Report

Commissioned report on fuel pricing

18 March 2020

Disclaimer

The views expressed herein are those of the South Australian Productivity Commission and do not purport to represent the position of the Government of South Australia. The content of this report is provided for information purposes only. Neither the South Australian Productivity Commission nor the Government of South Australia accepts any liability to any person for the information (or the use of such information) which is provided in this report or incorporated into it by reference. The information in this report is provided on the basis that all persons having access to this report undertake responsibility for assessing the relevance and accuracy of its content.

South Australian Productivity Commission
GPO Box 2343
Adelaide South Australia 5001
AUSTRALIA

Telephone: 08 8226 7828
Email: sapc@sa.gov.au
Website: www.sapc.sa.gov.au

An appropriate citation for this publication is:

South Australian Productivity Commission 2020, *Commissioned report on fuel pricing*, Report, March 2020

About the South Australian Productivity Commission

The Commission provides the South Australian Government with independent advice on facilitating productivity growth, unlocking new economic opportunities, supporting job creation and removing existing regulatory barriers.

The Premier and Cabinet Circular PC046 sets out the objectives and functions of the Commission; how inquiries are referred to the Commission, undertaken and reported on; and how the Commission and public sector agencies work together.

The Commission was established to assist the government to:

- improve the rate of economic growth and the productivity of the South Australian economy in order to achieve higher living standards for South Australians;
- improve the accessibility, efficiency and quality of services delivered or funded by government;
- improve South Australia's competitiveness for private sector investment;
- reduce the cost of regulation;
- facilitate structural economic changes while minimising the social and economic hardship that may result from those changes;
- take into account the interests of industries, employees, consumers and the community;
- increase employment;
- promote regional development; and
- develop South Australia in a way that is ecologically sustainable.

The Commission is supported by the Office of the South Australian Productivity Commission (OSAPC) which is an attached office of the Department of the Premier and Cabinet. The Chair of the Commission also serves as the Chief Executive of the OSAPC.

For more information on the Commission, including Circular PC046, visit the website at www.sapc.sa.gov.au

Disclosure

The Commissioners have declared to the South Australian Government all personal interests that could have a bearing on current and future work. The Chair confirms his belief that he has no personal conflicts in regard to this inquiry.

Notice of commissioned report

B460750

The Hon Steven Marshall MP
Premier of South Australia

Dr Matthew Butlin
Chair and Chief Executive
SA Productivity Commission
GPO Box 2343
ADELAIDE SA 5001
Email: sapc@sa.gov.au

Dear Dr Butlin,

As you would be aware, my government is committed to supporting South Australians to manage the cost of living.

My government has been exploring options to increase transparency of fuel prices and support South Australians to access information that would enable them to take advantage of the cheapest prices.

To assist our work, I ask that the Commission investigate and report on potential models that would increase transparency of fuel prices and enable customers to make informed choices when purchasing fuel, having regard to:

a) the net benefits and effectiveness of models used in other jurisdictions, including the real-time fuel pricing scheme in New South Wales and the 24-hour price locking mechanism in Western Australia
b) current regulatory arrangements for fuel pricing in South Australia and how alternative models compare
c) the most cost-effective solution to increase transparency in fuel prices in South Australia.

It is recognised that the cost of fuel is influenced by many factors, including overseas and local market forces.

The commissioned report detailing the outcomes of the investigation is to be provided to me no later than three months after receipt of this letter. Per the *Department of the Premier and Cabinet Circular 046 – The South Australian Productivity Commission* relevant agency staff will be made available to the Commission to support it in undertaking this investigation.

I thank you and the Commission in advance for your efforts in relation to this matter.

Yours sincerely,

Hon Steven Marshall MP
PREMIER OF SOUTH AUSTRALIA

18 / 12 / 2019

Office of the Premier
State Administration Centre 200 Victoria Square Adelaide South Australia 5000 GPO Box 2343 Adelaide SA 5001
T +61 8 8429 3232 E premier@sa.gov.au www.premier.sa.gov.au

Purpose (terms of reference)

The task

On 18 December 2019, the Premier asked the SA Productivity Commission to investigate and report on potential models that would increase transparency of fuel prices and enable customers to make informed choices when purchasing fuel, having regard to:

- the net benefits and effectiveness of models used in other jurisdictions, including the real-time fuel pricing scheme in New South Wales and the 24-hour price locking mechanism in Western Australia;
- current regulatory arrangements for fuel pricing in South Australia and how alternative models compare; and
- the most cost-effective solution to increase transparency in fuel prices in South Australia.

The task was undertaken in the context of:

- the government has been exploring options to increase transparency of fuel prices and support South Australians to access information that would enable them to take advantage of the cheapest prices; and
- the cost of fuel being influenced by many factors, including overseas and local market forces.

The letter from the Premier was received by the Commission on 18 December, specifying the report was to be provided within three months of the date the letter was received by the Commission.

In addressing the task, the Commission has confined its analysis to retail petrol prices. Diesel and autogas are excluded because neither has demonstrated price cycle behaviour. That said, diesel and autogas information could be included in any price transparency scheme the SA Government might decide to adopt, which is consistent with the approach taken in some other Australian jurisdictions.

The Commission considers four tests must be met to justify government intervention to increase fuel price transparency to consumers (motorists). The intervention must:

- improve the scope, quantity and integrity of fuel price information available to consumers;
- be taken up by consumers;
- be acted on by consumers; and
- provide benefits to consumers that exceed the costs of regulation to retailers and government.

The report begins with the context of concerns about fuel price information, followed by a description of two options and their assessment against the status quo and each other. While some unequivocal findings are difficult, the report sets out conclusions and a possible path forward for consideration by the SA Government.

Contents

Executive summary

The Commission was asked to investigate and report on potential models that would increase the transparency of fuel prices to buyers and enable them to make informed choices when purchasing fuel.

The petrol price cycles that exist in Australia's largest cities are the result of pricing decisions made by petrol retailers aiming to maximise profits. Price cycles arise from the way retailers behave in retail petrol markets that are characterised by a small number of retailers that collectively account for the bulk of the retail outlets.

Fuel price transparency schemes exist in Western Australia (WA), New South Wales (NSW), Northern Territory (NT) and Queensland (QLD). There are broadly two approaches. The first operates in three jurisdictions and requires retailers to provide current petrol price information to the government (or its contracted agent), which then publishes the information and makes it available via smart phone apps and websites (Option 1). The second has operated in WA since 2001 and requires retail outlets to advise the WA Government, by 2pm on the preceding day the price that will apply at the outlet for the following day which is published in the same manner (Option 2).

The current regulatory regime in South Australia (SA) for retail fuel prices is limited to requiring retailers to display the current prices at the site. It is complemented by a range of commercially-provided smart phone apps and other information that together provide substantial amounts of information on retail fuel prices by location. Much of this information is accurate and up to date, but it is incomplete in coverage, some data are less reliable due the collection methods used, and some data are out of date. The gaps include independent retailers that generally offer discounted low prices. This information situation is evolving.

Advocates of interventions to provide real time fuel price information argue that they can deliver benefits to motorists in terms of lower annual fuel costs, because better information allows them to buy petrol at the lowest point of the cycle and to take advantage of the lowest daily price at other times. The evidence from a variety of sources suggests that price is a key consideration for about half of motorists.

The industry generally contests the claims of the advocates, challenging the assumptions underpinning the estimated benefits and contending motorists are influenced by factors in addition to price. The industry points to the large amount of information on retail petrol prices currently available in SA that gives a high level of price transparency.

There is a helpful body of expert academic literature on fuel price cycles, including applied analysis and evaluation, as well as information provided in submissions and consultations. The Commission concludes that evidence clearly shows that price cycles persist despite the introduction of fuel price transparency schemes. But it also concurs with the view that transparency schemes reduce the costs to consumers of finding low cost fuel, including at the low point of the fuel cycle. With respect to the effects of the schemes on the shape of the cycles, the evidence is that the net effects on retail fuel prices of either option are unclear and probably small, both in the short term and in the long term. The evaluation being conducted in QLD of its two year trial introduction of a fuel transparency scheme is expected to provide additional evidence in late 2020.

There is, however, some variation between the two types of fuel price transparency schemes.

The Commission heard from most stakeholders that the QLD version of Option 1 made efficient use of existing price reporting and industry practice to reduce compliance costs. Retailers generally considered Option 1 would impose lower compliance costs than Option 2.

The Commission concludes that under reasonable assumptions both options for transparency schemes are likely to be better than the status quo. Further considerations relate to the regulatory costs, including implementation, and the treatment of metropolitan, regional and remote areas.

To get the benefit of lower prices, consumers need better information, better access to it and to act on it. Initiatives to complement mobile phone apps and websites to promote the information, such as regular advertising of lowest price and location, are likely to be useful. Organisations such as the RAA could have a significant role in promoting the information to their members.

Acronyms

ACAPMA	Australian Convenience and Petroleum Marketers Association
ACCC	Australian Competition and Consumer Commission
ACT	Australian Capital Territory
AIP	Australian Institute of Petroleum
API	Application Programming Interface
CCA	Competition and Consumer ACT (2010)
CPL	Cents Per Litre
DPC	Department of the Premier and Cabinet
DTF	Department of Treasury and Finance
GIRD	Gross Indicative Retail Difference
NSW	New South Wales
OECD	Organisation for Economic Co-operation and Development
OTR	On The Run
OSAPC	Office of the SA Productivity Commission
QLD	Queensland
RAA	Royal Automobile Association of South Australia
RACQ	Royal Automobile Club of Queensland
RIS	Regulatory Impact Statement
SA	South Australia
TPG	Terminal Gate Price
ULP	Unleaded Petrol
VIC	Victoria

1. Context, issues and evidence

This section sets out: the current environment of fuel price cycles; the fuel information currently available in Australian jurisdictions (including SA); stakeholder issues; relevant views of the Australian Consumer and Competition Commission (ACCC); and the key conclusions from academic research, including policy evaluations.

1.1 Petrol cycles (including fuels and sub-markets)

The ACCC identifies three broad components of the retail price of petrol[1]. These are the international price of refined petrol, taxes (adjusted for exchange rate and including excise and GST) and other costs, the wholesale margin and the retail costs and margin. For the quarter ending in September 2019, the ACCC calculated that 11.7 cents per litre (cpl) of the average fuel price in Australia's five largest cities for that period (142.1 cpl) related to retailer's costs and margins. The remaining 130.4 cpl related to the cost of refined petrol, taxes and wholesale costs and margins. The Commission noted that the average price of petrol in Australia is relatively low in international terms. The Australian Institute of Petroleum (AIP) noted the average Australian price was the third lowest in the Organisation for Economic Co-operation and Development (OECD) in the September quarter 2019 (after the United States and Canada).

Fuel prices in Australia's largest cities move in cycles. Petrol price cycles arise from the way retailers compete in retail petrol markets that are characterised by a small number of retailers that collectively account for the bulk of the retail outlets. They are observed in the five largest Australian cities and overseas in countries including Canada, Chile, Germany and the United States.

The prices of fuel during these cycles typically decrease gradually over time before reaching a trough from which they increase sharply to a peak before slowly decreasing again. Figure 1.1 shows price cycles in Adelaide between 1 December 2019 and 29 February 2020 using average retail petrol prices. The gap from peak to trough can be of the order of 20 per cent of the trough price. The gap between peaks varies between cities. Appendix 3 provides further details.

The ACCC, in their December 2018 report, states price cycles are "*the result of pricing decisions made by petrol retailers aiming to maximise profits. They only occur at the retail level; wholesale prices do not exhibit similar cyclical movements*".

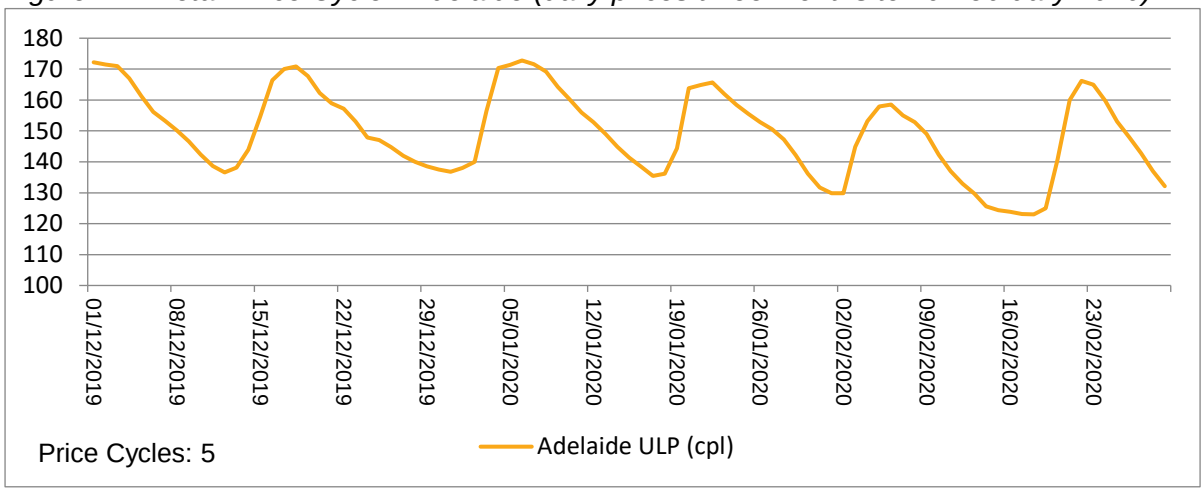
The cycles are recognised in academic literature as Edgeworth cycles which describe the way oligopolistic competition occurs in certain markets including petrol retailing. Professor David Byrne states these cycles are most likely to exist in cities where there are:

- dominant retailers with large networks of stations relative to market size who can lead the restoration of prices back to their peaks; and
- many independent stations, possibly with convenience stores, that have a large incentive to undercut dominant retailers' prices to compete away business. [2]

[1] The Australian Competition and Consumer Commission, Report on the Australian Petroleum market, September quarter 2019, (2019).
[2] Byrne, David P, *Petrol Price Cycles,* Research Paper Number 1159, (2012).

