape trade-off)
- Sites capable of selling three grades of fuel or less (these would typically be required to remove premium grade petrol from sale in favour of E10, which is considered inequitable as it would remove an important class of potential customers)
- Remote geographical location.

#### *2.2.2.1 Volume threshold*

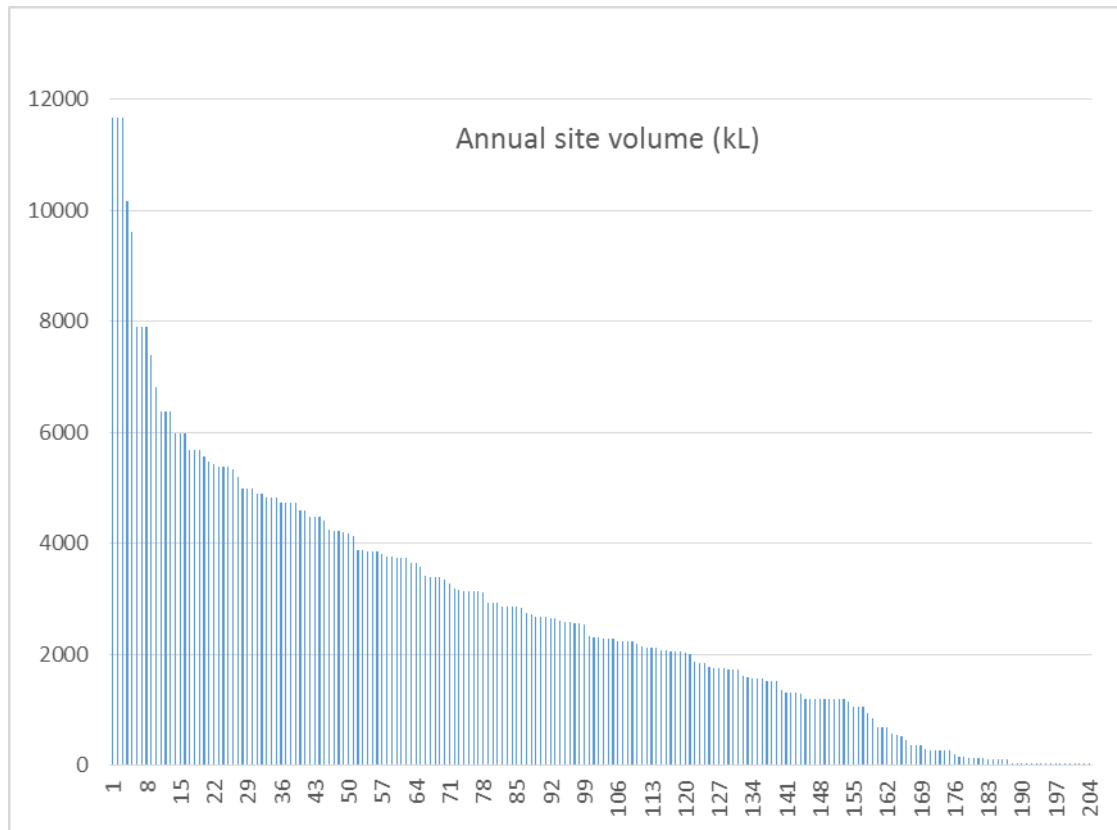
The volume threshold would be determined once all Queensland service stations have been identified and their volumes have been submitted.

This information would then determine an annual volume threshold where small sites with limited potential to contribute to total ethanol volumes become exempt, but sufficient volumes to comply with a 2 per cent mandate are achieved across the state. For example, it could be decided that sites that make up 10% of the petrol volume are exempted from the mandate – this would minimise red tape for hundreds of sites across Queensland. A possible exemption level is 1 ML p.a. of petrol sales (including E10).

Caltex has modelled potential Queensland petrol and E10 volumes using the Netwatch data, and the results can be seen in Table 4.

Exemptions would be assessed annually through site volume data for the previous year.

The following chart shows Caltex-branded petrol stations in Queensland sorted by annual petrol sales volume. It can be seen there is a huge variation in site volumes. About 23% of sites sell less than 1 ML of petrol (all grades) per year.



#### 2.2.2.2 Capability to supply ethanol blended fuel

Another possible ground for automatic exemption would be a site's incapability to supply E10. For example, sites selling only three grades of fuel (e.g. RULP, diesel and one premium petrol or diesel grade) should not be required to replace one of those grades with E10. (Note the criterion is lack of capability to sell an extra grade (i.e. E10) without investment in additional tankage or other site works, not the actual number of grades currently sold).

Table 2 shows the number of sites selling various fuel grades. Information is available for 942 of the 1368 sites in Queensland. The missing data somewhat reduces the accuracy of the information on sites characteristics but is nevertheless very useful for informing policy development. In general, the missing data would be for smaller sites with fewer grades as they would tend to be branded or non-branded independents. On the other hand, many of these sites might qualify for exemptions, so the data shown may be reasonably representative of non-exempt sites under a mandate.

| No. of fuel grades | No. of sites | No. of sites with 2 diesel grades  | No. of sites with 2 PULP grades | E10 data          |                       |                               |
|--------------------|--------------|--|---------------------------------|-------------------|-----------------------|-------------------------------|
|                    |              |  |                                 | Sites selling E10 | Sites not selling E10 | Sites selling E10 but not ULP |
| 6                  | 6            | 6  | 6                               | 6                 | 0                     | 0                             |
| 5                  | 76           | 38   | 71                              | 47                | 29                    | 4                             |
| 4                  | 519          | 31   | 347                             | 170               | 349                   | 28                            |
| 3                  | 269          | 6  | 6                               | 27                | 242                   | 6                             |
| 2                  | 52           | 0  | 0                               | 4                 | 48                    | 4                             |
| 1                  | 20           | 0  | 0                               | 0                 | 20                    | 0                             |
|                    | 942          | 81   | 430                             | 254               | 688                   | 42                            |
| 0                  | 365          |  |                                 |                   |                       |                               |
| N/A                | 61           | Note: 15 sites do not sell petrol  |                                 |                   |                       |                               |
|                    | 1368         | Note: 44 sites sell 4 petrol grades; 527 sell 3 grades; 295 sell 2 grades; 61 sell 1 grade |                                 |                   |                       |                               |

*Table 2*

The data enables a number of significant policy implications to be drawn:

