ATTACHMENT 19.1 AA5 REFERENCE TARIFFS TARIFF SETTING METHOD

ATCO 2020-24 PLAN

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1. Introduction

The purpose of this document is to detail the process undertaken by ATCO to set tariff structures, individual charging parameters and the result of that process for AA5 reference tariffs.

1.1 How ATCO set the AA5 tariff structures

ATCO's process to set the AA5 tariff structures can be summarised as:

- Determine the over-arching tariff setting objectives see section 2
- Determine the tariff classes see section 3
- Allocate costs to tariff classes so that tariffs can be set to recover those costs see section 4
- Estimate the long-run marginal cost of providing reference services so that tariffs can be set to promote efficient utilisation of the network see section 5
- Set tariff components so the usage charge takes account of the long-run marginal cost and the costs of providing the reference service are recovered see sections 7 and 8
- Confirm that for each tariff class, the revenue expected to be recovered by the tariff charges lies between an upper bound of the stand-alone cost of providing the reference service and a lower bound of the avoidable cost of providing the reference service.

1.2 Factors contributing to the AA5 tariff structures

In setting tariffs for AA5 ATCO has had regard to:

- Feedback from customers including the need for stability while acknowledging the preference of retailers to smooth the transition from AA4 to AA5 tariffs
- Regulatory precedent
- Compliance with relevant legislation including the requirements of rules 93 and 94 of the National Gas Rules
- Administrative cost
- Price signals to customers to promote efficient investment in and utilisation of the network, including ensuring that year-by-year tariff revenue approximates cost of service.
- Determine a price path to ensure economically efficient price signals, to acknowledge the competing preferences of customers, *stability*, compared to the preference of retailers to smooth the transition in tariffs from AA4 to AA5 and to ensure legislative compliance

1.3 Summary of AA5 tariff outcomes

The result of the process is to maintain ATCO's existing tariff structures into AA5 to provide stability to customers and retailers. These tariff structures are also supported by regulatory precedent. Tariff classes, based on groups of customers with similar characteristics, including the delivery facilities they require, remain unchanged from AA4.

The features of the AA5 tariff structures and price setting include:



- A1 B3: The tariff structures across all tariff classes retain a standing charge and a 2-band declining block usage tariff
- A1: The A1 tariff class retains a demand charge reflecting the capacity required by the customer
- **B3:** The first 1.825 GJ for each B3 tariff class customer continues to have no charge
- **B3:** The B3 tariff class standing charge has been held at the 2019 value in real terms as it now better approximates the fixed cost of serving this tariff class and to allow usage charges in the marginal usage tariff band to better approximate the long-run marginal cost of additional gas usage
- **New tariff:** A new tariff has been introduced for the new ancillary reference service "Special meter read" due to the increased demand for the service
- **Price path:** To ensure appropriate price signals are sent to customers and to promote stability in future tariffs, a price path is proposed that returns tariff revenue to approximate cost of service by 2024.

The sections below document how ATCO implemented the process to set tariffs for the AA5 period.

ATCO

2. ATCO's pricing goals

In determining the tariff structures for AA5 ATCO has considered feedback received from customers and regulatory requirements. A primary driver of ATCO's approach to determining the tariff structures and the price path for AA5 is feedback received from customers for stability and retailers' feedback to minimise any initial step change in tariffs on 1 January 2020. At the same time ATCO must bear in mind the National gas objective to "... promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas..."¹ through the price signals sent by tariffs and comply with legislated tests.

2.1 Customer and retailer preferences

ATCO has sought to balance the competing views of customers and retailers on the overall price path.

- **Customers** A strong preference of many customers was *stability* in pricing; that is, a step change in 2020 followed by stable distribution charges (Option 2 in Figure 2.1).
- **Retailers** Feedback on the Draft Plan indicated a preference by retailers to smooth the transition from AA4 tariffs in AA4 to AA5 tariffs with equal increases from 2019 to 2024 (Option 1 in Figure 2.1).

2.1.1 Customer preferences

A primary customer requirement from ATCO's engagement program is *stability;* that is, a stable overall distribution charge for a given level of service.