The international and Australian evidence is that, whether or not a jurisdiction imposes a price monitoring (or price transparency scheme) scheme (such as in WA, NSW, NT and QLD in Australia, and in Germany and Chile), retail price cycles persist. It is possible that, in some cases and for a time, cycles change their nature and frequency following the introduction of some price monitoring schemes.

Figure 1.1: Retail Price Cycle - Adelaide (daily prices three months to 29 February 2020)

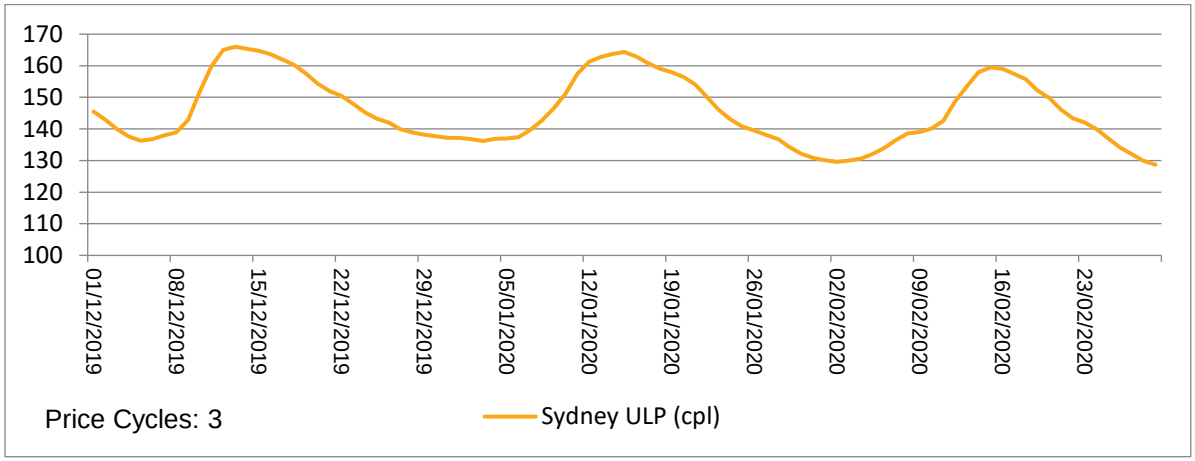


Source: www.fueltrac.com.au

The cycles differ among Australia's five largest cities in amplitude (size) and length of the price cycle. Perth's cycle has had a weekly pattern for more than five years. Adelaide and Melbourne both have price cycles without having fuel price monitoring schemes. Sydney and Brisbane had fuel price cycles both before and after implementing price transparency schemes. There did not seem to be a change to the price cycles in these cities once the monitoring system was put in place. Unlike Perth, the pattern of retail petrol price cycles in Adelaide, Brisbane, Melbourne and Sydney has varied during the past five years.

Figure 1.2 shows price cycles in Sydney between 1 December 2019 and 29 February 2020 using average retail petrol prices. There are obvious differences in the price cycle with Sydney having three price cycles and Adelaide having five. Appendix 3 provides comparable information for other large Australian cities, both for the year to 29 February 2020 and the three month period from 1 December 2019 to 29 February 2020.

Figure 1.2: Retail Price Cycles – Sydney (daily prices three months to 29 February 2020)



Source: www.fueltrac.com.au

Consumers (motorist) benefit from the cycles because of the periods of low-price days (as well as information about the cheapest price on any given day). Figures 1.1 and 1.2 also show differences in the number of low-price days (days where the price is within 5 cents of the lowest-price day in that trough). Adelaide had 21 days while Sydney had 30. Melbourne, without a fuel price transparency scheme, experienced 29 low-price days over that period, suggesting Adelaide's lower access to low-price days may be due to factors other than fuel price transparency.

1.2 Current fuel price information

The ACCC enforces the *Competition and Consumer Act 2010* and a range of additional legislation that promote competition and fair trading and regulate national infrastructure. In December 2007, the Australian Government directed the ACCC to monitor the prices, cost and profits relating to the supply of unleaded petroleum products in Australia. The ACCC monitors daily retail fuel prices and conducts investigations into areas of concern.

The ACCC's 2007 inquiry into the price of unleaded petrol in Australia found there was an imbalance in the fuel pricing information available between fuel retailers and consumers that allowed fuel retailers to react more quickly than consumers to price movements. The imbalance came from a fuel price subscription service for retailers provided by Informed Sources, which enabled subscribers to exchange fuel price data on a close to real-time basis. Prior to 2015, this information was only available to subscribers of the service.

In 2015, the ACCC obtained enforceable undertakings from Informed Sources and participating fuel retailers that prohibit the exchange of fuel price information between the relevant parties, unless the information is made available to consumers and various third-party providers and advocacy groups. Not all petrol retailers participate in the information sharing. Notably, independent retailers tend not to participate and to retail petrol at lower prices.

This situation applies in all Australian jurisdictions, including SA.

Typically, individual service stations advertise the price of petrol for sale on that site using price boards. While the use of price boards is only mandated in some jurisdictions, it is common practice across the industry. Beyond the individual retailer, the information sources

include website and mobile applications that compile and provide current information that cover most retail fuel outlets. In some jurisdictions, governments mandate that current, accurate information on fuel prices charged at all fuel outlets be aggregated and disseminated to assist motorists in the timing of their fuel purchases. While it is not the intent of the initiatives, the information also assists retailers in their competitive strategies.

Where, as in SA, there is no mandated scheme, there is a substantial amount of information available to motorists at relatively low cost, especially in major urban areas and especially through smart phones as a result of the undertakings to the ACCC. This base case – the status quo – could be characterised as a commercially provided fuel monitoring system.

The websites and commercially provided mobile applications, including MotorMouth, GasBuddy and Petrolspy, either capture information from Informed Sources, Fleet Fuel Card data or crowdsourced data from customers. While much of this information can be assumed to be accurate, it is not complete (gaps in the coverage of lower price independent retailers), the integrity of some information can be low and crowd-sourced information can be dated. Some stakeholders have suggested this information covers 70 – 90 per cent of service stations and sales volumes. Informed Services advised during this review that as a result of recent changes its coverage is now more than 96 per cent of Adelaide service stations. The Commission has been unable to independently validate any of these various claims.

The RAA publishes some available information on fuel prices on its website to assist motorists in identifying price cycle patterns and encourages motorists to use the available commercial apps and websites while cautioning that they can contain incomplete, inaccurate and outdated information. They offer free advice, including information on the latest average pump prices throughout most of SA, over a hotline, via email, via Twitter, and on a website. They publish weekly fuel price charts for Adelaide and country SA. The RAA is no longer able to provide site-specific service station prices online due to “an unintended consequence of an ACCC agreement with the fuel industry".

Four Australian jurisdictions mandate reporting of retail petrol price by location to provide whole of market information on retail petrol prices that is current and accurate (i.e. the data have high integrity). There are two approaches.

Table 1.1: Summary of fuel reporting schemes by state

Market price information available	SA	NSW	VIC	QLD	WA	NT	ACT	TAS
Transparency scheme operated by government (green) or authorised third party ("Fuel Check")		✓		✓		✓		
Transparency scheme with 24 hour price setting operated by government ("Fuel Watch")					✓			
Informed Sources, fleet card and crowdsourced data only	✓		✓				✓	✓

Source: Office of the South Australian Productivity Commission (OSAPC)

	Government regulator, data aggregator and publisher		*Government regulator and contracted third party aggregator*		*Market data publishers and no additional regulatory role*

The first requires retailers to provide real time petrol price information to the government (or its contracted agent), which then publishes it immediately (or within a 30 minute period as in QLD) and makes it available through third parties (including commercial providers of smart phone apps). This model provides close to real time, highly accurate petrol prices by retail outlet. It has been improved in successive iterations to reduce compliance costs without (it is said) compromising the integrity of current information to consumers. The jurisdictions comprise:

- NSW (Fuel Check, web-based since mid-2016);
- NT (MyFuelNT, web-based since late 2017); and
- QLD (web-based since end-2018 with a third party aggregating the data).

The second model has operated in WA since 2001. It requires retail outlets to advise the WA Government, by 2pm on the preceding day the price that will apply at the outlet for the duration of the following day.

In all four jurisdictions, the schemes are enforced through their fair trading regulators.

Victoria, Tasmania and the Australian Capital Territory (ACT) have not implemented a retail price reporting regime. An ACT parliamentary inquiry recently recommended adopting a model based on the NSW Fuel Check model. Tasmania provided a cash incentive to encourage the development of better information by a commercial provider.

The Commission concludes that the two models represented by the NSW Fuel Check (incorporating QLD's enhancements) and by the WA Fuel Watch are the government intervention options for further consideration.

The two key questions for this report are:

- What are the benefits to motorists and retailers from mandating the publication of high integrity, real time price information from all retail outlets?
- What are the net benefits of the two options compared with the status quo and with each other, having regard to the benefits to motorists, and costs to retailers and government?

1.3 Stakeholder issues

The Commission consulted 25 stakeholders and received ten submissions. The Commission also sought advice from academic experts to test its understanding of the relevant academic economic research. The Commission appreciates the contributions from stakeholders, particularly for the evidence they provided. Appendix 1 lists the stakeholders consulted and submissions received.

The key issues raised by stakeholders were:

- the likely impact of interventions on the amount of information available;
- price impacts following the transparency schemes;
- competition among retailers;
- benefits to motorists;
- potential regulatory burden on retailers; and
- views on options for increased price transparency.

Impact on information (quality, quantity and geographic coverage).

The industry consensus is that there is a large amount of information on retail petrol prices that gives a high level of price transparency in the SA retail fuel market. As noted by Caltex Australia, there are several independent, free, price information services that use a combination of publicly available and crowd sourced data to provide consumers with retail fuel prices. While these services do not cover all service stations within SA, the industry

considers they provide enough information and data to motorists, at no cost[3] to consumers or taxpayers, for them to make informed decisions on where and when to buy petrol.

The RAA commented that some apps are more comprehensive and timelier than others, and not all of them include prices for the lowest priced retail sites. The RAA's assessment is that around 70 per cent of fuel retailers' information is available on commercial apps in SA.

Price impacts

Submissions noted that advocates of real time models argue that they can deliver benefits to motorists in terms of lower annual fuel costs. In industry's view these claims are highly contestable, as they are developed around several assumptions including that all motorists are purchasing fuel on the cheapest day of the cycle. They indicate that in the four jurisdictions that have introduced regulated transparency, there has been no material evidence to suggest these schemes have reduced fuel prices or volatility.

While the RAA notes that the introduction of real-time fuel pricing in SA will not guarantee average fuel prices over time will be lower, they reference initial data collected by the Royal Automobile Club of Queensland (RACQ) which found that there are now more 'cheap days' in Brisbane's fuel price cycle and that average Brisbane fuel prices are lower as a result of the trial. In addition, average fuel prices have fallen in many regional QLD cities over the data collection period.

Competition among retailers

There were two views from stakeholders about the impact on retailer competition.

The RAA and other consumer groups considered that increased transparency will improve competition and put downward pressure on prices. The principle is that better information will lead to a competitive equilibrium that minimises price and stabilises the market.

Businesses and industry groups argued that increased transparency will discourage price competition and result in a higher concentration of ownership by the bigger firms. The rationale is that businesses will be discouraged from competing on price as the larger firms will be able to match price cuts sooner.

Benefits to motorists

The ACCC estimated that the potential savings to Adelaide motorists, of a price transparency scheme that allows motorists to buy petrol at the trough, could be up to $75 million per year. This estimate assumes one third of all motorists: fill up once a week; time their purchases at the trough of the cycle and seek out lower price retailers otherwise.

The RAA suggested, using ACCC information, the annual benefit to consumers of fuel price transparency is of the order of $30 – $75 million (RAA submission p.5).

Several submissions highlighted the importance of consumer behaviour and the need to consider the costs and benefits of fuel purchases according to multiple factors, not just price. The Australasian Convenience and Petroleum Marketers Association (ACAPMA) submission stated less than 50 per cent of consumers were very 'price sensitive', with the remainder

[3] While there is no direct charge for the obtaining the application (app), the Commission recognises that there are some indirect costs (finding the app, downloading it and learning how to use the features) that affect access to the information and, as a result, the realisable benefit from the additional information.

nominating convenience of physical location and diversity of convenience offerings as being equally significant considerations in their choices of service stations.

Informed Sources suggested consumers typically purchase fuel from one or a few of the same sites, noting the cost and time to travel to more distant but cheaper sites rarely justified the small savings. Location was usually a consumer's first consideration when deciding where to purchase fuel, as 87 per cent of motorists still purchase fuel from the same one or a few service stations suggesting that most motorists are not prepared to deviate off their route to buy fuel that may be cheaper somewhere else.

Submissions also noted more consumers are using fuel price apps (19 per cent in 2019, up from 8 per cent in 2017).

Potential regulatory burden on retailers

While most retailers prefer the status quo, they also point out that if a monitoring system were implemented it would be important to minimise operational compliance costs and burdens. Submissions generally suggested the QLD approach to the Fuel Check model made efficient use of standard industry reporting systems.

Views on options for greater price transparency

Much of the information provided in relation to jurisdictional approaches addressed the issue that any Fuel Check-type scheme largely duplicates existing datasets already available to the public through sources of fuel price apps.

However, given the Commission's task is to assess the net benefits of models used in other jurisdictions, most retailers considered a Fuel Check-type scheme based on the QLD model would be easier to implement. Retailers state that the WA scheme would be likely to impose additional administrative and compliance measures and costs to industry, negatively impact upon the consumer experience and, as noted in the academic work, has the potential to restrict a fuel retailer's ability to compete.

1.4 ACCC views

The ACCC has commented on the fuel transparency regimes in Australia in submissions to the parliamentary inquiries in the ACT and Victoria and to the QLD Regulatory Impact Statement that preceded the implementation of QLD's transparency regime and in a speech by the ACCC Chair.

The key points made by the ACCC are:

- Consumers are better off and markets work better if consumers are well informed.
- Fuel price transparency for consumers is a positive development for an industry where comprehensive fuel prices were previously only seen by the major retailers.
- The government fuel transparency schemes provide the most comprehensive and up-to-date data.
- In jurisdictions without comprehensive government schemes, commercial services are often not complete and do not include all the cheaper retail sites.