- The largest proportion of sites (55%) has 4 grades but a substantial proportion (36%) has 3 grades or fewer. The latter would typically sell two grades of petrol (ULP and one grade of PULP) and one grade of diesel. Caltex data shows that 34% of Caltex-branded sites sell 3 or fewer grades of petrol, which is similar to the industry average from NetWatch data.
- If the mandate required 3-grade sites to sell E10, this would imply removing one petrol grade, which would most likely be ULP so the sites continued to sell regular grade petrol (i.e. E10), PULP and diesel. However, this would remove choice of ULP and E10 at 3 grade sites, which the stated mandate policy seeks to avoid. The policy implication is that sites capable of selling only three grades of fuel should be exempt from the mandate.
- If the mandate required sites capable of selling 4 grades of fuel or more to sell E10, this would have major adverse business implications for sites. As can be seen from column 4 of the table, 347 of the 519 sites selling 4 grades of fuel (37% of total sites) sell two grades of PULP. There are sound business reasons for doing so, as PULP98 is popular with many customers and attracts a higher price than PULP95; on the other hand, many modern vehicles require premium fuel and motorists may not want to pay extra for PULP98. An E10 mandate at four-grade sites selling two grades of PULP would require either one PULP grade to be removed or removal of ULP.
- At 31 of the four-grade sites, two grades of diesel are sold, so an E10 mandate would probably require removal of one of these diesel grades. This would have significant adverse business implications, as premium diesel is popular with car drivers but cheaper, regular grade diesel is popular with truck drivers.
- There are similar implications at five- and six-grade sites: an E10 mandate would require removal of a PULP grade or a premium diesel grade if ULP was to be retained for sale.
- The data shows that 254 sites out of 942 (26%) sell E10, of which 42 sell only E10 as the regular grade (i.e. no ULP) and 212 offer a choice of E10 and ULP. Of the 426 sites for which data is not available, Caltex estimates 137 sell E10 (see market model discussed later); an estimated total of 381 sites in Queensland sell E10, equal to 28% of total sites.

- As would be expected, a significant number of five-grade sites sell E10 (47 out of 76), with four-grade sites making up the largest number of sites with E10 for sale (170 out of 519). Only a few three- and two-grade sites sell E10, for reasons discussed above.

### 2.2.2.3 Remote geographical location

A geographic exemption could also exist if site data shows that certain remote areas do not contribute significantly to the E10 mandate. An exemption could also apply on a discretionary basis if supply logistics meant that E10 supply was difficult or impractical (e.g. supply from a depot without E10 storage).

The Informed Sources Pty Ltd.'s NetWatch service data shows that the 1368 sites are spread throughout Queensland but the distribution of population means that most sites are in the south-east or coastal regions. The following table shows the number of sites by region.

| Region  | Postcode  | No. of sites       |
|---|---|--------------------|
| South-east (within 400 km of Brisbane)                    | <=4428, 4494-4680                                     | 927 (68% of sites) |
| Far north and west  | 4429-4493, 4725-4736, 4823-30, 4874, 4876, 4890, 4891 | 79 (6% of sites)   |
| Coastal (including Gladstone, Mackay, Townsville, Cairns) | Remainder   | 362 (26% of sites) |

Table 3

It can be seen that only 6% of sites are remote from the SEQ or coastal regions. These sites would also tend to have relatively low site volumes. The policy implication is that exemption of such remote sites from an ethanol mandate (e.g. through a geographical criterion) would have minimal impact on ethanol volumes but would reduce compliance costs. Service stations could still sell E10 if logistics permitted but would not be required to explain their failure to do so, for example if the logistics of E10 supply made it unavailable or uneconomic.

68% of sites are within about 400 km of Brisbane, so dominate the site numbers. The remaining 26% of sites are spread out along the Queensland coast north of Brisbane (beyond the 400 km point).

The postcode selection above is only an approximation of the nominated regions but illustrates fairly accurately the dispersion of sites.

### 2.2.3 Discretionary/case-by-case exemptions

Discretionary, case-by-case exemptions for all sites, which could be based on standard criteria or, if not covered by these standard criteria, case-by-case consideration:

- Uneconomic supply – inability to sell E10 at a reasonable discount to RULP, defined by fuel efficiency or energy equivalence (say, 2.5 to 3%, approximately 4 to 5 cpl at current prices)
- Unsuitable infrastructure – need for significant capital expenditure to introduce E10 (typically new tanks or major pipework)

- Depot-based supply chain, where depot does not stock E10 (it may be uneconomic for some depots to stock e10 due to lack of tankage for an extra grade of petrol)
- Financial hardship – inability to afford site conversion to E10 or infrastructure upgrades
- Removal of an existing grade of fuel
- Competitive disadvantage – arising from a competitor site having an E10 exemption and being able to take market share from a site with E10
- Primarily a diesel site but petrol volume above threshold
- Other reasons e.g. near term end of lease or site closure, that show all reasonable steps are being taken to comply with the mandate.

#### *2.2.3.1 Uneconomic ethanol supply*

An exemption should be given when the price at which a fuel retailer can purchase E10 does not allow for a reasonable price discount relative to RULP. The price would include freight as freight costs between some locations could vary significantly. The economic supply of ethanol from producers is not guaranteed. In these situations, it would be unreasonable to require the retailer to subsidise the discount for E10 at the pump in order to avoid losing ethanol volumes and failing to comply with the mandate.

To achieve fuel-efficiency parity (which is similar to energy parity), retailers would need to deliver a 2.5 to 3% price differential between ULP and E10. At typical current prices, that is 4 to 5cpl. Market experience shows many motorists are prepared to purchase E10 at a lower discount but others cite this as a reason for not purchasing E10.

Caltex tenders competitively for ethanol and 2cpl is about breakeven over time. We are aware that there are certain branded fuel retailers who are able to offer a discount greater than 2cpl. However, this is made possible by their supplier having cheap ethanol supply from its ethanol plant.

#### *2.2.3.2 Financial hardship*

Financial hardship where sites do not have the financial capacity to upgrade their site to supply ethanol could be a valid cause for a discretionary exemption. This criterion would include an inability to secure finance to undertake an upgrade. Such an exemption application would need to be accompanied by a plan to achieve compliance and an exemption would be conditional on implementation of an approved plan.

#### *2.2.3.3 Removal of existing grade of fuel*

An exemption can also be sought if introducing ethanol blended fuel means displacing an existing regular or premium grade fuel (that is, RULP, diesel and PULP). It would be unreasonable if the mandate, while maintaining choice for the consumer, restricted choice for retailers. There would likely be an adverse impact on retailers, even with a 2% mandate, if they are required to remove an existing grade and replace it with E10 in order to comply. These could include financial costs resulting from capital investment, disruption costs while work is undertaken, and potential losses due to the removal of a more profitable grade that is in higher demand compared to E10.

Typical base grade fuels at service stations are RULP, diesel and one premium petrol grade. The first two are base grades, while premium grades are sold at a higher price relative to base grade fuels. Removing a premium grade may substantially affect the financial viability of a service station, especially one with a limited convenience offering and/or no affiliated business (such a mechanic) to support it. The implications of removing certain fuel grades is discussed in greater detail in section 2.b.ii above.

#### *2.2.3.4 Competitive disadvantage*

Although individual retailer liability should largely remove the need for an exemption on competitive grounds, there may still be cases where one site is being disadvantaged because a competing site is exempt from complying with the mandate. From a commercial point of view, sites should be able to respond to competitors who do not sell E10 and may get a greater share of the regular grade market given consumer preference for this fuel.