ATCO's pricing for AA5 was an important topic of discussion in the Engage Phase of ATCO'S 'Voice of Customer' (VoC) program. Customers were presented with the potential price increases for the distribution component of their bill for the next period. ATCO explained that the increases were based on proposed capital works programs for the AA5 period. Both residential and small and medium enterprise (SME) workshop participants considered the price increase for AA5 as modest given the projects being considered.

Customers' views were sought on *how* the price increase should be introduced over AA5. Through a worksheet activity, customers were asked for their preferences on the size of an upfront increase, and subsequent percentage increases in the remaining years of the period.

Most customers (76% overall, with 86% for residential, 74% for SME and 25% for commercial and industrial (C&I) customers) chose a *stable price path* as their preference for paying for the increase in costs (Option 2 in Figure 2.1). Customers accepted the larger increase in the initial year as they viewed the step change as modest.





Figure 2.1: Customer preferences for various price path options

2.1.2 Retailer preferences

ATCO published its "2020-24 Draft Plan" at the beginning of May 2018 inviting feedback from stakeholders. Several retailers and other parties provided feedback. The feedback relevant to tariff structures is summarised in Table 2.1

Table 2.1: Consideration	of stakeholder feedback	on pipeline services
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DRAFT PLAN STAKEHOLDER QUESTION	STAKEHOLDER FEEDBACK	ATCO'S RESPONSE TO FEEDBACK ON THE 2020-24 DRAFT PLAN	
Chapter 6: Pipeline services 8. Do you agree with the pipeline services we have proposed?	There was general acceptance of the proposed reference services including the new "special meter read" service	No Change to draft plan	
Are there any services not listed that we should be offering? Are there any proposed services that you believe we shouldn't be offering?	Some retailers queried the pricing of cancelled ancillary services suggesting they should be charged at a lower rate if cancelled within a specified period. AGL recommended the increased use of street valves as part of undertaking a street disconnection at a site.	ATCO is investigating the cost of necessary system changes (estimated \$50,000) to be balanced against reduced charges ATCO has proposed the use of "TAC" locks as an effective and efficient alternative	
Chapter 17: Reference tariffs 36. Do you support our Voice of Customer findings that an initial price step-up, followed by longer-term price stability is preferred over consistent increases over AA5?	Retailers generally suggested a moderation of the price increase in 2020 to be offset by price increases in later years.	ATCO has moderated the increase in distribution charges shown in the draft plan from 2019 to 2020 offset by increases in the following years.	
Other matters for consideration	Alinta Energy suggested a lower charge for delivery points with no consumption for a period of more than 12 months.	ATCO has considered this matter and found that it has no scope to implement this proposal. ATCO cannot discriminate among delivery points receiving the same service.	



Retailers have expressed a strong preference for setting a 'smooth' price path, one which included a steady and consistent increase from 2019 price levels for each year of AA5. Based on feedback from Retailers', the initial price increase has been moderated, however, a full adoption of this 'steady and consistent increase' approach is not proposed due to a couple of important reasons. This is discussed further in section 7.

2.2 Economically efficient price signals

ATCO has sought to provide economically efficient price signals by setting tariffs in a way that seeks to minimise:

- tariff variability within the access arrangement period.
- tariff variability *between* access arrangement periods.

ATCO has also considered the need for tariffs to:

- reflect efficient costs to provide the service; and
- provide signals to promote efficient utilisation of, and investment in the network.

Fundamentally, meeting these requirements requires that tariff revenue approximates cost of service and individual tariff charging parameters reflect the cost of providing the service.

2.3 Regulatory framework

The National Gas Law (NGL) includes objectives and principles that influence the approach that ATCO takes to setting reference tariffs. The associated National Gas Rules (NGR) set out a process to establish tariff classes and the tariffs for those tariff classes.

In relation to the NGL, particular regard should be had to the national gas objective² and revenue and pricing principles³.

The national gas objective states:

"The objective of this Law is to promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply of natural gas."

Regarding setting tariffs, the revenue and pricing principles contained in sections 24(3), 24 (6) and 24(7) of the NGL are relevant because they relate to the effect tariffs can have on efficient investment in and utilisation of the network. These sections of the NGL are restated below.