- The ACCC has not endorsed one type of fuel transparency system, or made a judgement whether it should be privately run or government run.
- It is important that not only the major players are covered by these websites and apps, but that smaller independents as they often provide competitive tension that is important in these markets.
- The ACCC is concerned about the regulation of physical and data assets that have monopoly characteristics, such as full high integrity retail petrol price information. It prefers to isolate the operations of a monopoly provider from its users rather than to use a regulatory "ring fence" that might enable a company to operate an aggregator role at arm's length from its commercial app operation. Accordingly, the ACCC has expressed concerns about the QLD price transparency regime that allows its commercial data aggregator to be a commercial user of the real-time fuel price data.

1.5 Academic research and evaluations

The Commission examined an extensive body of academic literature and applied economic analysis, which is summarised in Appendix 2. The literature is generally helpful, suggesting regulatory interventions to increase the quantity, coverage and integrity of real time price information to the market are an example of a demand-side technology that cuts the cost of obtaining information. While this should increase responsiveness of consumers to price changes, the same information makes it easier for major retailers to adjust their prices based on information about their competitors. The overall impact on prices depends on which impact dominates.

Impact of better information on retailers

Both the theory and applied research show fuel retailers benefit from better information regarding their competitors' prices because they can respond (compete) by adjusting their pricing strategies faster. At the same time, from a competition policy perspective in a market where a small number of retailers account for a large share of the market, this situation may facilitate the role of a price leading retailer to signal the end of a low-price period.

While there is very limited information in SA and Australia generally about the volumes of fuel sold, it has been suggested that the margin between wholesale and retail prices may increase somewhat when the information regarding competitors' prices increases in accuracy, coverage and timeliness. There is also some suggestion that competition is less intense with price transparency as it discourages lower cost independent retailers from competing vigorously on price for fear of inviting retaliatory responses from larger retailers that might be designed to drive out competition. While the Commission could find no applied research or data to support this assertion, it notes such a circumstance would, of course, be a matter for competition policy and the ACCC.

David Byrne found that Fuel Watch reduced consumer search costs, such that firms became less willing to raise prices when costs rise, and more willing to cut prices when they fall. [4] If a technological change, such as Informed Sources or Fuel Watch tips the advantage in the market to one side or the other, the relative amounts of producer and consumer benefit delivered by a market would be affected. More informed producers can better coordinate on

[4] David P. Byrne, Gordon W. Leslie, and Roger Ware, *how do consumers respond to gasoline price cycles?* Department of Economics, University of Melbourne (2015).

higher prices while better-informed consumers can respond to a greater degree and faster to price changes.

Impact of better information on consumers

The academic literature is less helpful in relation to consumers, having received much less attention than retailers in academic studies. While the potential total benefit to them is not clear, some useful insights have emerged from the applied analysis.

The evidence on usage of the government fuel price apps suggests they have a relatively slow take up rate (NSW, NT), flagging the likely importance of complementary communication to highlight the cheapest petrol prices and the location of the cheapest service stations. The Commission notes this point.

A study by Byrne found that 'price shocks' – sudden increases in the price of fuel – led to substantial and permanent increases in the number of searches on the Fuel Watch site. [5] The evidence strongly suggests the increase is driven by additional users searching for prices on the site rather than an increase in the frequency of use for existing users. This suggests the overall usefulness of price transparency policies, as well as the extent of firms' market power, depends on how much additional information is made available to consumers who buy petrol.

Recent evidence for the retail petrol market of Greater Sydney covering the six months ending March 2017 indicates:

- Consumers in the lowest socio-economic group (lowest 20 per cent) search least for low petrol prices and are less attentive to price jumps than other groups.
- Consumers in the highest socio-economic group (top 20 per cent) appear to respond most to the daily low price opportunities.
- The remaining groups tend to time their purchases to take advantage of the price cycle, while also looking for the best prices on any given day.[6]

As a general principle, if consumers are both aware of the price cycle and they are in a position to act, they can benefit both by timing their purchases to the lowest point in the cycle and by seeking out lower priced retail sites over the rest of the cycle. In 2017, the ACCC estimated that an Adelaide motorist could theoretically save $300 annually this way. These estimates, when applied to the population of motorists as a whole, have been used to generate potential total annual savings of around $75 million, as noted earlier. That said, the data from Perth (where the WA Fuel Watch scheme applies) shows that one quarter of motorists purchase on Monday, the highly predictable cheapest day in the weekly petrol cycle. This strongly suggests a lower level of benefit than estimated above as not all consumers purchase fuel on the cheapest day.

Impact on prices

In 2018, the QLD Government commissioned Griffith University to assess the impact of the NSW and NT fuel price transparency schemes on petrol prices. The report found that the

[5] David P. Byrne, *Fuelling Australia: Structural Changes and New Policy Challenges in the Petrol Industry*, Department of Economics, The University of Melbourne (2014).
[6] Jia Sheen Nah, *Empirical Studies of Consumer Search and Market Power,* Department of Economics University of Melbourne, (2019).

NSW scheme had a small negative impact on unleaded fuel retail prices in metropolitan Sydney, equivalent to a permanent reduction of 1.03 cents per litre or 0.7 per cent. The study suggested a mediating factor in Sydney was the high level of competition within the Sydney market. The 2019 study by Jia Sheen Nah suggests a smaller effect in Sydney, finding increases in retail price margins in small regional NSW cities following the introduction of Fuel Check but not in larger cities including Sydney.[7]

The Griffith University study also found that in the NT fuel prices increased by 1.08 cents per litre or 0.67 per cent, noting that the study was based on only three months of available data following MyFuelNT's introduction in November 2017. The Commission is inclined to regard this evidence as less robust than the NSW studies because of the short timeframe and other changes in the NT market at that time.

[7] *Ibid.*

2. The two options for interventions

The Commission considers there are two options for government intervention - the latest iteration of the Fuel Check model or the Fuel Watch model. These two options are evaluated against the base case (default option) of the status quo and against each other.

Option 1 would collect, compile and publish real time information on retail petrol prices together with the location of the retailer charging those prices. Published prices accurately reflect the current petrol price charged by each retailer. Retailers could change their prices during a day to respond to competitive pressure. This information would be published on a government website and app and would be available for use of commercial businesses including those that currently provide similar information. This option is based on the NSW Fuel Check model, incorporating some of the additional refinements made in the QLD version. They include options for data reporting that reflect industry practice, reducing regulatory costs, incorporating a short delay between reporting price changes and publishing that information, and responding to the ACCC concerns about conflicted third party aggregators. The Commission considers a third party aggregator – either a commercial business or another jurisdiction – could be used.

Option 2 differs from Option 1 principally in fixing retail petrol prices for 24 hours to provide greater certainty to consumers about prices charged and the duration of those prices. Each retailer would advise the relevant regulator by a common time on the preceding day the retail fuel prices that it will charge for the next day. This information would be published on a government website and app, and would be made available for use by commercial businesses including those that currently provide such information. A third party data aggregator could also be used. Option 2 is based on the WA Fuel Watch scheme.

On the advice available to the Commission both Options are feasible. The *Petroleum Products Registration Act 1995* and *Fair Trading Act 1987* are potential vehicles and may require legislative amendments, making regulations and/or an industry code.

Table 2.1 sets out the features of the two options and identifies some further design choices.

Table 2.1: Summary of key design and other features of the two new options.

	OPTION 1: Fuel Check model (NSW, NT and Qld)	OPTION 2: Fuel Watch model (WA)
Description	Obtain accurate real time petrol prices from all petrol retailers. Aggregate and publish accurate real time petrol prices for each retail outlet, together with current day average price and recent past. Motorists can: • search for a specific service station; • find the cheapest nearby fuel; and • understand current stage of the petrol price cycle. Variations to this basic model include: geographic coverage; legal underpinnings; regulator; compliance and enforcement mechanism; and choice of government or third-party data aggregator/publisher.	Obtain petrol prices from each petrol retailer to apply for the duration of the following day by a specified, common time. Retailers maintain the price for twenty-four hours. Publish the price information for each retail outlet, together with current day average price and recent past. Motorists can: • search for a specific service station; • find the cheapest nearby fuel; and • understand current stage of the petrol price cycle. Variations are the same or very similar to Option 1.
Coverage	**Option 1A**: confine petrol price transparency reporting to all retail outlets in metropolitan Adelaide. **Option 1B**: cover all service stations/retailers in SA except for remote areas where compliance costs are high and retailers are few.	As for Option 1.
Design of gathering, aggregating and publishing petrol price	Three choices: A. SA government collects and aggregates data. • SA government publishes on Open Data, and website and own app • Third party app developers use data. B. Data aggregation by a private third party that is vertically separated (from commercial providers of fuel price information) and pro-competitive (noting ACCC concerns). This could be done by another jurisdiction.	Two choices: A. SA government collects and aggregates data. • SA government publishes on Open Data, and website and own app • Third party app developers use data. B. Data aggregation by a private third party that is vertically separated (from commercial providers of fuel price information) and pro-competitive (noting ACCC concerns). This could be done by another jurisdiction.

	OPTION 1: Fuel Check model (NSW, NT and Qld)	OPTION 2: Fuel Watch model (WA)
	C. Data aggregation by service contract with NSW Dept for Customer Service.	
Legislation/ Regulations	The *Petroleum Products Registration Act 1995* and *Fair Trading Act 1987* have been identified as potential vehicles to allow for a fuel price transparency scheme in SA. Option 1 may require legislative amendments, making regulations and/or an industry code that allows the government to: • require retailers to provide real-time prices and maintain prices until next changed • <u>either</u> publish the price information by the government <u>or</u> a third party aggregator that is vertically separated (from commercial providers of fuel price information) and pro-competitive.	As for Option 1 plus amendments to legislation, making regulations and/or an industry code that allows the government to: • require retailers to notify next day's price by a specific time • freeze (maintain) that price for the duration of the next day.
Regulator	Two choices: • Commissioner for Consumer and Business Services, who administers the *Fair Trading Act* • special supervisory unit located in (say) the Department of Treasury and Finance (DTF).	As for Option 1.
Compliance and Enforcement Framework	To be specified in detail drawing on the recent experience of other jurisdictions and consultation for Industry Code covering: • named parties responsible for reporting; • remote / regional reporting mechanisms; • monitoring by regulator, with spot checks; • motorists reporting non-compliance; and • penalties for non-compliance.	As for Option 1.

Source: OSAPC

3. Assessment

The assessment covers five matters:

- impact on quantity, quality and timeliness of petrol price information;
- impacts on consumers;
- impacts on retailers;
- regulatory costs of the options (to retailers and government); and
- other impacts.

These matters are then used to test whether the options and complementary actions meet the four tests set out at the beginning of the report.

3.1 Quantity, quality and timeliness of petrol prices

Options 1 and 2 would increase the amount, quality and timeliness of petrol price information available to consumers and retailers in all parts of SA over the status quo.

The QLD Regulatory Impact Statement (RIS) prepared as part of their price transparency scheme estimated that, without regulation, over half of fuel retail sites in QLD did not make their fuel prices available to third party fuel comparison apps and websites. (refer to QLD RIS). By contrast, the Commission has been told that 70 – 90 per cent of SA service stations and volumes of petrol sold are covered by smart phone apps provided by commercial businesses. Informed Services subsequently updated this estimate to over 96 per cent. The Commission has been unable to independently verify these claims.

The chief weaknesses of SA's status quo are: some data are collected through methods that are not as reliable and current as information obtained directly from retailers; lower cost independent retailers are under-represented in the coverage; and information in regional areas is limited. One stakeholder suggested there is a pattern of inaccurate prices in at least one part of Adelaide.

Both Options 1 and 2 require appropriate audit and compliance/enforcement processes to ensure the ongoing integrity of price information.

Options 1 and 2 would have geographical coverage similar to internet and cellular coverage. Using Telstra coverage as an example, it is mainly around the central, south east, Eyre Peninsula, and mid north areas of SA.

The Commission considers there is a reasonable case for confining the geographic scope of Options 1 and 2 to the Adelaide metropolitan area, which is where petrol price cycles, to reduce the risk of unintended consequences in regional areas including higher prices and to minimise regulatory costs. That said, full coverage is more likely to support stronger competition. It will be important that the detailed design of Option 1 and Option 2 minimises additional reporting and regulatory burdens that arise outside metropolitan Adelaide, having regard to lessons learned from other jurisdictions.

3.2 Impacts on consumers

The potential impacts on consumers arise in three areas:

- changes in average prices over time. A reduction in average prices favours consumers;
- action by consumers to exploit the price cycle and daily difference in fuel prices; and
- changes in the petrol price cycle including the frequency and duration of cycles and the magnitude of trough to peak.

Regarding *changes in average prices*, the Commission concludes the evidence to date is inconclusive that price transparency schemes have any lasting impact on average prices in price cycles.

Regarding *action by consumers* to exploit better price cycle information and price differences between service stations, the Commission notes the ACCC's estimate that a motorist who timed petrol purchases optimally could save $300 annually in Adelaide. As noted earlier, this estimate has been used by the RAA and others to generate total potential annual savings of the order of $30 – 75 million. These numbers, in the Commission's view, are indicative at best and are likely to significantly overstate the actual total benefit to consumers. They include motorists who are already purchasing fuel at the lowest point in the price cycles, they assume all motorist purchase fuel at that point in the cycle and they assume that retailers do not change their pricing strategies.

The ACCC found in Perth in 2016 that around 25 per cent of motorists timed their purchases at the bottom of the very predictable weekly price cycle. Compared with an even spread of purchases across the week (which would imply around 14 per cent of motorists bought petrol on any given day), the ACCC figures suggest that perhaps 11 per cent of a fully informed population took advantage of the information in the marketplace. That suggests the additional total benefit to SA consumers may perhaps be around 11 per cent of the potential benefit estimated by the RAA – perhaps of the order of $3 million - $8 million. Such estimates are clearly indicative only; are sensitive to a range of technical assumptions; and should be viewed with caution.

Another way to consider the possible benefit is that if 15,000 additional motorists (the equivalent of the additional 11 per cent purchasing fuel on the lowest price day in WA and around 1.6 per cent of Adelaide's 933,000 motorists) used the information to follow the ACCC's advice on optimising petrol purchases to buy at the trough and optimise daily purchases then the total additional annual benefit to consumers would be around $5 million.