A competitive disadvantage may be associated with hose choice on service station forecourts. For example, given the lack of consumer demand for E10, reduced hose choice at a site that offers E10 relative to a site that is exempt from the mandate would shift ULP customers to the exempt site as there would be less congestion at the ULP hoses on that site.

### 2.3 Reporting

Quarterly reporting as proposed in the discussion paper is not necessary; it creates red tape and only pinpoints short-term fluctuations in compliance levels rather than looking at the more stable long term trend. Caltex recommends annual reporting, including reporting against exemption conditions. As well as standard reporting against compliance levels and conditions, retailers would, if under the mandate target, need to outline the reasonable efforts they have undertaken to comply, and compliance progress including future plans to increase compliance where relevant.

### 2.4 Expert panel

Caltex recommends the establishment of an informal advisory body comprising a wide range of government and industry representatives to advise on the initial implementation of the mandate. A formal NSW-style 'expert panel' should then be established once the mandate is in operation so that relevant stakeholders would continue to have engagement with government on matters relating to the mandate going forward.

### 3. Modelling of Queensland ethanol mandate

#### 3.1 Base case

In order to evaluate the impact of mandate policy scenarios, a simple model of the Queensland petrol market is required. The first step is to model the base case for petrol.

Table 4 shows the assumptions made in “Model 1”, based on industry experience, about average site volumes for each site type according to the number of grades sold. These volumes are adjusted by trial and error so the calculated total Queensland volume equals the total reported in Australian Government statistics.

The data is reasonably robust where it matters for policy purposes: three and four grade sites. Errors in average volumes at other sites are not as important for policy purposes as site numbers are relatively small.

| <b>TOTAL PETROL VOLUME</b>                   |              |           |             |        |      |           |             |      |              |
|--|--------------|-----------|-------------|--------|------|-----------|-------------|------|--------------|
| No. of grades                                | No. of sites | All areas |             |        |      | Sub-total | Site volume |      | Total volume |
|  |              | E10 only  | E10 and ULP | No E10 |      |           | kLpa        | MLpa |              |
| 6  | 6            | 0         | 6           | 0      | 6    | 10000     |             | 60   |              |
| 5  | 76           | 4         | 43          | 29     | 76   | 6000      |             | 456  |              |
| 4  | 519          | 28        | 142         | 349    | 519  | 3200      |             | 1661 |              |
| 3  | 269          | 6         | 21          | 242    | 269  | 1300      |             | 350  |              |
| 2  | 52           | 4         | 0           | 48     | 52   | 350       |             | 18   |              |
| 1  | 20           | 0         | 0           | 20     | 20   | 50        |             | 1    |              |
| Subtotal                                     | 942          | 42        | 212         | 688    | 942  | 2702      | (average)   | 2546 |              |
| <u>Sites with no data</u>                    |              |           |             |        |      |           |             |      |              |
| 7 Eleven                                     |              |           | 4           |        | 6    | 2000      |             | 12   |              |
| BP   |              |           | 0           |        | 87   | 1000      |             | 87   |              |
| Caltex                                       |              |           | 8           |        | 34   | 1000      |             | 34   |              |
| Ctx Woolworths                               |              |           | 4           |        | 5    | 3000      |             | 15   |              |
| Choice                                       |              |           | 1           |        | 1    | 2000      |             | 2    |              |
| Coles Express                                |              |           | 0           |        | 10   | 3000      |             | 30   |              |
| Costco                                       |              |           | 0           |        | 1    | 4000      |             | 4    |              |
| CQP  |              |           | 1           |        | 1    | 1000      |             | 1    |              |
| Freedom                                      |              |           | 32          |        | 32   | 1000      |             | 32   |              |
| Gull   |              |           | 0           |        | 0    | 1000      |             | 0    |              |
| Independent                                  |              |           | 20          |        | 84   | 500       |             | 42   |              |
| Liberty                                      |              |           | 0           |        | 7    | 500       |             | 4    |              |
| Matilda                                      |              |           | 7           |        | 10   | 1000      |             | 10   |              |
| Mobil  |              |           | 0           |        | 46   | 500       |             | 23   |              |
| Neumann                                      |              |           | 7           |        | 7    | 1000      |             | 7    |              |
| Puma   |              |           | 16          |        | 21   | 1500      |             | 32   |              |
| Shell  |              |           | 0           |        | 37   | 500       |             | 19   |              |
| United                                       |              |           | 37          |        | 37   | 2500      |             | 93   |              |
|  |              | Estimate  | 137         |        | 426  | 1045      | (average)   | 445  |              |
| Total  |              |           |             |        | 1368 |           |             | 2991 |              |
| cf. Australian Petroleum Statistics Table 3B |              |           |             |        |      |           |             |      |              |
| based on petrol sales to retailers 2H2014    |              |           |             |        |      |           |             |      | 2991         |

Table 4

The next step is to estimate base case E10 sales, so the model can then be used for policy analysis. Table 5 takes the site volumes by grade from the above table and uses estimates of site penetration of E10 to match the Australian Government data for E10 sales.