- 24 (3) A service provider should be provided with effective incentives in order to promote economic efficiency with respect to reference services the service provider provides.
 - The economic efficiency that should be promoted includes-
 - (a) efficient investment in, or in connection with, a pipeline with which the service provider provides reference services; and
 - (b) the efficient provision of pipeline services; and

² National Gas Access Act WA (2009), Section 23

³ National Gas Access Act WA (2009), Section 24



(c) the efficient use of the pipeline

- 24 (6) Regard should be had to the economic costs and risks of the potential for under and over investment by a service provider in a pipeline with which the service provider provides pipeline services.
- 24 (7) Regard should be had to the economic costs and risks of the potential for under and over utilisation of a pipeline with which a service provider provides pipeline services

In summary, what the revenue and pricing principles require is that tariffs should reflect the costs of providing reference services and provide price signals that promote efficient investment in and utilisation of the network.

Meeting the objectives and compliance with the principles, processes and requirements of the legislation is a necessary consideration when setting tariffs. The tests in the NGR provide a method to implement the NGL principles and include testing the expected tariff revenue, given the tariffs set, against the requirements that:

- for each tariff class the expected tariff revenue is between the avoidable cost and stand-alone cost of providing the reference service to that tariff class;
- in net present value terms, the total cost of service equals the expected tariff revenue; and
- the need to take account of long-run marginal cost when setting tariffs.

ATCO must also take account of the *National Gas Access (WA) (Local Provisions) Regulations 2009* regarding setting a uniform tariff for customers using up to one terajoule of gas and the effect on those customers as well as retailers. The *National Gas Access (WA) (Local Provisions) Regulations 2009* requires that:

- the impact on small-use customers and retailers must be taken into account; and
- uniform tariffs must be applied to small-use customers for the same service irrespective of their location.

2.4 Summary: tariff setting objectives

In summary, ATCO is seeking to satisfy the following objectives in setting tariffs:

- Meeting customer and retailer requirements including a trade-off of the need for stability and easing the transition from tariffs in AA4 to tariffs in AA5
- Compliance with legislation including:
 - taking account of the impact on customers and retailers
 - meeting regulatory tests
 - taking account of long-run marginal costs
 - avoiding unnecessary administrative costs
- Recovery of the cost of providing reference services over AA5 in net present value terms
- Setting price signals to promote efficient use of and investment in the gas distribution network



3. Tariff classes

The reference tariff classes in AA5 will be the same as in AA4, as there are no material changes in the:

- types of haulage services required by customers in each tariff class; or
- types of customers requiring reference services.

Maintaining the same tariff classes also:

- Contributes to the stability required by customers
- Avoids costs associated with changing systems to accommodate changes to tariff classes
- Is supported by feedback from retailers.

ATCO's tariff classes for haulage reference services are defined by the type of delivery facilities that are provided to certain customer groups. By grouping customers according to the delivery facilities required, tariffs can be constructed to reflect the costs related to serving that tariff class and provide suitable price signals. Table 3.1 details the AA5 tariff classes.

Table 3.1: AA5 tariff classes

TARIFF CLASS	CUSTOMER CHARACTERISTICS	DELIVERY FACILITIES
A1	 Large industrial customers that use over 35TJ per year. These customers often: have direct impact on the designed capacity of the network; and are directly connected to the high pressure network. 	These customers require specific facilities to supply their gas consumption including peak load requirements.
	Typically, flows are fairly stable throughout the day peaking in the early evening. The ratio of peak to average hourly consumption is generally in the ratio 1.5 to 2.	
A2	Industrial and commercial customers that use 10TJ to 35TJ per year. These customers are generally accommodated within the distribution gas network, downstream of the high pressure network.	These customers require specific facilities to supply their gas consumption including peak load requirements
	Consumption generally rises from 3am to a peak around 7am to 8am and declines to a lower level around noon.	
	Typically, the ratio of peak to average consumption is in the range 1.7 to 2.	