The Commission considers $5 million might be a reasonable estimate. It depends on: having better information in the marketplace, consumers acquire that information; and consumers act on it (which are three of the four tests set out by the Commission). The extent of any overall consumer benefit would be increased by complementary measures to highlight the lowest prices and the retail outlets offering them. This points to an important potential role by motorist organisations such as the RAA. *The Commission notes this estimate is inherently imprecise and needs to be treated with caution*.

Regarding the *impact on price cycles*, the Commission did not find any conclusive information of any significant effect. Price cycles evolve, but their evolution does not seem to

be related to the timing of the implementation of government price transparency schemes. Informed Sources has cautioned against expecting Adelaide's price cycle to change to a weekly cycle if the SA Government were to implement a WA-like price transparency scheme.

There is very little information on the impact of fuel price monitoring schemes on the pass through of wholesale prices changes. The evidence suggests such changes are passed through more quickly in WA. This may be more related to the shorter price cycle than to the existence of a fuel price monitoring scheme.

There is some information regarding the impact of fuel price monitoring on rural and remote retailers. In NSW, average fuel prices increased in some of those markets (but not Sydney) following the implementation of Fuel Watch [8]. It is possible that a lower level of competition in regional areas would allow retailers to use better price information to sustain a higher level of prices.

Overall, the Commission considers the most likely benefit to consumers is that some can exploit both the price cycle and the best daily price. It has not included any provision for changes to average prices or to price cycles.

3.3 Impacts on retailers

The retail market for petrol in Adelaide is more concentrated than the other four largest Australian cities, with one retailer accounting for around 37 per cent of retail outlets in 2018. It is not clear what this implies for the fuel price cycle in Adelaide compared with the other large Australian cities.

Accurate and transparent retail petrol prices would on the whole add more information from independent, low cost retailers. Compared with the status quo, that provides (possibly) additional information to the larger retailers at low cost and enables them to lead prices back to the peak.

The Commission has been told that competition is more intense without full transparency as full disclosure of prices discourages smaller retailers from being as aggressive with price reductions. The Commission is inclined to discount this view. One reason is that even with full information the smaller retailer would still have an incentive to compete for sales. Moreover, current shortcomings in current market price information can be overcome at a cost by determined competitors. In addition, the ACCC regulates anti-competitive behaviour and has the power to intervene where predatory pricing strategies are followed to remove or curtail competition.

The position of the ACCC – that the 2015 starting point suggests a presumption that the transparency schemes would favour consumers more than retailers – seems sensible.

3.4 Regulatory costs

Costs to retailers

The regulatory analysis follows the approach applied by QLD in its RIS.

[8] For more information, See Jia Sheen Nah, *Empirical Studies of Consumer Search and Market Power,* Department of Economics University of Melbourne, (2019).

Industry stakeholders consider the approach taken in QLD to reporting price changes reduced administrative costs to retailers without compromising the integrity of the information. This detailed design was developed in consultation with the industry and provided flexibility in the way fuel price data could be reported, consisting of:

- a portal for fuel retailers to directly input data;
- direct bulk upload which may be suitable for medium to large retailers with multiple sites;
- upload through a third party data agent for the retailer that accommodates existing industry practices; and
- an option to report to the data aggregator where an internet connection is not available.

The Commission regards this reporting design is currently best practice and has incorporated it in Option 1.

For the major retailers which are already providing this information to Informed Sources, the additional regulatory cost for the systems is likely to be small, including both their franchisees and their own retail outlets. For retailers which are unable to report prices via a direct data feed or bulk upload, the QLD RIS assumed it would take approximately five minutes of staff time to report price changes for all fuel types via a web portal.

Table 3.1 sets out the estimated time costs for Options 1 and 2.

Table 3.1: Estimated time to report price changes

	Number of retail sites*	Approximate total number of changes per month (all fuel types)	Total time per fuel retail site per month (minutes)
Metropolitan	304	30	150
Other	357	5	25
Total	661	n/a	n/a

* Approximate numbers only

Source: OSAPC based on preliminary data provided by the Environmental Protection Authority on 4 March 2020.

Based on the advice of stakeholders (Caltex and AIP among others), Option 2 may impose additional regulatory costs for some retailers, as there is a requirement to report prices daily. Consultation for the QLD Government's 2018 Fuel Price Reporting Regulatory Impact Statement identified that some retailers, especially in rural areas, may close for 24-hour periods, such as a Sunday.

Valuing this time at an hourly wage rate of $25, the Commission estimates the total annual reporting costs for all metropolitan petrol retailers to be less than $230,000 for Options 1 and 2, noting this is almost certainly an overestimate given that many service stations are part of retail groups and have efficient internal data reporting systems. The annual costs to non-metropolitan petrol retailers are estimated at $45,000 for Option 1 and $270,000 for Option 2

because it requires daily price notification. The latter cost could be reduced through administrative means or by exempting remote or selected rural areas.

Table 3.2: Summary of estimated retailer and government cost ($ million)

	Option 1	Option 2
Retailers		
Metropolitan	0.23	0.23
Other	0.04	0.27
Total	0.27	0.50
Government		
Year 1	1.25	1.25
Ongoing	0.75	0.75

Source: OSAPC

The Commission notes the view of retailers that Option 1 imposes lower compliance regulatory costs on retailers than Option 2.

The Commission emphasises that these estimates are inherently imprecise and need to be treated with caution.

Costs to government

The costs to the SA Government of implementing either option comprise three elements:

- establishing the platform for receiving and aggregating the price information;
- receiving, aggregating and publishing the information on a government website and through an app, and making the information available to third party publishers via an Application Programming Interface (API) for use by motorists and to other data users; and
- monitoring and enforcement.

The information available to the Commission on establishing the platform is limited. The cost to the QLD Government of the tender for the two year trial with a third party aggregator (Informed Sources) is reported to be under $0.250 million. Based on the publicly available contracts, Informed Sources provides 'data in' and 'data out' services to the QLD Government as well as managing the relationship/connections to service stations. In addition, the QLD Government has contracted with an additional third party for an undisclosed amount to undertake data matching between the prices reported by retailers and other available pricing datasets to aid compliance activities and reduce compliance costs. That said, the Commission notes the all-inclusive setup cost for Fuel Check was reported as $0.3 million in the NSW parliamentary papers and internal SA Government estimates suggest establishment costs of around $0.5 million.

It may be possible to make use of an existing platform in another jurisdiction, noting the recommendation by the ACT Parliament Committee that the ACT make use of the NSW Fuel Check system. The Commission considers this approach has merit.

Information available to the Commission suggests ongoing operating costs of the system are likely to be significantly less than the establishment costs, possibly under $0.5 million.

The Commission assumes ongoing monitoring and enforcement under both options would be done by the Office for Consumer and Business Services. The Commission suggests this might take two staff at an annual cost of around $0.25 million. This level of resource is consistent with the experience in other jurisdictions. The Commission notes the effectiveness of these resources would be increased by incorporating the means for consumers to report incorrect prices to the regulator.[9]

In sum, the Commission estimates the regulatory costs to government for both options to be indicatively around $1.25 million in the first year and indicatively around $0.75 million in the second year. *The Commission regards these figures as illustrative and requiring further work should the government decide to proceed*. They are sensitive to the assumptions about the scope of the work, the means of monitoring compliance and enforcement and to the limited information about the actual costs of existing schemes. That said, the size of these costs is low relative to the estimated annual consumer benefit of around $5 million that would be realised if an additional 1.6 per cent of motorists bought at the trough of the cycle. The break-even point where benefits equal costs is much lower at around 0.6 per cent.

Clearly, should the government decide to proceed, the quality of cost estimates for government and retailers needs to be improved.

3.5 Other impacts

The likely impact of either Option 1 or Option 2 on Adelaide's retail petrol price cycle is unclear. Should the SA Government decide to adopt either option, the Commission considers the approach by the QLD Government of a two year trial and assessment to be good practice.

Moreover, should the government adopt either option, the Commission considers that a period of consultation with industry, as is required when developing industry codes, would enable other matters that have not arisen in the Commission's review to be addressed.

The experience of other jurisdictions with fuel price transparency schemes suggests the take up by motorists of government websites and apps is slow. Based on the available information on the NSW Fuel Check it seems the uptake after about two years of use was no more than 13 per cent. This suggests the information can be made more effective using other media to advise lowest petrol prices and also by encouraging organisations such as RAA to give the information greater visibility to motorists.

[9] While the potential to use 'data matching' similar to the QLD Government may reduce the need for additional staffing costs, the Commission notes the cost of contractual arrangements for data matching services would need to be taken into account.

Table 3.3: Summary of estimated impacts

	OPTION 1: Fuel Check model (NSW, NT and Qld)	OPTION 2: Fuel Watch model (WA)
Impact on quantity, quality and timeliness of petrol price information	Additional high integrity information especially for lower cost independent retailers and in regional areas. Higher integrity information for some areas currently covered by commercial providers.	Similar to Option 1
Impacts on consumers in making informed choices	Greater scope to exploit the price cycle and cheapest outlet at a given time. Some uncertainty about the duration of retail prices on offer. A reasonable estimate for the total annual benefit to consumers may be $5 million.	Consumers trade off intra-day price movements (Option 1) with price stability for 24 hours, which, by allowing for time to access the price on offer, gives greater certainty to the consumer.
Impacts on retailers	Better information on competitors' prices, makes it easier to adjust prices on any given day. Larger retailers have information to respond to low cost competitors. ACCC can intervene where such action is anti-competitive.	Reduces the number of occasions retailers need to adjust their pricing strategies. Arguably lower regulatory, reporting and compliance costs on retailers. Less competition than Option 1.
Estimated regulatory costs to retailers and government	**Retailers**: Estimated annual reporting and administrative costs $300,000, mainly for metropolitan service stations **SA government**: First year: under $1.25 million Ongoing: under $0.75 million.	**Retailers**: Estimated annual reporting costs of around $228,000 for metropolitan service stations and up to $270,000 for non-metropolitan service stations. **SA Government:** as for Option 1.
Other impacts.	Pro-competitive by revealing lower cost independent retailers to a wider group of consumers. Probably little impact on the price cycle.	Less opportunity to respond to competitors. Impact on the price cycle unclear. There is no reason to expect Adelaide' price cycle would move to Perth's weekly pattern.

Source: OSAPC

3.6 Net benefit / least cost

The effects on retail fuel prices of either option are unclear, either in the short term or the long term. The Commission considers a reasonable position is that the main benefit to consumers is having better information to buy petrol at the cheapest price and at the lowest point of the price cycle. It suggests a plausible annual benefit to motorists may be in the

range of $3 - $8 million, having regard to ACCC estimates and the purchasing pattern observed in WA. This estimate is inherently very imprecise.

This annual benefit to motorists exceeds the estimated setup and ongoing costs to retailers and government, which were conservatively estimated for:

- option 1 at under $1.6 million in the first year, and under $1.1 million in subsequent years; and
- option 2 at under $1.9 million in the first year, and under $1.3 million in subsequent years.

The conclusion is that both options are likely to provide net benefits overall, noting the estimated benefit to motorists is more than twice the estimated cost. Either option appears to be superior to the status quo.

3.7 Least cost approach

The Commission notes the criteria used in the QLD RIS, which it suggests are relevant to ranking the options beyond the Commission's simple benefit cost assessment:

- maximising the potential for motorists to take advantage of differences in retail fuel prices;
- maximising the integrity of fuel price information;
- support market competition;
- build on learnings from other jurisdictions;
- avoids red tape; and
- cost effective and efficient for industry.

The Commission has added net benefit to the QLD list of criteria.

Table 3.4: Summary assessment

	Policy Objectives	Option 1	Option 2
1	Maximise the potential for motorists to take advantage of the demonstrable difference in market prices between fuel retailers through access to accurate and timely fuel price data.	✓✓	✓✓
2	Maximise integrity of the scheme through the provision of accurate and timely fuel price data.	✓✓	✓✓
3	Not impact adversely on market competition.	✓✓	✓
4	Builds on learnings from other jurisdictions and recognises SA's characteristics	✓✓	✓
5	Avoids unnecessary red tape and costs that are passed onto motorists	✓	✓
6	Cost effective and efficient for industry	✓	X
7	Positive net benefits	✓✓	✓✓

✓✓ = Achieved ✓ = Partially achieved **X** = Not achieved

Source: OSAPC

The most important points of difference are the impacts on competition and the regulatory costs to the industry. Option 2, by freezing the price for 24 hours, significantly reduces a retailer's capacity to respond quickly (within a day) to the competitive moves by other retailers. The trade-off is, of course, higher certainty about prices for motorists.

On the cost effectiveness for industry, the Commission consistently heard that the QLD version of Fuel Check made efficient use of the existing price reporting and industry practice. That said, one stakeholder was concerned that it made it easier for major retailers to obtain and match the prices of discounters more quickly, reducing the benefit of discounting as a competitive strategy. It is unclear how significant this consideration may be in practice.

4. Conclusion

The Commission was asked to investigate potential models for improving the transparency of fuel prices in SA and improving the information available to motorists when buying fuel. It was not asked for recommendations.

The current regulatory regime in SA for retail fuel prices is limited to requiring retailers to display the current prices at the site. It is complemented by a range of commercially - provided smart phone apps and other information that together provide substantial amounts of information on retail fuel prices by location. Much of this information is accurate and up to date, but it is incomplete in coverage, some data are less reliable due the collection methods used, and some data are out of date. The gaps include independent retailers that generally offer discounted low prices. This information situation is evolving.