| TOTAL ETHANOL VOLUME      |              |          |             |        |           |                      |                       | E10 penetration % petrol |                          | Ethanol volume ML       |             |      |
|---------------------------|--------------|----------|-------------|--------|-----------|----------------------|-----------------------|--------------------------|--------------------------|-------------------------|-------------|------|
| No. of grades             | No. of sites | E10 only | E10 and ULP | No E10 | Sub-total | Site volume kLpa     | Total volume MLpa     | All sites                | All sites                | All sites               | All sites   |      |
|                           |              |          |             |        |           |                      |                       | E10 only                 | E10 and ULP              | E10 only                | E10 and ULP |      |
| 6                         | 6            | 0        | 6           | 0      | 6         | 10000                | 60                    | 75                       | 26                       | 0.0                     | 1.6         |      |
| 5                         | 76           | 4        | 43          | 29     | 76        | 6000                 | 456                   | 75                       | 26                       | 1.8                     | 6.7         |      |
| 4                         | 519          | 28       | 142         | 349    | 519       | 3200                 | 1661                  | 75                       | 26                       | 6.7                     | 11.8        |      |
| 3                         | 269          | 6        | 21          | 242    | 269       | 1300                 | 350                   | 75                       | 26                       | 0.6                     | 0.7         |      |
| 2                         | 52           | 4        | 0           | 48     | 52        | 350                  | 18                    | 75                       | 26                       | 0.1                     | 0.0         |      |
| 1                         | 20           | 0        | 0           | 20     | 20        | 50                   | 1                     | 75                       | 26                       | 0.0                     | 0.0         |      |
| Subtotal                  | 942          | 42       | 212         | 688    | 942       | 2702                 | 2546                  |                          |                          | 9.2                     | 20.8        |      |
| <u>Sites with no data</u> |              |          |             |        |           |                      |                       |                          |                          |                         |             |      |
| 7 Eleven                  |              |          | 4           |        | 6         | 2000                 | 12                    |                          |                          | 26                      | 0.2         |      |
| BP                        |              |          | 0           |        | 87        | 1000                 | 87                    |                          |                          | 26                      | 0.0         |      |
| Caltex                    |              |          | 8           |        | 34        | 1000                 | 34                    |                          |                          | 26                      | 0.2         |      |
| Ctx Woolworths            |              |          | 4           |        | 5         | 3000                 | 15                    |                          |                          | 26                      | 0.3         |      |
| Choice                    |              |          | 1           |        | 1         | 2000                 | 2                     |                          |                          | 26                      | 0.1         |      |
| Coles Express             |              |          | 0           |        | 10        | 3000                 | 30                    |                          |                          | 26                      | 0.0         |      |
| Costco                    |              |          | 0           |        | 1         | 4000                 | 4                     |                          |                          | 26                      | 0.0         |      |
| CQP                       |              |          | 1           |        | 1         | 1000                 | 1                     |                          |                          | 26                      | 0.0         |      |
| Freedom                   |              |          | 32          |        | 32        | 1000                 | 32                    |                          |                          | 26                      | 0.8         |      |
| Gull                      |              |          | 0           |        | 0         | 1000                 | 0                     |                          |                          | 26                      | 0.0         |      |
| Independent               |              |          | 20          |        | 84        | 500                  | 42                    |                          |                          | 26                      | 0.3         |      |
| Liberty                   |              |          | 0           |        | 7         | 500                  | 4                     |                          |                          | 26                      | 0.0         |      |
| Matilda                   |              |          | 7           |        | 10        | 1000                 | 10                    |                          |                          | 26                      | 0.2         |      |
| Mobil                     |              |          | 0           |        | 46        | 500                  | 23                    |                          |                          | 26                      | 0.0         |      |
| Neumann                   |              |          | 7           |        | 7         | 1000                 | 7                     |                          |                          | 26                      | 0.2         |      |
| Puma                      |              |          | 16          |        | 21        | 1500                 | 32                    |                          |                          | 26                      | 0.6         |      |
| Shell                     |              |          | 0           |        | 37        | 500                  | 19                    |                          |                          | 26                      | 0.0         |      |
| United                    |              |          | 37          |        | 37        | 2500                 | 93                    |                          |                          | 26                      | 2.4         |      |
|                           |              |          | 137         |        | 426       | 1045                 | 445                   |                          |                          |                         | 5.3         |      |
| Total                     |              |          |             |        | 1368      | 2186                 | 2991                  |                          |                          | 9.2                     | 26.1        | 35.3 |
|                           |              |          |             |        |           | Avg site volume kLpa | Total volume Q/d MLpa |                          |                          | Percentage total petrol | 1.18        |      |
|                           |              |          |             |        |           |                      |                       |                          | Percentage regular grade | 1.57                    |             |      |

Table 5

The modelling assumes that sites selling E10 only achieve E10 market penetration equal to 75% of total petrol sales (the remaining 25% is PULP), based on ULP/PULP sales figures for Queensland in 2H2014.

Some interesting policy-relevant observations can be drawn from the modelling:

- The estimated E10 market penetration at sites where both E10 and ULP are sold is 26% of total petrol (equal to 35% of regular grade petrol sales). These assumptions result in a model that matches reported sales data for E10.
- The above estimated market penetration should be treated with some caution due to data limitations and model assumptions: the estimate of 35% market penetration is probably +/- 5 percentage points i.e. between 30 and 40%.
- In addition, the sites remaining in the Queensland market are probably “high-graded” i.e. the remaining sites (numbers have dropped substantially in recent years) are those at which sales of E10 are most attractive for operators.



- A significant volume of E10 sales (9 ML out of 35 ML) is from the relatively few sites that sell E10 only (and not ULP); E10-only sites have a disproportionate effect on ethanol volumes (as experienced also in NSW)

Sites with 3 grades or less make up only 14% of total E10 volume; accurate Caltex-only site data is also 14%, which supports the modelling. This suggests that exemption of three-grade (or fewer) sites would not have a substantial effect on ethanol volumes.

### 3.2 Policy scenario – all sites offer choice of E10 and ULP

The table below shows the policy scenario in which all sites that do not currently sell E10 offer a choice of ULP and E10. Sites currently selling E10 (either with or without a choice of ULP) are assumed to remain unchanged.

| No. of grades             | No. of sites | E10 only | E10 and ULP | No E10 | Sub-total | Site volume<br>kLpa     | Total volume<br>MLpa     | E10 penetration % petrol |             | Ethanol volume ML |             |      |                          |
|---------------------------|--------------|----------|-------------|--------|-----------|-------------------------|--------------------------|--------------------------|-------------|-------------------|-------------|------|--------------------------|
|                           |              |          |             |        |           |                         |                          | All sites                | All sites   | All sites         | All sites   |      |                          |
|                           |              |          |             |        |           |                         |                          | E10 only                 | E10 and ULP | E10 only          | E10 and ULP |      |                          |
| 6                         | 6            | 0        | 6           | 0      | 6         | 10000                   | 60                       | 75                       | 26          | 0.0               | 1.6         |      |                          |
| 5                         | 76           | 4        | 72          | 0      | 76        | 6000                    | 456                      | 75                       | 26          | 1.8               | 11.2        |      |                          |
| 4                         | 519          | 28       | 491         | 0      | 519       | 3200                    | 1661                     | 75                       | 26          | 6.7               | 40.9        |      |                          |
| 3                         | 269          | 6        | 263         | 0      | 269       | 1300                    | 350                      | 75                       | 26          | 0.6               | 8.9         |      |                          |
| 2                         | 52           | 4        | 48          | 0      | 52        | 350                     | 18                       | 75                       | 26          | 0.1               | 0.4         |      |                          |
| 1                         | 20           | 0        | 20          | 0      | 20        | 50                      | 1                        | 75                       | 26          | 0.0               | 0.0         |      |                          |
| Subtotal                  | 942          | 42       | 900         | 0      | 942       | 2702                    | 2546                     |                          |             | 9.2               | 63.0        |      |                          |
| <u>Sites with no data</u> |              |          |             |        |           |                         |                          |                          |             |                   |             |      |                          |
| 7 Eleven                  |              |          | 6           |        | 6         | 2000                    | 12                       |                          | 26          |                   | 0.3         |      |                          |
| BP                        |              |          | 87          |        | 87        | 1000                    | 87                       |                          | 26          |                   | 2.3         |      |                          |
| Caltex                    |              |          | 34          |        | 34        | 1000                    | 34                       |                          | 26          |                   | 0.9         |      |                          |
| Ctx Woolworths            |              |          | 5           |        | 5         | 3000                    | 15                       |                          | 26          |                   | 0.4         |      |                          |
| Choice                    |              |          | 1           |        | 1         | 2000                    | 2                        |                          | 26          |                   | 0.1         |      |                          |
| Coles Express             |              |          | 10          |        | 10        | 3000                    | 30                       |                          | 26          |                   | 0.8         |      |                          |
| Costco                    |              |          | 1           |        | 1         | 4000                    | 4                        |                          | 26          |                   | 0.1         |      |                          |
| CQP                       |              |          | 1           |        | 1         | 1000                    | 1                        |                          | 26          |                   | 0.0         |      |                          |
| Freedom                   |              |          | 32          |        | 32        | 1000                    | 32                       |                          | 26          |                   | 0.8         |      |                          |
| Gull                      |              |          | 0           |        | 0         | 1000                    | 0                        |                          | 26          |                   | 0.0         |      |                          |
| Independent               |              |          | 84          |        | 84        | 500                     | 42                       |                          | 26          |                   | 1.1         |      |                          |
| Liberty                   |              |          | 7           |        | 7         | 500                     | 4                        |                          | 26          |                   | 0.1         |      |                          |
| Matilda                   |              |          | 10          |        | 10        | 1000                    | 10                       |                          | 26          |                   | 0.3         |      |                          |
| Mobil                     |              |          | 46          |        | 46        | 500                     | 23                       |                          | 26          |                   | 0.6         |      |                          |
| Neumann                   |              |          | 7           |        | 7         | 1000                    | 7                        |                          | 26          |                   | 0.2         |      |                          |
| Puma                      |              |          | 21          |        | 21        | 1500                    | 32                       |                          | 26          |                   | 0.8         |      |                          |
| Shell                     |              |          | 37          |        | 37        | 500                     | 19                       |                          | 26          |                   | 0.5         |      |                          |
| United                    |              |          | 37          |        | 37        | 2500                    | 93                       |                          | 26          |                   | 2.4         |      |                          |
|                           |              |          | 426         |        | 426       | 1045                    | 445                      |                          |             |                   | 11.6        |      |                          |
| Total                     |              |          |             |        | 1368      | 2186                    | 2991                     |                          |             | 9.2               | 74.6        | 83.8 | Total ethanol volume     |
|                           |              |          |             |        |           |                         |                          |                          |             |                   |             | 2.8  | Percentage total petrol  |
|                           |              |          |             |        |           | Avg site volume<br>kLpa | Total volume<br>Qld MLpa |                          |             |                   |             | 3.7  | Percentage regular grade |