TARIFF CLASS	CUSTOMER CHARACTERISTICS	DELIVERY FACILITIES
B1	Smaller industrial and commercial customers that use from 1TJ up to 10TJ per year. These customers are generally accommodated within the distribution gas network, downstream of the high pressure network. Consumption generally rises from around 2am to a peak around 7am to 8am and declines throughout the day with a secondary peak around 7pm to 8pm Typically, the ratio of peak to average consumption is in the range 2.2 to 2.8.	These customers usually require specific facilities to supply their gas consumption including peak load requirements. However, there are a significant number of customers also served by a standard 18m ³ per hour meter.
В2	Commercial enterprises using up to 1TJ per year. This tariff class may also include some residential customers with demand requiring a meter larger than for a B3 tariff class. Peak to average flows for this tariff class may vary widely depending on whether for commercial or residential use.	Standard 12m ³ per hour meter.
B3	Generally, residential customers but may include some small commercial enterprises. Median consumption is in the 10GJ to 12GJ per annum range. Generally, consumption peaks between 5am and 9am with secondary peaks at noon and throughout the evening. Peak flows are generally over 6 times average flows due to fuelling gas appliances used over short periods such as for water heating, cooking and domestic space heating.	Standard 6m ³ to 10m ³ per hour meter.

ATCO has a single tariff class for each ancillary reference service. The six reference ancillary services available in AA5 can be accessed by the tariff classes detailed in the Access Arrangement and Access Arrangement Information.



4. Cost allocation

ATCO has adopted the following method to allocate the building block costs (Total Revenue) to each tariff class:

- 1. Where costs are directly attributable to a tariff class they are allocated to that tariff class.
- 2. Where costs are not able to be directly attributed to a tariff class, operations and asset managers have used their expertise and network modelling techniques to estimate the proportion of costs required to serve an individual tariff class.

Costs have also been allocated to non-reference services in accordance with ATCO's Cost Allocation Method document.

The following sections detail ATCO's approach to allocation for each of the building blocks.

4.1 Return on and return of assets building blocks

Depreciation and return on asset costs relating to the forecast asset base are allocated to tariff classes based on a combination of network modelling and other bases of allocation.

Network modelling is used to allocate pipeline and telemetry assets to tariff classes. Meters and service pipes, vehicles, equipment and IT as well as land and buildings are allocated based on tariff class delivery points. Regulators and gate stations are allocated based on tariff class volume.

4.2 Operating cost building block

ATCO has separately considered the method to allocate the operating costs to each tariff class.

ATCO has used 2017 costs as a base to allocate operating costs to tariff classes using the following three step process:

- 1. Direct costs such as unaccounted for gas are directly allocated to tariff classes.
- 2. Maintenance activities are evaluated as to the proportion of the activities' costs that would be required for each tariff class.
- **3.** The balance of costs by cost centre are evaluated as to the proportion of the cost centre's costs that would be required for each tariff class.

Using 2017 actual costs as a base, the proportion of total operating costs required for each tariff class has been determined. That proportion is then applied to the operating costs over AA5 to arrive at the total operating costs for each tariff class.

4.3 Other building blocks

The remaining elements of cost of service (working capital allowance, tax and imputation credits) are allocated proportionate to the allocation of operating costs, depreciation and return on assets.



4.4 Allocators adopted for indirect allocations

For the building blocks where ATCO is unable to directly attribute the cost to a tariff class, ATCO estimates the proportion of costs required to serve an individual tariff class based on nine different cost allocators.

Table 4.1 shows examples of the cost allocators used to allocate costs not directly attributable to a tariff class. A weighted average of up to three cost allocators is used to allocate costs by activity or cost centre to tariff classes. Costs centres hold the balance of costs after costs have been charged out to jobs as the activities take place.

TARIFF CLASS	VOLUME	DELIVERY POINTS	HP STEEL PIPE	PEAK DEMAND	LENGTH OF MAINS
A1	17.8%	0.0%	26.4%	34.4%	1.5%
A2	3.3%	0.0%	4.4%	6.3%	7.7%
B1	5.0%	0.2%	0.2%	9.7%	10.1%
B2	6.7%	1.7%	1.1%	6.5%	10.1%
В3	67.1%	98.1%	68.0%	43.2%	70.6%
Ancillary services	0%	0.0%	0.0%	0.0%	0.0%
	100.0%	100.0%	100.0%	100.0%	100.0%

Table 4.1: Cost allocator examples

4.5 AA5 cost allocation by tariff class

Table 4.2: shows the outcome of ATCO's allocation of Total Revenue in present value terms to tariff classes for AA5.