The Commission concludes:

- Retail price cycles will persist whether or not the government establishes a real time fuel price transparency scheme.
- There are two potential models for government intervention to provide full transparency of fuel prices. Option 1 is based on the NSW Fuel Check regime, further modified to adopt improvements identified by the QLD Government when introducing a similar scheme. This scheme provides full, real time information on fuel prices by location and information about the current price cycle among other things. Option 2 is based on the WA Fuel Watch regime, which provides full, real time information of fuel prices that are in force for a standard 24 hour period, with prices being advised to the WA Government during the preceding day.
- The Commission's assessment of the evidence suggests both options 1 and 2 would probably yield modest net benefits (benefits to motorists very likely would exceed the regulatory costs imposed on retailers and the SA Government) compared with the status quo. These net benefits are likely to grow over time with the increased use of the information by motorists. In the Commission's view both the potential benefits to motorists claimed by proponents and the likely regulatory costs to retailers and government claimed by opponents have been significantly overstated.
- The choice between Option 1 and Option 2 may depend on factors including:
    - The impact on competition (Option 1 is more pro-competition than Option 2);
    - Price certainty for motorists (Option 2 locks in prices for 24 hours); and
    - The regulatory costs to retailers (Option 1 is said by retailers to be more efficient in using industry information).
- There is a good case for exempting remote and thinly populated regions because there are few retailers, no additional information is likely to be provided to local motorists and hence costs would very likely outweigh the benefits to motorists.
- There may be opportunities to further reduce the cost to the SA Government and expedite the establishment of a price transparency regime by making use of the data gathering and aggregation facilities in other jurisdictions such as NSW.

Whether or not to adopt either Option 1 or 2 is of course a matter for government.

The Commission notes WA is the only jurisdiction that has a 24-hour price freeze regime, which has been in place for almost twenty years. The NSW, NT and QLD models – all variants of the NSW Fuel Check scheme – are much more recent, having been introduced within the past five years. The Commission suggests there is merit in adopting a model based on Option 1, largely because this model is pro-competition compared with Option 2.

The Commission was not asked to develop a business case or to address detailed design matters, which would of course affect the costs of implementation. That task logically follows a decision in principle to adopt a scheme and would require consultation with industry and the development of an industry code (depending on the legislative and regulatory underpinning of any scheme). Consistent with the practice in all other jurisdictions, the Commission suggests the appropriate regulator would be the Commissioner for Consumer and Business Services since the purpose of the scheme is to assist motorists. The practice of evaluating any initiative after two years, being done in QLD, is highly desirable.

Appendices

Appendix 1: Stakeholder submissions and consultations

Number	Organisation name
1	Australasian Convenience and Petroleum Marketers Association (ACAPMA)
2	Australian Institute of Petroleum (AIP)
3	Caltex Australia
4	Member for Florey
5	Informed Sources
6	Royal Automobile Association (RAA)

* In addition, there were four confidential submissions.

Number	Organisation name	Contact
1	Attorney-General's Department	Ingo Block
2	Australasian Convenience and Petroleum Marketers Association	Mark McKenzie
3	Australian Competition and Consumer Commission	Warwick Donohoe, Matthew Schroder
4	Australian Institute of Petroleum	Peter Gniel
5	Business SA	Andrew McKenna
6	Caltex Australia	Patrick Luxton
7	Department of Economics, The University of Melbourne	David Byrne
8	Department of Planning, Transport and Infrastructure	David Colmer, Nadine Wessel
9	EG Group	Cara Williams
10	Environment Protection Authority	Kelvin Vogelsang
11	FuelTrac	Michael Groesz
12	Informed Sources	Nick Ferris

Number	Organisation name	Contact
13	Liberty Oil	Jeff Dawson, Chris Walker
14	Motor Trade Association of South Australia	Kaes Cillessen
15	Peregrine Corporation	Rick Conti
16	Royal Automobile Association of Australia	Sally Warner, Mark Borlace
17	Royal Automobile Club of Queensland	Rebecca Michael
18	State Member for Florey	Frances Bedford MP JP
19	The Commissioner for Consumer and Business Services, Attorney-General's Department	Dini Soulio
20	VIVA Energy Australia	Sharon Evans
21	X Convenience	Rachel Stewart

Appendix 2: Economic analysis and evidence

This appendix summarises the key findings of research and evidence on petrol price cycles, including government interventions to deliver transparent real time petrol price information.

The SAPC's literature review examined approximately 25 academic articles and sought advice from two experts, Professor David Byrne from Melbourne University's Centre for Market Design and Associate Professor Nicolas de Roos from the University of Sydney. The academic literature is a very helpful resource. Professor de Roos critiqued the SAPC summary of the literature and improved the Commission's understanding. His assistance is greatly appreciated. The Commission is, of course, responsible for the content of this appendix and its use in the final report.

This appendix is organised as follows:

- structure of the retail market for petrol;
- characteristics of consumer behaviour;
- petrol price cycles;
- regulatory interventions;
- possible price signalling;
- asymmetric information;
- new technology and impact of data; and
- weighing up the evidence.

Structure of the retail market for petrol

The Australian Competition and Consumer Commission (ACCC) collects data regularly from the larger retailers in the retail petrol market including: BP, Caltex, Viva Energy/Shell, Coles Express, Woolworths, 7-Eleven, United, Puma Energy and On The Run[10] (OTR) and monitors between 83 and 85 per cent of total volume of reported petrol sales. [11]

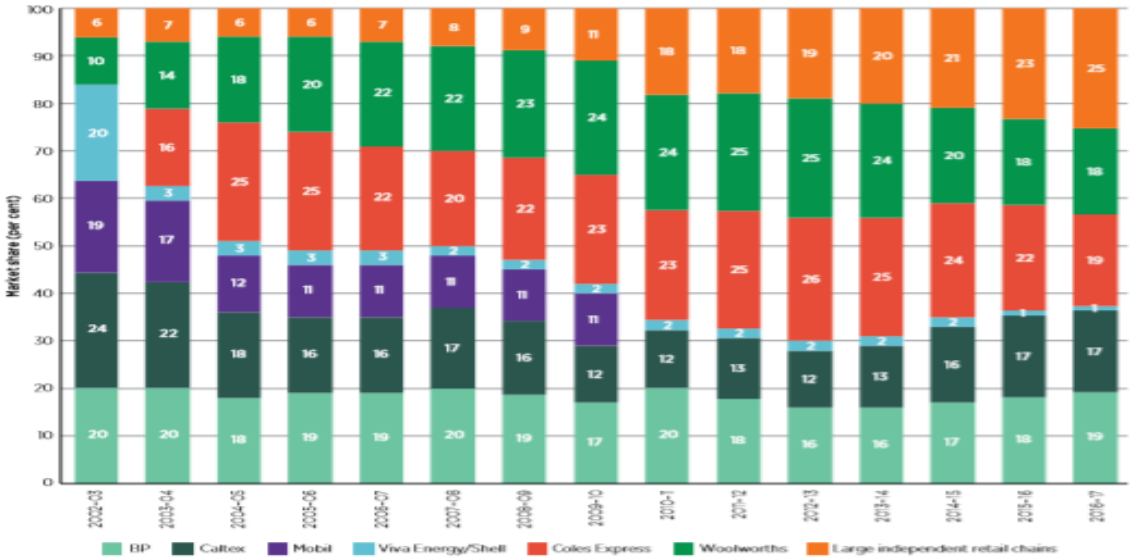
The share of the supermarket chains (Coles Express and Woolworths) of the volume of national retail petrol sales monitored by the ACCC has fallen from 51 per cent in 2012-13 to 37 per cent in 2016–17, the lowest share since 2003–04.[12] (see Figure A2.1)

Several corporate changes have affected these shares. Woolworths and Caltex entered an alliance, Coles Express entered the retail petrol market in 2003, while in South Australia (SA) 7–Eleven sold the Mobil retail sites to Peregrine, which operates OTR. Peregrine acquired a further 25 BP retail sites in SA in 2013–14.[13]

[10] The ACCC produces quarterly petrol monitoring reports focusing on price movements in the capital cities and over 190 regional locations across Australia.
[11] The Australian Competition and Consumer Commission, *Retail and wholesale petrol market shares in Australia*—September (2018), p.1.
[12] *Ibid*, p.2.
[13] *Ibid*, p.4.

As at 30 June 2018, there were 276 fuel retail sites in Adelaide. Figure A2.2 shows the major retailers operating in Adelaide. The five largest major retailers (OTR, Caltex COCO, Coles Express, Liberty and Woolworths) accounted for around 80 per cent of total retail sites in Adelaide,[14] with OTR accounting for nearly half of this figure.

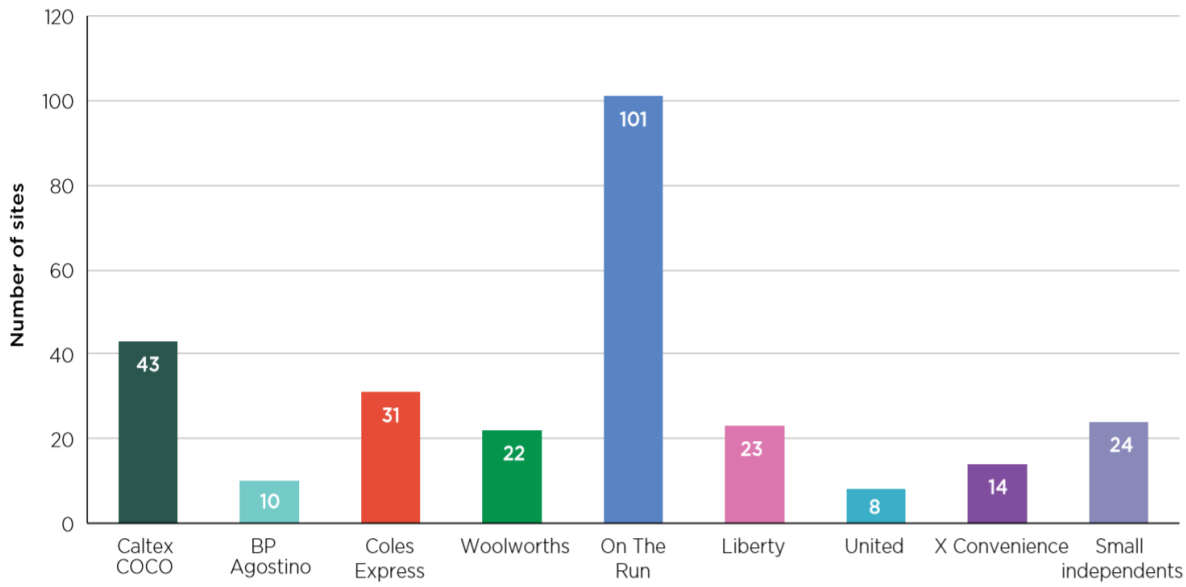
Figure A2.1: ACCC monitored retail sales volumes in Australia by major retailer; 2002-03 to 2016-17



Source: ACCC calculations based on data obtained from companies included in the ACCC's petrol monitoring program.
Notes: Large independent retail chains are 7-Eleven, United, Puma Energy and On The Run.
Totals may not add up to 100 per cent due to rounding.

[14] Australian Consumer Competition Commission, Petrol prices vary significantly: *report on petrol prices by major retailer in 2018*, (2018), p.61.

Figure A2.2: Number of retail sites by major retailer in Adelaide 2018.



Source: ACCC calculations based on Informed Sources Netwatch data and information provided by some major retailers.

SA differs from other capital city markets in having a single competitor that has more than one-third of the retail outlets. In other capital cities in Australia, there is a greater dispersion of retail sites among brands with no single brand or retailer controlling more than 21 per cent of retail sites.[15]

Characteristics of consumer behaviour

The Australasian Convenience and Petroleum Marketers Association (ACAPMA) undertakes a national survey of consumer attitudes towards the petrol-convenience industry in Australia.[16] ACAPMA examines the behavioural and attitudinal statements of different groups of consumers.[17] These statements include price sensitivity, the importance of location, the convenience offering, purchase behaviours and brand loyalty. The 2019 Monitor found most Australian consumers are loyal to one of a few service stations. Eighty-seven per cent of respondents said they buy fuel locally. Loyalty to a single service station increased from 17 per cent of respondents in 2017 to 26 per cent in 2019.[18]

Informed Sources consider consumers do not shop around widely for fuel, stating few consumers travel far out of their way. One in five consumers would not travel to find a cheaper price, and 45 per cent would not travel more than 5 minutes out of their way. That time equates to two to three kilometers in city traffic. [19]

[15] Caltex Australia Submission, p.3.
[16] ACAPMA comprises a series of online focus groups, a nationally representative online survey of 1,000 respondents, of which nine per cent are in South Australia.
[17] Australasian Convenience and Petroleum Marketers Association (ACAPMA) *2017, Monitor of Fuel Consumer Attitudes*, (2017), p.6.
[18] <https://acapmag.com.au/2019/11/australian-service-stations-more-than-just-fuel/>
[19] Informed Sources Submission, p.8.

Price and location are the biggest reasons for retailer loyalty. Price is the most important factor for over half of respondents), followed by location (12 per cent of respondents). Table A2.1 sets out the most important factors in the decision about where to purchase fuel.

Table A2.1: Key factors in deciding where to purchase fuel 2015 – 2019.

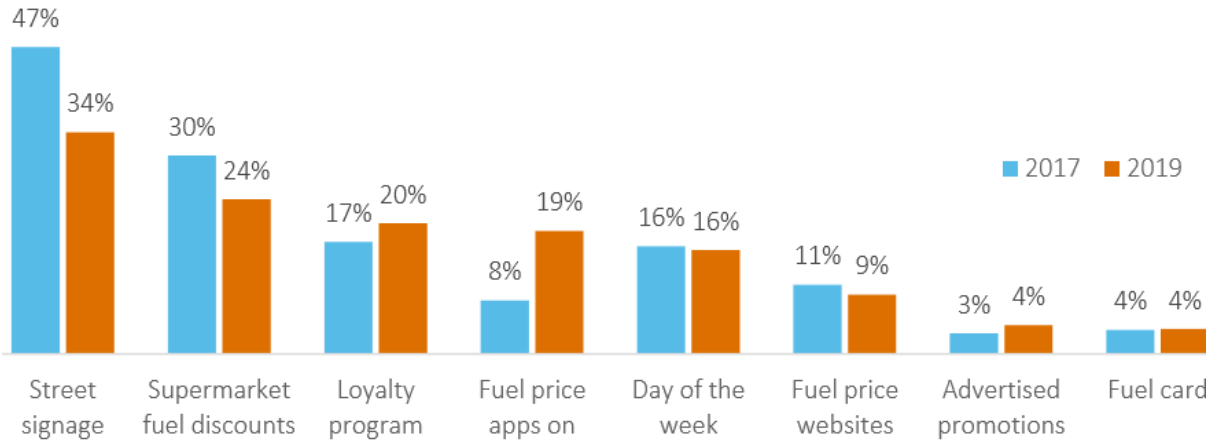
	2019	2017	2015
Sample	1,059	1,042	1,000
Price of fuel	56%	48%	60%
Location of the service station	12%	17%	22%
Quality / type of fuel	10%	11%	-
Ability to redeem supermarket fuel discount vouchers or use loyalty card	6%	6%	-
Brand	4%	4%	9%
Ease of entry and / exit	3%	4%	1%
Safety	3%	3%	2%
Opening hours	2%	2%	1%
Customer service	2%	2%	1%
Cleanliness	1%	1%	0%
Availability of prepared food and coffee	1%	1%	-
Availability of rest rooms	1%	1%	-
Range of grocery and food offerings in the convenience store	0%	-	-

Source: 2019 Monitor of Fuel Consumer Attitudes, Australasian Convenience and Petroleum Marketers Association (ACAPMA).