It can be seen that total ethanol (E100) volume increases from 35 ML to 84 ML pa. This represents 2.8% of total petrol sales or 3.7% of regular grade sales.

If three-grade and fewer sites were exempted, this would reduce the ethanol volume by an estimated 10 ML. In addition, if sites selling less than 1 ML pa of petrol were exempted, this would reduce ethanol volume by an estimated 5 ML, so a more realistic policy estimate with

reasonable exemptions is about 69 ML, equal to 2.3% of total petrol sales or 3.1% of regular grade sales (the model for this scenario is shown below).

Note that this is the average across all sites – a significant number of sites would have ethanol market penetrations above and below the average due to variations in local market and site conditions.

In addition, for the model as shown in the above table, introducing E10 would at many sites require the removal of ULP, one PULP grade or one diesel grade, with potentially serious business consequences. This would create a further practical constraint on the mandate (through potential exemptions), hence model estimates.

### 3.3 Policy scenario – sites with 3 grades or fewer exempt, sites below 1 ML pa exempt

| No. of grades                 | No. of sites | E10 only | E10 and ULP     | No E10 | Sub-total | Site volume<br>kLpa  | Total volume<br>MLpa  | E10 penetration % petrol |             | Ethanol volume ML |             |                         |                                 |
|-------------------------------|--------------|----------|-----------------|--------|-----------|----------------------|-----------------------|--------------------------|-------------|-------------------|-------------|-------------------------|---------------------------------|
|                               |              |          |                 |        |           |                      |                       | All sites                | All sites   | All sites         | All sites   |                         |                                 |
|                               |              |          |                 |        |           |                      |                       | E10 only                 | E10 and ULP | E10 only          | E10 and ULP |                         |                                 |
| 6                             | 6            | 0        | 6               | 0      | 6         | 10000                | 60                    | 75                       | 26          | 0.0               | 1.6         |                         |                                 |
| 5                             | 76           | 4        | 72              | 0      | 76        | 6000                 | 456                   | 75                       | 26          | 1.8               | 11.2        | 5 grade sites few in nu |                                 |
| 4                             | 519          | 28       | 491             | 0      | 519       | 3200                 | 1661                  | 75                       | 26          | 6.7               | 40.9        | 4 grade sites are key   |                                 |
| 3                             | 269          | 6        | 21              | 242    | 269       | 1300                 | 350                   | 75                       | 26          | 0.6               | 0.7         |                         |                                 |
| 2                             | 52           | 4        | 0               | 48     | 52        | 350                  | 18                    | 75                       | 26          | 0.1               | 0.0         |                         |                                 |
| 1                             | 20           | 0        | 0               | 20     | 20        | 50                   | 1                     | 75                       | 26          | 0.0               | 0.0         |                         |                                 |
| Subtotal                      | 942          | 42       | 590             | 310    | 942       | 2702                 | 2546                  |                          |             | 9.2               | 54.4        |                         |                                 |
| 310 fewer sites than max case |              |          |                 |        |           |                      |                       |                          |             |                   |             |                         |                                 |
| <u>Sites with no data</u>     |              |          |                 |        |           |                      |                       |                          |             |                   |             |                         |                                 |
| 7 Eleven                      |              |          | 4               |        | 6         | 2000                 | 12                    |                          | 26          |                   | 0.2         |                         |                                 |
| BP                            |              |          | 0               |        | 87        | 1000                 | 87                    |                          | 26          |                   | 0.0         |                         |                                 |
| Caltex                        |              |          | 8               |        | 34        | 1000                 | 34                    |                          | 26          |                   | 0.2         |                         |                                 |
| Ctx Woolworths                |              |          | 4               |        | 5         | 3000                 | 15                    |                          | 26          |                   | 0.3         |                         |                                 |
| Choice                        |              |          | 1               |        | 1         | 2000                 | 2                     |                          | 26          |                   | 0.1         |                         |                                 |
| Coles Express                 |              |          | 0               |        | 10        | 3000                 | 30                    |                          | 26          |                   | 0.0         |                         |                                 |
| Costco                        |              |          | 0               |        | 1         | 4000                 | 4                     |                          | 26          |                   | 0.0         |                         |                                 |
| CQP                           |              |          | 1               |        | 1         | 1000                 | 1                     |                          | 26          |                   | 0.0         |                         |                                 |
| Freedom                       |              |          | 32              |        | 32        | 1000                 | 32                    |                          | 26          |                   | 0.8         |                         |                                 |
| Gull                          |              |          | 0               |        | 0         | 1000                 | 0                     |                          | 26          |                   | 0.0         |                         |                                 |
| Independent                   |              |          | 20              |        | 84        | 500                  | 42                    |                          | 26          |                   | 0.3         |                         |                                 |
| Liberty                       |              |          | 0               |        | 7         | 500                  | 4                     |                          | 26          |                   | 0.0         |                         |                                 |
| Matilda                       |              |          | 7               |        | 10        | 1000                 | 10                    |                          | 26          |                   | 0.2         |                         |                                 |
| Mobil                         |              |          | 0               |        | 46        | 500                  | 23                    |                          | 26          |                   | 0.0         |                         |                                 |
| Neumann                       |              |          | 7               |        | 7         | 1000                 | 7                     |                          | 26          |                   | 0.2         |                         |                                 |
| Puma                          |              |          | 16              |        | 21        | 1500                 | 32                    |                          | 26          |                   | 0.6         |                         |                                 |
| Shell                         |              |          | 0               |        | 37        | 500                  | 19                    |                          | 26          |                   | 0.0         |                         |                                 |
| United                        |              |          | 37              |        | 37        | 2500                 | 93                    |                          | 26          |                   | 2.4         |                         |                                 |
|                               |              |          | 137             |        | 426       | 1045                 | 445                   |                          |             |                   | 5.3         |                         |                                 |
| Total                         |              |          | 270 fewer sites |        | 1368      | 2186                 | 2991                  |                          |             | 9.2               | 59.6        | 68.9                    | Total ethanol volume Qld        |
|                               |              |          | 580 fewer sites |        |           |                      |                       |                          |             |                   |             | 2.3                     | Percentage total petrol         |
|                               |              |          |                 |        |           | Avg site volume kLpa | Total volume Qld MLpa |                          |             |                   |             | 3.1                     | Percentage regular grade petrol |

As discussed above, total E10 volume reduces from about 84 ML pa in the “all sites sell E10” model to 69 ML in a model with realistic exemptions. While the ethanol volume is reduced, there is a reduction in 580 sites (out of 1368) that have mandate liabilities other than an annual petrol volume report. This is a huge red-tape reduction without a major impact on mandate volumes.

### 3.4 Policy scenario – wholesalers and major retailer liability

In this scenario, it is recognised that major retailers (Woolworths and Coles) have 48% market share of petrol sales nationally, so even if the Queensland market share is lower than the national average, their inclusion in the mandate has a substantial effect.

Wholesalers in general have little ability to influence retailers due to lack of operational control, so it is assumed the existing E10 sales at sites remain unchanged, apart from Woolworths and Coles. This scenario necessitated a change in the model to explicitly include Woolworths and Coles (“Model 2”).

| No. of grades             | No. of sites |          |             |        |      | Sub-total            | Site volume kLpa      | Total volume MLpa | E10 penetration % petrol |                         | Ethanol volume ML        |             |
|---------------------------|--------------|----------|-------------|--------|------|----------------------|-----------------------|-------------------|--------------------------|-------------------------|--------------------------|-------------|
|                           |              | E10 only | E10 and ULP | No E10 |      |                      |                       |                   | All sites                | All sites               | All sites                | All sites   |
|                           |              |          |             |        |      |                      |                       |                   | E10 only                 | E10 and ULP             | E10 only                 | E10 and ULP |
| Coles Express             | 128          | 0        | 128         | 0      | 128  | 5000                 | 640                   |                   | 29                       | 0.0                     | 18.6                     |             |
| Woolworths                | 132          | 0        | 132         | 0      | 132  | 5000                 | 660                   |                   | 29                       | 0.0                     | 19.1                     |             |
| 6                         | 6            | 0        | 6           | 0      | 6    | 8000                 | 48                    | 75                | 29                       | 0.0                     | 1.4                      |             |
| 5                         | 4            | 4        | 0           | 0      | 4    | 3200                 | 13                    | 75                | 29                       | 1.0                     | 0.0                      |             |
| 4                         | 331          | 28       | 132         | 171    | 331  | 3000                 | 993                   | 75                | 29                       | 6.3                     | 11.5                     |             |
| 3                         | 269          | 6        | 21          | 242    | 269  | 800                  | 215                   | 75                | 29                       | 0.4                     | 0.5                      |             |
| 2                         | 52           | 4        | 0           | 48     | 52   | 350                  | 18                    | 75                | 29                       | 0.1                     | 0.0                      |             |
| 1                         | 20           | 0        | 0           | 20     | 20   | 50                   | 1                     | 75                | 29                       | 0.0                     | 0.0                      |             |
| Subtotal                  | 942          | 42       | 419         | 481    | 942  |                      | 1288                  |                   |                          | 7.7                     | 51.1                     |             |
| <u>Sites with no data</u> |              |          |             |        |      |                      |                       |                   |                          |                         |                          |             |
| 7 Eleven                  |              |          | 4           |        | 6    | 2000                 | 12                    |                   | 29                       |                         | 0.2                      |             |
| BP                        |              |          | 0           |        | 87   | 1000                 | 87                    |                   | 29                       |                         | 0.0                      |             |
| Caltex                    |              |          | 8           |        | 34   | 1000                 | 34                    |                   | 29                       |                         | 0.2                      |             |
| Ctx Woolworths            |              |          | 0           |        | 0    | 0                    | 0                     |                   | 29                       |                         | 0.0                      |             |
| Choice                    |              |          | 1           |        | 1    | 2000                 | 2                     |                   | 29                       |                         | 0.1                      |             |
| Coles Express             |              |          | 0           |        | 0    | 0                    | 0                     |                   | 29                       |                         | 0.0                      |             |
| Costco                    |              |          | 0           |        | 1    | 4000                 | 4                     |                   | 29                       |                         | 0.0                      |             |
| CQP                       |              |          | 1           |        | 1    | 1000                 | 1                     |                   | 29                       |                         | 0.0                      |             |
| Freedom                   |              |          | 32          |        | 32   | 1000                 | 32                    |                   | 29                       |                         | 0.9                      |             |
| Gull                      |              |          | 0           |        | 0    | 1000                 | 0                     |                   | 29                       |                         | 0.0                      |             |
| Independent               |              |          | 20          |        | 84   | 500                  | 42                    |                   | 29                       |                         | 0.3                      |             |
| Liberty                   |              |          | 0           |        | 7    | 1000                 | 7                     |                   | 29                       |                         | 0.0                      |             |
| Matilda                   |              |          | 7           |        | 10   | 1000                 | 10                    |                   | 29                       |                         | 0.2                      |             |
| Mobil                     |              |          | 0           |        | 46   | 500                  | 23                    |                   | 29                       |                         | 0.0                      |             |
| Neumann                   |              |          | 7           |        | 7    | 1000                 | 7                     |                   | 29                       |                         | 0.2                      |             |
| Puma                      |              |          | 16          |        | 21   | 1500                 | 32                    |                   | 29                       |                         | 0.7                      |             |
| Shell                     |              |          | 0           |        | 37   | 500                  | 19                    |                   | 29                       |                         | 0.0                      |             |
| United                    |              |          | 37          |        | 37   | 2500                 | 93                    |                   | 29                       |                         | 2.7                      |             |
|                           |              |          | 133         |        | 411  | 982                  | 404                   |                   |                          |                         | 5.6                      |             |
| Total                     |              |          |             |        | 1353 | 298                  | 1692                  |                   |                          | 7.7                     | 56.6                     | 64.3        |
|                           |              |          |             |        |      | Avg site volume kLpa | Total volume Q/d MLpa |                   |                          | Percentage total petrol | Percentage regular grade | 2.15        |
|                           |              |          |             |        |      |                      |                       |                   |                          |                         |                          | 2.87        |

cf 2014 APS data 35 ML

### 3.5 Summary of modelling

| Scenario                              | Ethanol volume (ML p.a.) | E100 % of regular grade petrol |
|---------------------------------------|--------------------------|--------------------------------|
| Base case (Model 1)                   | 35                       | 1.6                            |
| All sites sell E10 (Note 1)           | 84                       | 3.7                            |
| Only sites >1 ML pa (all grades)      | 78                       | 3.5                            |
| Only sites > 1 ML and > 3 fuel grades | 69                       | 3.1                            |
|                                       |                          |                                |
| Base case (Model 2) (Note 2)          | 35                       | 1.6                            |
| All sites sell E10 (Note 3)           | 92                       | 4.1                            |
| Wholesaler/major retailer liability   | 64                       | 2.9                            |