The ACAPMA survey notes street signage is the most common source of price information for consumers. Consumer use of fuel price apps increased from 8 per cent in 2017 to 19 per cent in 2019. Usage by consumers under 30 rose to 24 per cent of that age group.

Figure A2.3 shows information sources used by consumers to shop for cheaper fuel prices.

Figure A2.3: Information sources used by consumers to shop for cheaper fuel prices, 2017 – 2019.



Source: 2019 Monitor of Fuel Consumer Attitudes, Australasian Convenience and Petroleum Marketers Association (ACAPMA).

The industry suggests many retailers are upgrading facilities and convenience stores co-located with service stations and improving the range of products on offer. Fuel retailers have sought to diversity their offerings to grow annual revenues and market leaders are expanding their convenience offerings in a rapidly-evolving market and are looking to become "one-stop-shops" of food, retail and convenience.[20]

Eight in ten (82 per cent of) consumers generally only purchase fuel when they visit a service station. Despite this, there are pockets of consumers who are increasingly using the convenience store at their local fuel retailer. One third of young, inner city consumers buy convenience items with their fuel compared with around one fifth of all consumers.[21]

Consumer surveys provide an indication of consumer attitudes to search and purchase intentions but have limitations. First, without incentives for accurate reporting, consumers may answer questions quickly rather than with deliberation. Second, survey evidence is influenced by the market environment at the time of the survey.

Petrol price cycles

Retail petrol prices in the five largest Australian cities move in cycles that are the result of pricing decisions made by petrol retailers to compete for sales. They only occur at the retail level. Wholesale price margins do not cycle. Wholesale prices are mainly driven by international prices, exchange rates and fuel taxes. In Sydney, Melbourne, Brisbane and Adelaide, retail price cycles vary in length and amplitude, and are markedly different from the regular weekly pattern observed in Perth.

A substantial body of research has examined petrol markets that show price cycles. Price cycles resemble Edgeworth cycles that are characterized by an initial jump, followed by a gradual decline towards the initial level. It is a form of oligopolistic competition where a small

[20]<https://www.propertycouncil.com.au/Web/News/Articles/News_listing/Web/Content/News/National/2017/Fuel_stations_of_the_future.aspx>
[21] Australasian Convenience and Petroleum Marketers Association (ACAPMA), *2019 Monitor of Fuel Consumer* (2019), p.5.

number of large suppliers compete for consumers. Edgeworth cycles have been observed in retail petrol markets in many countries. The literature identifies behaviour similar to tacit collusion where firms slowly converge on the same pricing strategy to maximise revenues, which is most likely to occur in industries that tend to be more concentrated. These markets present challenges for designing competition policy that encourages a more competitive fuel market that will reduce the impacts of price signalling.

Table A2.2 compares, for 2019, the price cycle dimensions of capital cities that have fuel price cycles. Adelaide motorists on average received the greatest "price range," measured as the difference from trough to peak prices, in the petrol retail price cycle.[22]

Table A2.2: Fuel cycle dimensions in five large Australian cities

City	Average cycle length	Average Retail Price (cpl)	Average Terminal Gate Price (cpl)	Average retail price difference between cycle peak and trough (cpl)	Average difference between retail price and TGP at cycle trough (cpl)	Average difference between retail price and TGP at cycle peak (cpl)
Adelaide	19	143.2	129.6	31	-0.2	29.9
Brisbane	27	143.7	129.6	29	1.7	30.6
Melbourne	28	142.0	129.2	26	1.4	27.1
Perth	7	140.4	129.2	19	1.8	20.6
Sydney	28	140.1	129.5	25	0.5	24.6

Source: Informed Sources

The ACCC estimates that motorists who both time their purchases at the trough in the cycle as well as seek out lower retail sites over the cycle, could potentially save around $300 per year in Adelaide. As noted by Byrne and others, the markets with substantial numbers of both large chains and discounters tend to exhibit Edgeworth cycles whereas capital cities like Darwin, Canberra and Hobart seem to have insufficient discounters which seem necessary for cyclical behaviour.[23] The literature assesses the potential benefits from price cycles for informed consumers, suggesting simple strategies lead to substantial savings for consumers. The gains from timing purchases are significantly greater than the gains from carefully searching across stations for petrol without regard to timing their purchases.

According to the academic literature, the ACCC and Informed Sources, the competitiveness of markets is generally revealed by the way in which retail prices track wholesale prices. In large competitive markets with many competitors and consumers, retail prices closely track wholesale prices. In substantial markets with many consumers and concentrated (relatively few) groups of retailers, retail price cycles are observed around the world. In small, regional and remote markets with few consumers and few retailers, retail fuel prices follow wholesale prices (adjusted for transport and other costs).[24]

One measure of retailer gross margins is Gross Indicative Retail Difference (GIRD), which measures the difference between the average unleaded petrol retail price and the average Terminal Gate Price (TGP). The GIRD is affected by transport and other costs such as

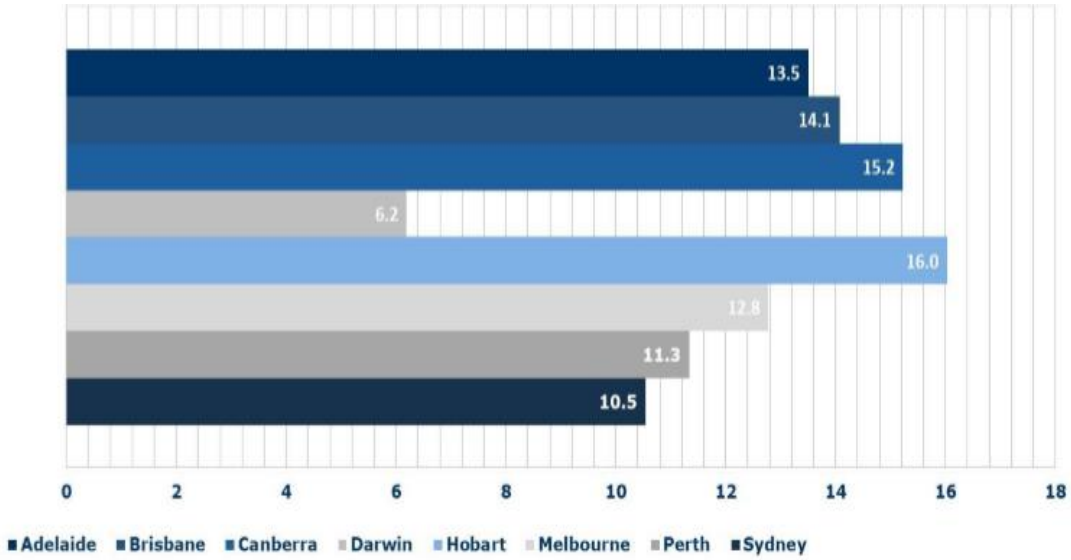
[22] Informed Sources Submission, p.22
[23] Byrne, David P, *Petrol price Cycles,* Research Paper Number 1159, (2012), p.8.
[24] Informed Sources Submission, p.5.

rentals and labour.[25] Nonetheless, it gives a broad measure of relative profitability among local markets.

Figure A2.4 shows the GIRD for Australian capital cities in 2019. It shows:

- Sydney and Perth had the lowest retailer gross margins at 10.5 and 11.3 cents per litre (cpl); and
- Adelaide ranked in the middle at 13.5 cpl.

Figure A2.4: 2019 Gross Indicative Retail Difference (GIRD) comparison between capital cities



Source: Informed Sources

Regulatory interventions

Regulatory interventions to lift the quality, coverage and timeliness of real time retail petrol price information to consumers (and retailers) have been made in several Australian jurisdictions:

- Fuel Watch WA;
- Fuel Check (variations on this model in Qld and NT); and
- overseas experiences.

The Western Australian Government (WA) introduced the 'Fuel Watch' scheme in 2001. This scheme differs from those currently operating in NSW and NT, as prices must be provided to

[25] *Ibid,* p.3.

the government by 2pm for the following day, preventing any fluctuations in fuel prices during any one day.

As a result of proceedings in the Federal Court of Australia, in December 2015, the ACCC accepted court enforceable undertakings from Informed Sources, a data collection warehouse, and several fuel retailers. The undertakings prohibited the exchange of fuel price information between the relevant parties, unless they simultaneously make available the retail price of fuel to consumers and various third-party providers and advocacy groups.

In August 2016, the New South Wales (NSW) Government introduced a web-based platform called 'Fuel Check', a mandatory scheme for the collection and publication of real time service station fuel prices.

In late 2017, the Northern Territory (NT) Government implemented 'MyFuelNT'. Similar to the NSW scheme, MyFuelNT requires the collection of publications of all service station fuel prices.

In December 2018, the Queensland (QLD) Government began a two-year trial of a mandatory fuel price reporting scheme. Informed Sources won the contract to aggregate and develop the platform for data collection and manage the collection of data.

Germany and Chile have established fuel price transparent schemes. The Chilean scheme commenced in February 2012 when the government legislated that retail sites post their prices on a government website and keep prices updated as they changed. The website was introduced in March 2012, first covering the capital, Santiago, and the whole country by July 2012. [26] The German scheme, the German Market Transparency Unit for Fuel, commenced in 2013, hosted by the German competition authority.

In late 2017 the Victorian Parliament conducted an inquiry into fuel prices in regional Victoria[27], and resolved not to support mandatory fuel price reporting schemes, finding no evidence that mandatory fuel price reporting reduced fuel prices in the jurisdictions where it operates.

The QLD Government commissioned Griffith University to assess the impact on prices of the schemes implemented in NSW and the NT. It found the NSW scheme reduced unleaded fuel retail prices in metropolitan Sydney equivalent to a permanent reduction of 1.03 cpl or 0.7 per cent. The study suggested this was in part due to a high level of competition within the Sydney market. This result has been questioned by Informed Sources. The study also found that NT fuel prices increased by 1.08 cpl or 0.67 per cent, based on three months of data following MyFuelNT's introduction in November 2017.

Possible price signalling

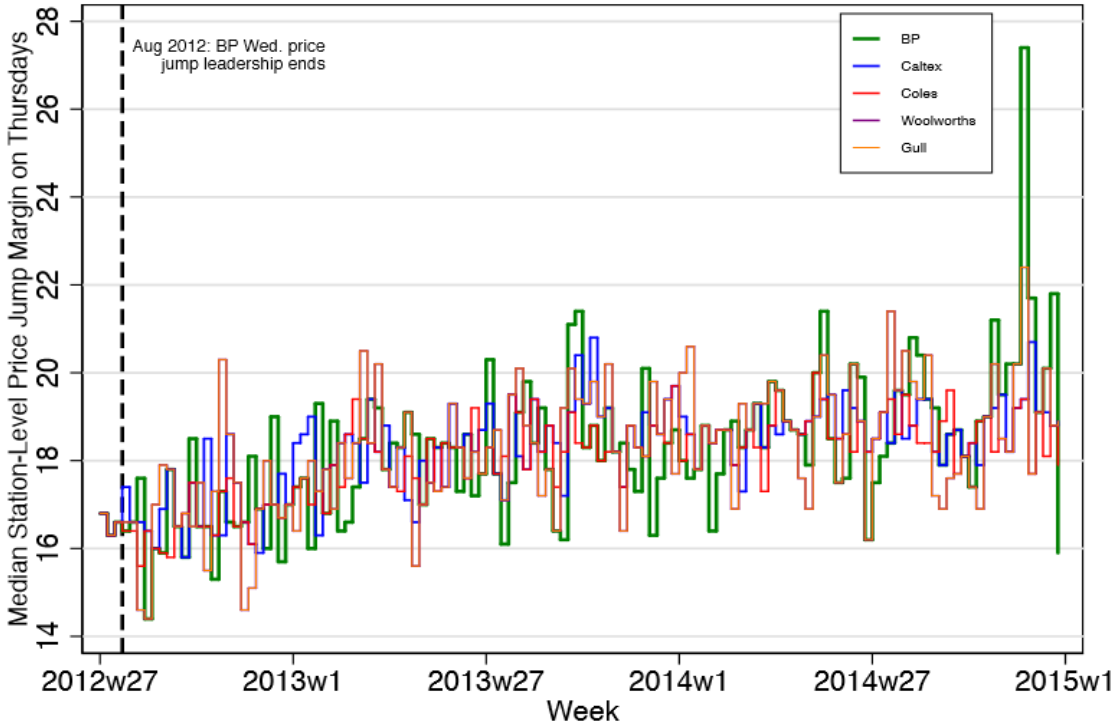
Byrne and de Roos examined the WA retail fuel market in *Learning to coordinate: a study in retail gasoline,* which demonstrated the communicative power of price information. They

[26] The Australian Competition and Consumer Commission speech, *Fuel price transparency and retail industry competition*, <https://www.accc.gov.au/speech/fuel-price-transparency-and-retail-industry-competition>.
[27] Economic, Education, Jobs and Skills Committee, Parliament of Victoria, *Inquiry into fuel prices in regional Victoria,* Parliamentary paper 374, February 2018.

found potential evidence of tacit communication through one company's ability to gradually transition its rivals to a new equilibrium price through price leadership. [28]

Their research analysed more than 1.7 million unique petrol price data points. It showed how behaviour among petrol retailers in Perth between 2010 and 2015 suggested that firms' ability to coordinate on higher margins over time grew margins from approximately 16 cpl in August 2012 to 19 cpl in January 2015. Figure A2.5 plots median Thursday margins by firm over this period. This implies a three cpl margin increase on all days because margins are anchored to the top of the cycle.

Figure A2.5: Median station level price margin.



Source: Learning to Coordinate: A Study in Retail Gasoline, American economic review, 2019,

Byrne and de Roos' research found that the price leader's tacit collusion reduced competition and raised prices, leading to higher profits for retailers and higher prices for consumers. They state "this tacit collusion softened price competition, resulting in higher profits for all firms involved, and higher prices for consumers. Between 2010 and 2015, retailers saw profit gains of up to 57 per cent at the top of the price cycle; from 11.39 cpl to 17.87 cpl. That means consumers were paying up to 57 per cent more to fill their car than five years earlier"[29] These changes in profits implied roughly a seven cpl transfer to retailers from the average consumer, who paid roughly $120 more per year in petrol costs.[30]

[28] Byrne, DP, De Roos, N, *Learning to Coordinate: A Study in Retail Gasoline*, American Economic Review, 2019, 109 (2), p.591 – 619.
[29] *Ibid*, p.591.
[30] *Ibid,* p.591.

The OECD Competition Committee cautioned in a recent paper that increased price transparency in concentrated markets with homogeneous goods (such as fuel), may also increase the risk of tacit collusion among retailers. That said, the ACCC considers the starting point is important. In Germany, for example, before their price transparency scheme, retailers were not able to see each other's prices in any comprehensive way. They relied on driving around noting down the prices of their competitors. In that situation price transparency provided a large benefit to retailers by sharply increasing the information available about competitor prices. As noted by the ACCC, this is a very different starting point from in Australia, where for many years the major retailers were able to see each other's prices on a near real-time basis, but consumers could not.[31]

The OECD paper notes in Germany prices increased following the introduction of their fuel price transparency scheme in 2013. The key reason for the increase was the information was available to retailers, who could use it to respond more effectively to their competitors' prices. The paper also found in Chile that margins increased following the introduction of the fuel price transparency scheme. In some areas of the country where the fuel price website was used least by consumers, retail margins increased the most. In areas where consumers took greater advantage of the fuel website, margins increased only slightly or fell.[32]

As detailed in the Frances Bedford MP submission, the ACCC stated in the 2018 report on the Australian petroleum market, in general, independent decisions by petrol retailers to adjust prices throughout price cycles are not usually the result of collusive behaviour that would raise concerns under the *Competition and Consumer Act 2010* (CCA). [33] Further, petrol retailers are doing no more than responding to each other's published prices.[34]

Asymmetric information

Academic papers have provided evidence that consumers engage in both searching across petrol stations and over time. A significant minority of consumers exploit the predictability of price cycles to time their fuel purchases.

The paper *Fueling Australia: structural change and new policy challenges in the petrol industry* investigated the demand and supply side effects of Fuel Watch. The paper supports the theory that Perth's consumers used the Fuel Watch platform to time their purchases to avoid price jumps, and to seek out the lowest-price station at a point in time. That is, Fuel Watch has reduced consumers' search costs. [35]

The development of internet-based technologies has led to structural changes on the supply and demand sides of retail petrol markets. On the supply-side, the literature finds that the lower search costs caused by Fuel Watch has affected stations' pricing behaviour. [36]

---

[31] The Australian Competition and Consumer Commission speech, *Fuel price transparency and retail industry competition*, <https://www.accc.gov.au/speech/fuel-price-transparency-and-retail-industry-competition>.
[32] *Ibid.*
[33] Frances Bedford MP JP, Submission, *Research paper into Fuel Price Cycles within South Australia, May 2019*, (2020), p.4.
[34] The Australian Competition and Consumer Commission, *Report on the Australian Petroleum market, December quarter 2018*, (2019), p.48.
[35] David P. Byrne, *Fueling Australia: structural change and new policy challenges in the petrol industry,* (2014), p. 9.
[36] *Ibid*, p. 12.

For policy makers, the relevant finding from this study is Fuel Watch reduced consumer search costs and lifted the opportunity to exploit the price information to the point that firms became less willing to raise prices when costs rose, and more willing to cut prices when they fell.[37] If any technological change, such as Informed Sources (pro-supply) or Fuel Watch (pro-demand) tips the informational advantage in the market to one side or the other, it will affect the relative amounts of producer and consumer surplus delivered in the market.[38] More informed producers can better coordinate on higher prices and better-informed consumers lead to higher price sensitivity and price elasticity, and in equilibrium, lower prices.

The paper *How do consumers respond to gasoline cycles* is an empirical study of how consumers respond to retail gasoline price cycles and a market-level measure of consumer responsiveness based on web traffic from gasoline price reporting websites. [39] The analysis used a dataset of daily, station-level prices from Ontario, Canada from 2007–08. The owners of GasBuddy Organization Inc. (GasBuddy), who run an online gasoline price reporting website in North America, provided these data. Users of these websites upload stations' prices from their local markets via the internet using mobile devices and computers. The dataset consists of every station-level price report submitted to GasBuddy's websites over the sample period.[40]

The study found consumers are more responsive to price rises around price restoration periods, and, through a series of tests, showed that forward-looking stockpiling behaviour by consumers likely plays a central role. By emphasizing the importance of dynamic demand incentives in retail gasoline purchasing behaviour the paper concluded:

> *the "study helps motivate pro-competitive policies and technologies like GasBuddy that aim to inform the consumers about daily retail price fluctuation to help them make well-timed fuel purchases. Such price transparency policies have been proposed in Canada with Ontario's Gas Price Notices Act (Bill 228, 2007), a law that would require retailers to give 72 hours advanced notice on price increases. These policies can lead to non-negligible cost savings for consumers, and reductions in market power among firms, if they encourage purchasing strategies that see consumers buy fuel at the bottom of the cycle."*[41]

The overall usefulness of price transparency interventions, as well as the extent of firms' market power, depends on the degree of (un)informedness among consumers in the population who purchase fuel and their preparedness to act on available information. Established web-savvy consumers in gasoline markets appear to be forward-looking and exploit web-based price information to time their fuel purchases.[42]

Academic evidence suggests that consumer adoption of search technology is a dynamic process. The direct policy implication is that effective implementation of a search platform requires a strategy to propel initial engagement with the platform which would include the possible use of information campaigns or monetary incentives to induce engagement.

---

[37] *Ibid*, p. 10.
[38] *Ibid,* p. 13.
[39] David P. Byrne, Gordon W. Leslie, and Roger Ware, *How do consumers respond to Gasoline price cycles?* (2015), p.115.
[40] *Ibid,* p.116.
[41] *Ibid,* p.117.
[42] *Ibid,* p.145.

New technology and the impact of better data

A recent study by Byrne, Nah and Xue *Australia has best fuel price data* examined the impact of Australia's fuel price interventions, noting that with the availability of real-time station-level data many core issues can be examined. The study examines Fuel Watch and Fuel Check, the legislated retail fuel price platforms, and the availability of real-time station-level data. The websites show real-time information on petrol prices across stations helps consumers find the lowest-price stations. The study notes that these platforms make these real-time station-level data publicly available, and they can be readily accessed via web download. Importantly, both datasets are complete, and they contain every price charged at every point in time at every station since the respective launches of Fuel Watch and Fuel Check through to the present day.[43]

These platforms aimed at closing information gaps require a database of some kind to ensure that people are able to access information. The implication is that there are now issues and their impacts on fuel prices that can be examined with these accurate and newly available datasets, including collusion, price discrimination, mergers, consumer research, contestability and other relevant issues.

Theory and empirical evidence provide little guidance whether a price transparency scheme assists price coordination by retailers. A regular weekly cycle in petrol prices is currently linked to the 24-hour price freeze of Fuel Watch. By contrast, the NSW Fuel Check real-time price scheme is associated with cycles that range from 4 to 6 weeks. In Germany there are extremely short price cycles, with a typical cycle occurring daily, and including mini-cycles within the day. Taking these observations together, it is hard to predict the implication of the specification of the scheme on the timing of cyclical prices.

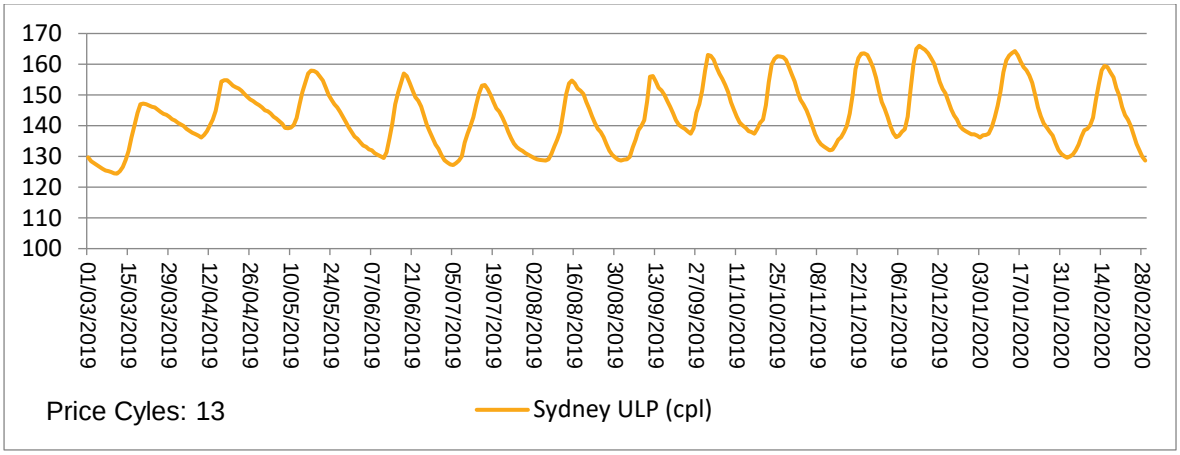
Weighing up the evidence

In principle, an improvement in price transparency – that lifts the quantum, quality and span of price information – can change consumer and firm behaviour and affect market outcomes. The literature suggests interventions to increase the quantity, quantity and integrity of real time price information are examples of demand-side technology that lowers search frictions, which should increase demand elasticities and lower prices. On the supply-side real-time prices make it easier for oligopolists to monitor their competitors, which suggests that collusive anti-competitive outcomes are more likely to arise. The overall impact depends on which effect dominates [44] and the impacts seem to be diminished in a competitive fuel market.

[43] David P. Byrne, Jia Sheen Nah and Peng Xue, *Australia Has the World's Best Petrol Price Data: FuelWatch and FuelCheck*, *SSRN Electronic Journal*, (2018), p. 565.
[44] Jia Sheen Nah*, Empirical Studies of Consumer Search and Market Power,* Department of Economics University of Melbourne, (2019), P.112.