#### Notes

1. Existing sites selling E10 only as regular grade remain unchanged, all other sites offer choice
2. Revised base case with explicit assumptions on Woolworths and Coles
3. Same scenario as second case in table but using Model 2 – results vary 10% due to modelling assumptions

## **4. Other comments**

### **4.1 Biodiesel mandate**

We do not support the introduction of a biodiesel mandate. The bulk of biodiesel sales are to commercial customers who will only purchase once fuel sustainability, cost savings, and technical issues (such as equipment suitability) are considered. Any biodiesel mandate in Queensland would require Caltex to consider whether it was reasonable, given the economic returns and risks, to make a multi-million dollar investment in storage and injection systems at terminals.

A 1% biodiesel mandate on retail diesel would require only 15ML of biodiesel, so would not generate enough volumes to ramp up biodiesel production and encourage capital investment (we note the discussion paper indicates Queensland's only biodiesel production facility has capacity to produce 50ML per year). A 5% retail diesel mandate would require about 75ML of biodiesel so would create additional demand; however this demand would need to be supplied from interstate until Queensland capacity is increased. An exemption similar to the one proposed under an ethanol mandate for uneconomic supply would also need to apply to biodiesel.

The maximum possible biodiesel demand if all diesel customers used diesel with up to 5% biodiesel is about 300ML. Of course, this would be highly dependent on commercial customers and the suitability of such a fuel for their equipment.

### **4.2 Sustainability certification**

Any sustainability certification that would be required under a biofuels mandate (whether for biodiesel or ethanol) would have to be the responsibility of ethanol supplier. Petrol wholesalers and retailers must be able to rely on this certification legally.

### **4.3 Timeframe for implementation**

A large number of sites will need to add E10 to their fuel offer. This will vary in complexity and cost and the availability of suitable contractors may be an issue. Data on sites and exemption criteria will need to be gathered. It is unlikely this can be achieved before 2017 and some sites may never be able to comply because of the cost if tank replacement were required.

### **4.4 Site conversion costs**

The costs associated with converting a site to sell E10 vary depending on the level of work required, but can be significant.

Sites with E10-compatible underground petroleum storage tanks that require a straightforward product swap, tank clean, new decals and markers start at \$10,000 and go up to \$30,000 if concrete need to be broken in order to modify the fuel pipelines.

Where tank replacement is required, capital costs can be up to \$1 million per site. This is exclusive of disruption costs and loss of earnings during construction works.

#### 4.5 Interstate supply

Caltex opposes any some limitation of supply source for the purpose of mandate compliance as it runs contrary to the principle of free interstate trade and weakens supply security; by precluding the use of interstate ethanol supply, the proposed framework in the discussion paper compromises the integrity of the Queensland ethanol supply chain.

While there is ample local capacity to cover a 2% mandate, the areas in which ethanol plants are located are prone to adverse weather conditions such as flooding and cyclones. For example, we understand that the Dalby plant has in the past been impacted by flooding, which prevented the movement of ethanol by truck to the market.

We note the government's commitment to suspend the mandate during times of short ethanol supply due to extreme weather events or otherwise. This approach will obviously impact compliance levels and potentially add further regulatory complexity to the exemption and compliance regime. An alternative approach that could help safeguard Queensland against potential domestic shortages is allowing for interstate ethanol supply in extenuating circumstances such as extreme weather events.

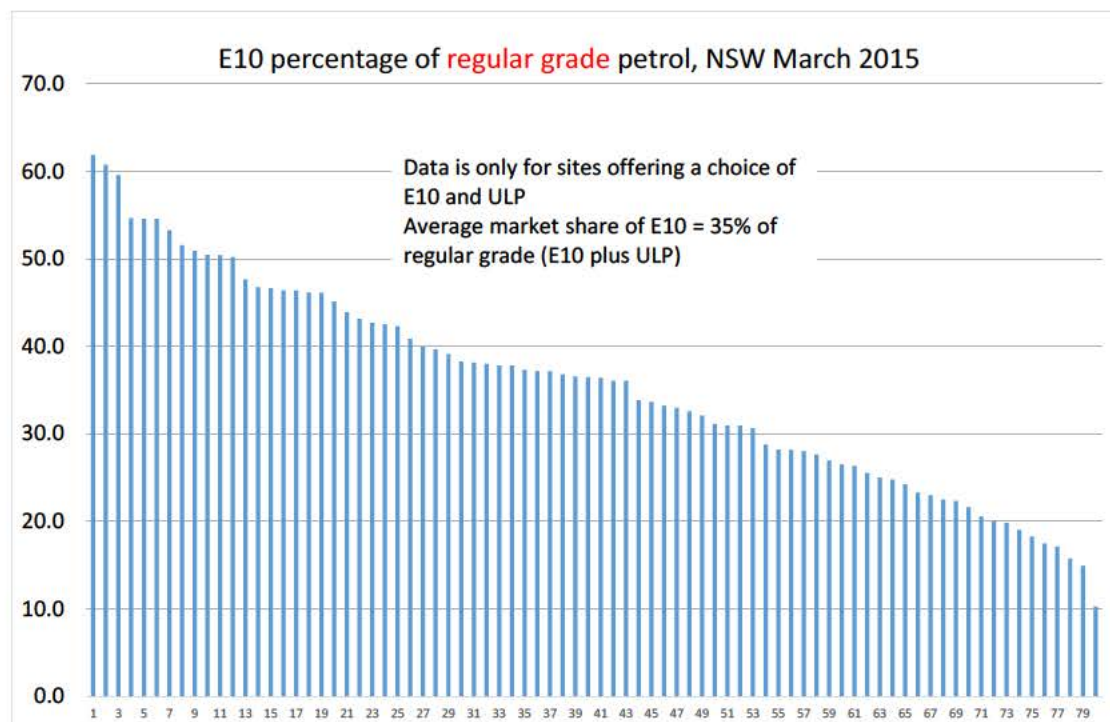
**Appendix I: Caltex experience in NSW with E10 market penetration at sites offering E10/ULP choice**

In NSW, E10 penetration of the petrol market (all sites, not just Caltex) was driven to a high of about 4.0%, mainly by government policy for removal of ULP from the market. Caltex estimates that a large proportion of the volume at maximum market penetration was from sites selling only E10 and no ULP. Since the removal of the legislated ban on ULP, overall ethanol market penetration has fallen steadily as service stations have reintroduced ULP or, where site characteristics do not allow for both regular grades, replaced E10 with ULP. As a general picture, market penetration at sites offering only E10 as the regular grade is about 50% of total petrol volume. This drops to under 20% at sites where both E10 and ULP are available.