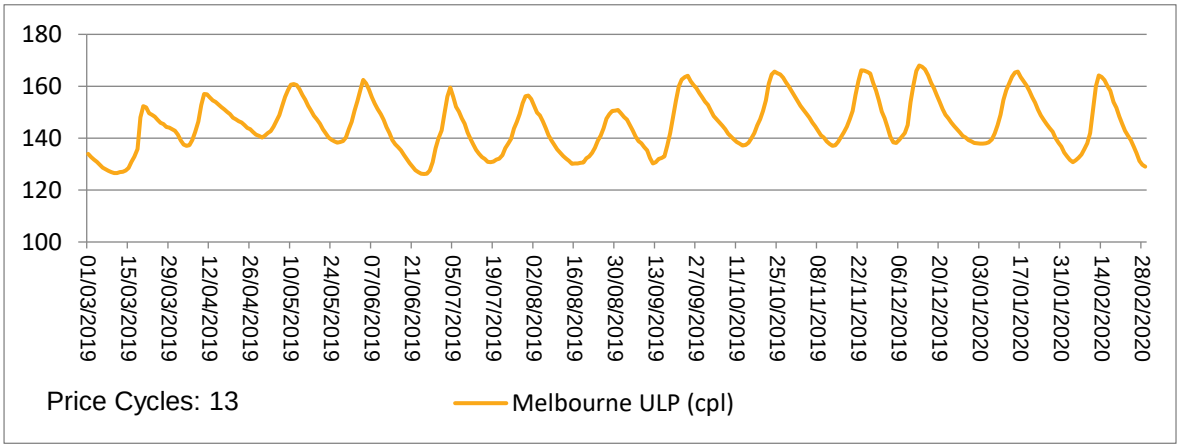
Appendix 3: Retail price cycles

Figure A3.1: Retail Price Cycles – Sydney – 1 March 2019 to 29 February 2020



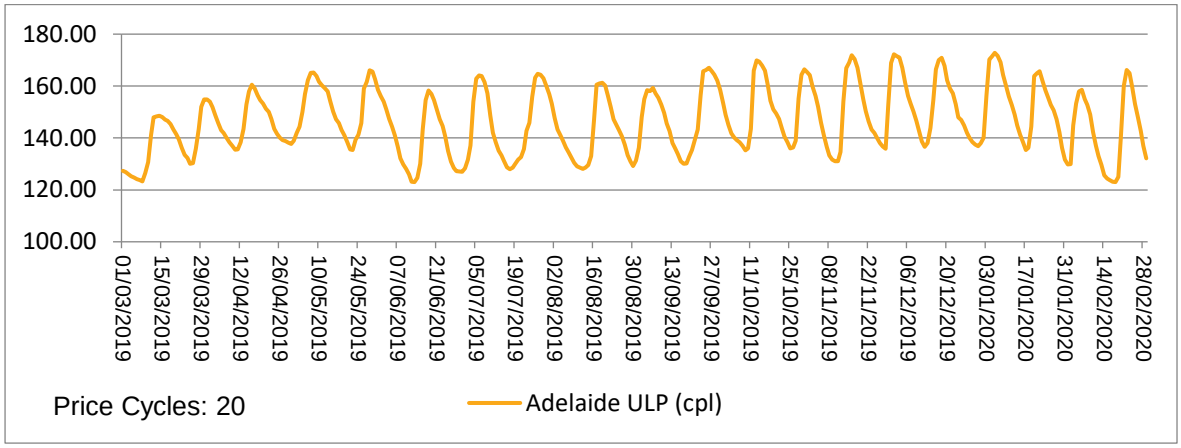
Source: www.fueltrac.com.au

Figure A3.2: Retail Price Cycles – Melbourne – 1 March 2019 to 29 February 2020



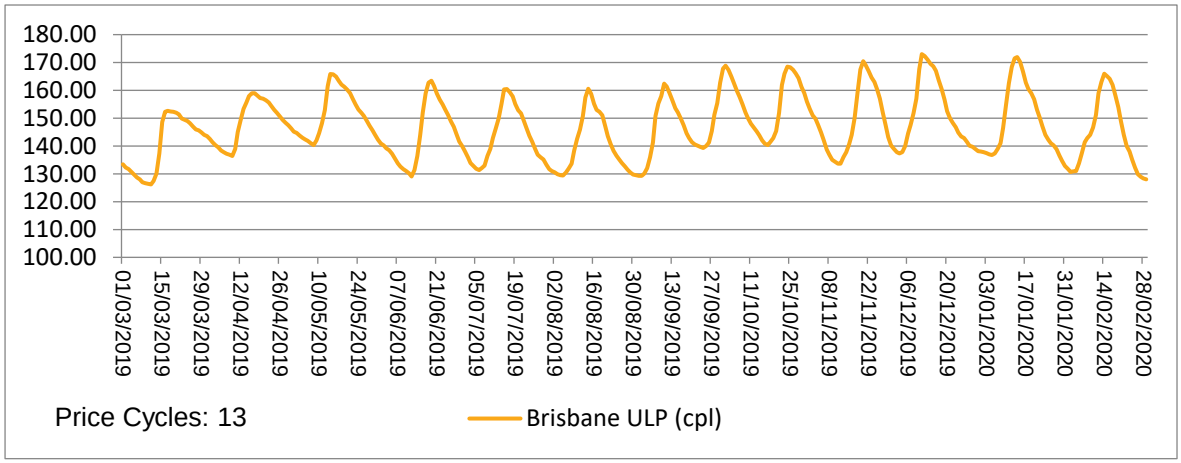
Source: www.fueltrac.com.au

Figure A3.3: Retail Price Cycles – Adelaide – 1 March 2019 to 29 February 2020



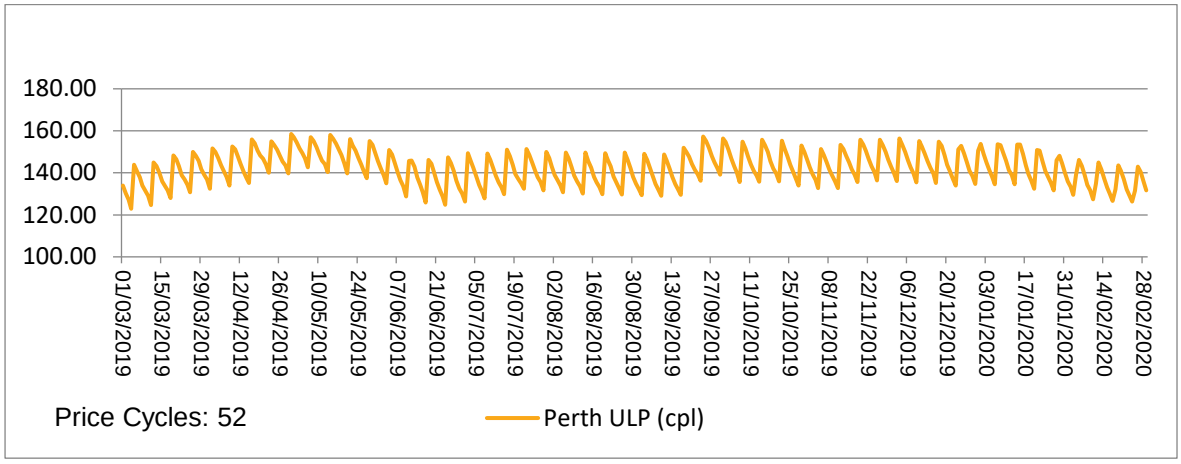
Source: www.fueltrac.com.au

Figure A3.4: Retail Price Cycles – Brisbane – 1 March 2019 to 29 February 2020



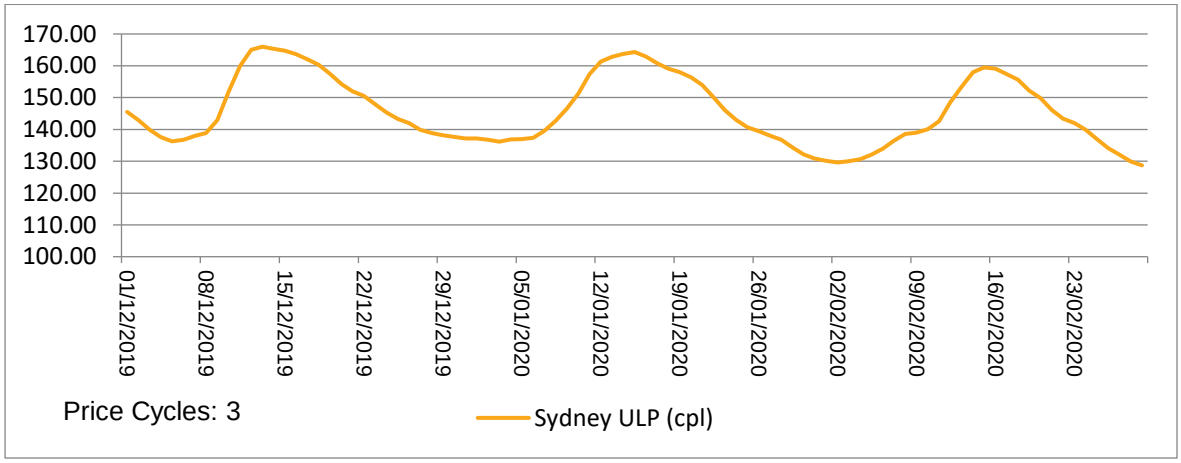
Source: www.fueltrac.com.au

Figure A3.5: Retail Price Cycles – Perth – 1 March 2019 to 29 February 2020



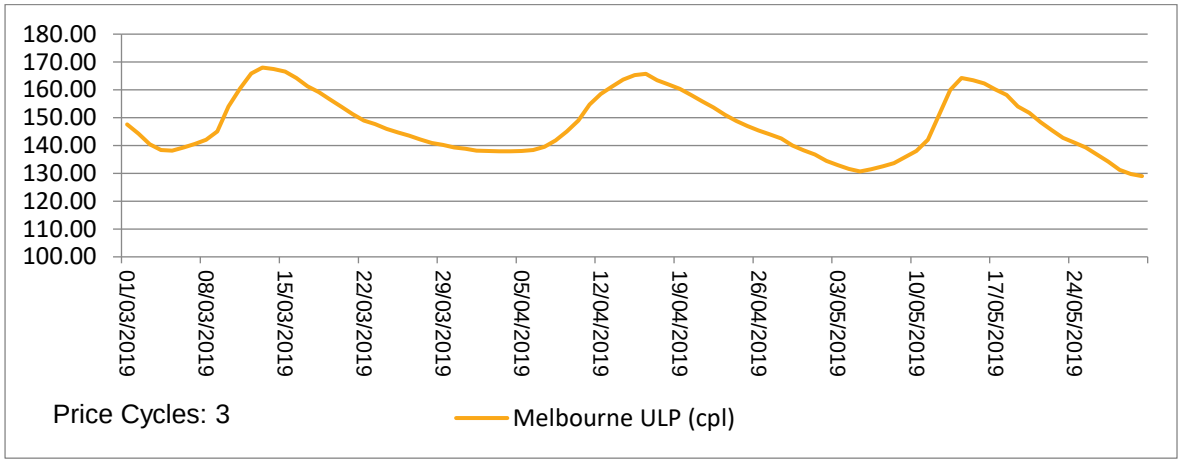
Source: www.fueltrac.com.au

Figure A3.6: Retail Price Cycles – Sydney – 1 December 2019 to 29 February 2020



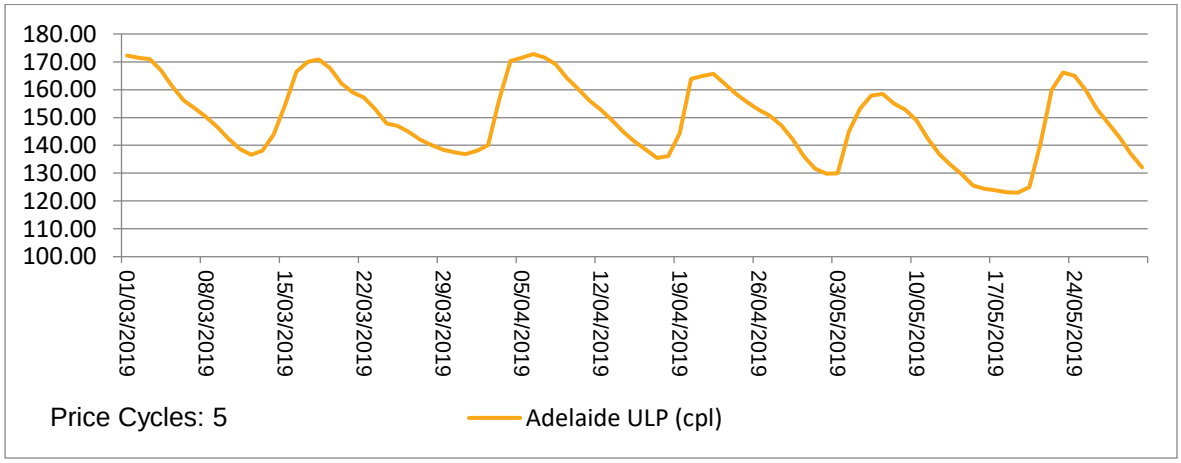
Source: www.fueltrac.com.au

Figure A3.7: Retail Price Cycles – Melbourne – 1 December 2019 to 29 February 2020



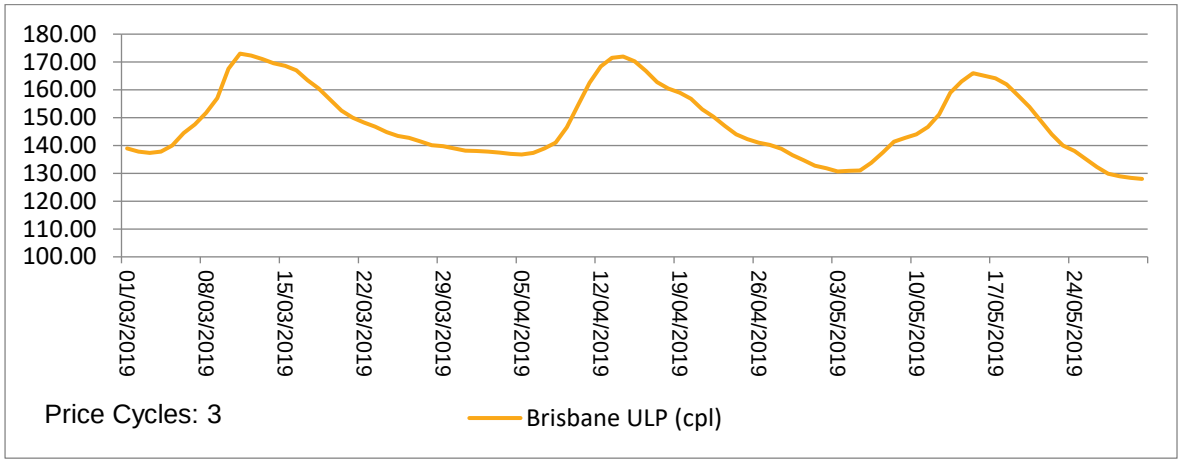
Source: www.fueltrac.com.au

Figure A3.8: Retail Price Cycles – Adelaide – 1 December 2019 to 29 February 2020



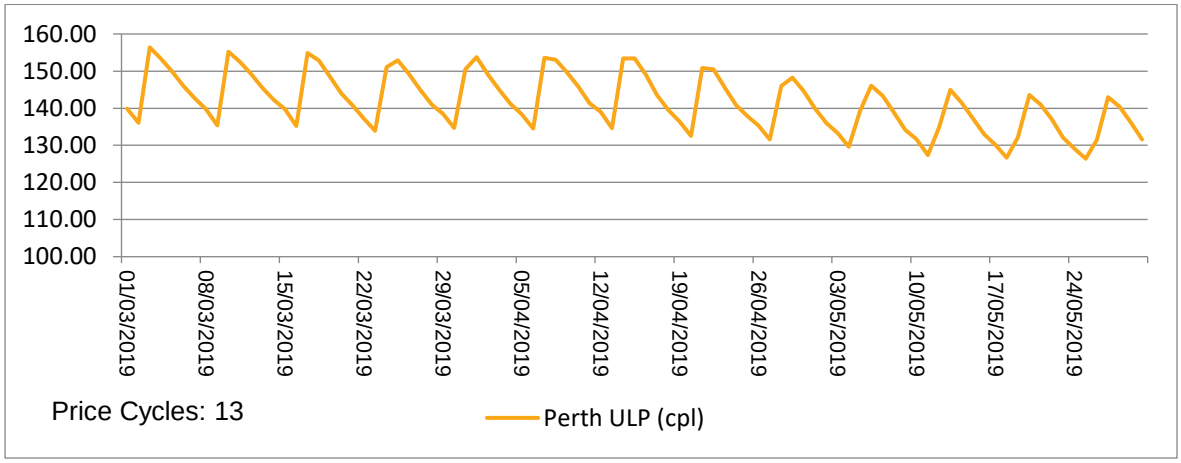
Source: www.fueltrac.com.au

Figure A3.9: Retail Price Cycles – Brisbane – 1 December 2019 to 29 February 2020



Source: www.fueltrac.com.au

Figure A3.10: Retail Price Cycles – Perth – 1 December 2019 to 29 February 2020



Source: www.fueltrac.com.au

For more information

W: www.sapc.sa.gov.au
E: sapc@sa.gov.au
P: (08) 8226 7828

30 Wakefield Street
Adelaide SA 5000