The chart below shows a sample of 80 Caltex sites in NSW where both E10 and ULP are available. The average market penetration of E10 is about 18% of total petrol volume, or about 35% of regular grade volume.

A significant point for policy evaluation is that 10% of sites are below 2% and one third of sites are below 3%. A similar pattern would be expected in Queensland if there was a much higher level of ethanol penetration than at present (average E10 penetration of 1.2% of total petrol or 1.6% of regular grade in 2H2014).

The NSW market data points to the practical difficulties of achieving compliance with a particular level of mandate in Queensland when there is in reality a substantial variation on ethanol market penetrations from site to site.



## Appendix II: History of ethanol blends in Australia

### 1.1 National

In December 2005, the Howard government announced a *Biofuels Action Plan* with an industry-wide target of 350 million litres of biofuels content in fuels by 2010. Commitment of individual fuel suppliers was sought and vigorously monitored. Oil companies were asked to provide annual projections of sales and report on volumes sold. Biofuels stakeholders attended annual ethanol industry roundtables to discuss industry and policy issues.

The federal government acknowledged the cost to business of conversion and funded the *Ethanol Distribution Program*, a grants program with a subsidy of \$10,000 for tank conversions. An additional grant of up to \$10,000 was available for meeting increased sales at upgraded sites. The scheme concluded on 31 March 2008.

While the industry targets were voluntary, there was considerable political pressure to meet the self-imposed commitments, with the threat of regulation if industry progress was not satisfactory. This resulted in a significant rollout of E10, although this varied by company and by state. While this did not represent a truly free market as policy commitments over-rode normal market assessment and development, the choice of E10 and ULP at sites and the relatively small number of sites selling E10 (so that E10 competed against ULP at both the same site and competing sites) meant the market resembled a normal competitive market.

This enables observations to be made on the likely penetration of E10 in an unregulated market. In addition, the discount to ULP available at that time, typically 3 to 4 cpl, provided an incentive to motorists to buy E10 to obtain a cheaper fuel per litre and for some service stations to stock the product. Politicians at that time advocated the use of E10 as a cheaper alternative to ULP (notwithstanding the typical fuel economy loss).

### 1.2 Queensland

When E10 was introduced into Queensland, there was a rapid increase in penetration so that after 2 1/2 years (August 2005 to December 2007) approximately 15% of total petrol sales was E10 (48ML of ethanol per year). Caltex was selling E10 at about 90 sites in Queensland.

At Caltex sites **where E10 was available**, market penetration of E10 increased from about 16% (as a percentage of total petrol) at the beginning of 2006 to about 19% by mid-2007. Expressed as a percentage of regular grade petrol only (i.e. both E10 and ULP), the percentages were about 19% and 22% respectively. Market penetrations varied widely between sites.

For calendar year 2011, the market penetration was 24% (as a percentage of total petrol) **at sites offering choice of E10 and ULP**, although this figure was based on only 19 sites and therefore not directly comparable to the earlier data (for example, only sites with high E10 penetration may have continued selling the product). Expressed as a percentage of regular grade petrol only (both E10 and ULP), the penetration was 31%.

The Queensland Labor government also made an election promise in August 2006 that 5% of ULP would be ethanol by 2010, increasing to 10% "as soon as practicable after 2010". The Opposition supported this policy. The Queensland government offered a subsidy of up to \$8,000 (to a maximum of 50% of cost) for service station tank conversions. The government



also provided on the ground support with education campaigns for consumers and “ethanol ambassadors” visiting sites.

With a change in Premier from Peter Beattie to Anna Bligh, there was less emphasis on ethanol policy and a broadening of interest in biofuels away from driving change through site conversion supplied by first generation ethanol plants. The proposed ethanol mandate legislation was deferred in late 2010 due to lack of supply and uncertainty over the federal government’s excise regime. No policy decision was made by Labor on the mandate and the policy proposal lapsed with Labor’s defeat at the March 2012 elections. The subsequent LNP government did not propose any biofuels mandate during its three year term of office.

Sales of E10 in Queensland increased quite strongly in anticipation of the ethanol mandate, with a significant number of sites converted to selling E10 as the only regular grade of petrol. This was because 50% penetration of E10 (on a state wide basis) could only be achieved by removal of consumer choice at many metropolitan sites. With the indefinite deferral of the mandate, competition from ULP led some marketers to remove E10 bowsers from sites and replace them with ULP. For example, Caltex removed E10 from sites that were selling only that grade of regular petrol and replaced it with ULP; sites that were offering a choice of E10 and ULP continued to offer that choice; and other sites removed E10 from sale.

In Queensland, industry-wide monthly E10 sales reached a maximum of about 80 ML in mid-2010 (96 ML annualised ethanol volume or 2.2% of total petrol sales) according to data from the then Department of Resources, Energy and Tourism. As the prospects for a Queensland mandate faded (despite it being Labor policy), E10 sales dropped to 39 ML in November 2011 (47 ML annualised ethanol volume or 1.1% of petrol sales). In 2013-14, E10 sales totalled 35ML, representing an ongoing and steady decline.

### 1.3 New South Wales

The NSW government announced a mandate in 2007 which required ethanol to account for 2% of total petrol volume by 1 October 2007, progressing to 6% from 1 January 2012. In December 2007 in NSW, after two years of introduction on a voluntary basis, ethanol accounted for less than 1% of total petrol (about 30ML/year). Caltex was selling E10 at about 120 sites in NSW.

At Caltex sites **where E10 was available**, market penetration increased from about 9% (as a percentage of total petrol) at the beginning of 2007 to about 14% by mid-2008. Expressed as a percentage of regular grade petrol only (both E10 and ULP), the percentages were about 10% and 18% respectively. Market penetrations varied widely between sites.

For calendar year 2011, the Caltex market penetration was 17% (as a percentage of total petrol) **at sites offering choice of E10 and ULP**, although based on a sample of only 7 sites and therefore not directly comparable to the earlier data. Expressed as a percentage of regular grade petrol only (both E10 and ULP), the percentage was 23%.

In anticipation of the ULP ban, many fuel companies began displacing ULP at their sites to replace it with E10 as the base petrol grade. This led to industry-wide compliance peaking in the last quarter of 2012 at just under 4%. Following the abandonment of the ban, the compliance rate has steadily declined due to the continued existence of choice between ULP and E10, a lack of operational control at certain sites to introduce E10 and a lack of consumer demand for ethanol blended fuel.