TARIFF CLASS	ESTIMATED COST OF SERVICE (\$M PRESENT VALUE)	TOTAL COSTS ALLOCATED (%)
A1	32.4	3.8%
A2	22.1	2.6%
B1	54.9	6.4%
B2	48.7	5.7%
В3	686.3	80.0%
Ancillary services	13.3	1.5%
TOTAL REVENUE PRESENT VALUE	857.7	100.0%

ATCO used the estimated cost of service per tariff class as a guide to setting the tariff revenue per tariff class.



5. Long-run marginal cost

Conceptually, long-run marginal cost (LRMC) is the additional, marginal, cost of supplying an additional unit of demand when all factors of production are variable. LRMC can be thought of as including both capital and operating expenditure.

Literature commonly discusses two methods used in regulation for assessing long-run marginal cost:

- 1. the perturbation (also known as the Turvey method); and
- 2. average incremental cost methods.

Each method involves, in one form or another, looking at the impact on costs given an increment or decrement in volume. Each method has pros and cons. Regulators have acknowledged that no matter which method is used, LRMC is only an estimate and should be used as a *guide*⁴ to setting usage charging parameters (as opposed to seeking a precise value to be used in setting usage charging parameters).

5.1 Perturbation method adopted to calculate LRMC for AA5

ATCO is restricted to using the perturbation method because the average incremental cost method relies on there being an increase in forecast demand. In ATCO's case, in three of five tariff classes, demand is forecast to decrease over AA5.

The perturbation approach estimates the LRMC as the direct change in total forward-looking operating and capital expenditure resulting from a change in capacity required by:

- first, estimating forward-looking total operating and capital expenditure for each year over a time horizon of, say, ten years;
- second, re-estimating forward-looking operating and capital expenditure for each year over the time horizon as a consequence of a small but permanent increment in demand; and
- third, dividing the present value of the difference between the two forward-looking operating and capital expenditure estimates by the demand increment applied.⁵

The perturbation method can be represented by the formula:

$$LRMC (perturbation) = \frac{PV(revised optimal capex plus opex - optimal capex plus opex)}{PV(additional demand served)}$$

The principal feature of the perturbation method is that it directly estimates the change in cost as a consequence of small changes in demand, which most closely resembles the theoretical 'marginal cost'. Where capital expenditure is necessarily 'lumpy', this approach considers current conditions and so will result in lower estimates of the LRMC where current capacity is sufficient to satisfy incremental changes in demand. Equivalently, it produces higher estimates of the LRMC where small changes in demand lead to bringing forward near-term investments. *This most closely resembles the price signals that promote more efficient use of network infrastructure.*⁶

⁴ AER, DRAFT DECISION Multinet gas Access arrangement 2018 to 2022, Attachment 10 – Reference tariff setting, page 12

⁵ NERA Economic Consulting, Economic Concepts for pricing Electricity Network Services, A report for the Australian Energy Market Commission, 21 July 2014, page 14

⁶ Ibid, page 15



The perturbation method has also been used by the Water Corporation and the Economic Regulation Authority in its inquiry into the setting of water usage charges. Even though both parties used the same method in principle, they arrived at different conclusions. For example, different results were obtained due to the use of different increments in demand, emphasising the point that, estimates of LRMC are just that: estimates.

ATCO has attempted to estimate LRMC using the perturbation method in two ways: by reviewing actual and forecast projects and the increased demand they were devised to serve; and by conducting a theoretical calculation of LRMC for different methods of increasing network capacity. When calculating the LRMC for a tariff class it is important to take account of the capacity required in the network at peak loads versus average loads. For example, in the B3 tariff class it is estimated the peak load for a customer is almost seven times the average flow. Therefore, the LRMC per unit of capacity used (demand) is seven times the LRMC per unit of theoretical capacity created, because capacity must be built to meet peak loads although average usage is lower.

5.2 LRMC estimates for AA5

ATCO has estimated the LRMC using the perturbation method. A 10-year period was used to estimate net present values. The demand increment used is the forecast average flow for the type of asset assumed constructed. Demand was forecast to increase linearly to reach the forecast average flow in the tenth year. The results are shown in Table 5.1.

	A1	A2	B1	B2	В3
Network Reinforcement (HPR)	0.80	0.80	1.20	1.19	1.22
Network Reinforcement (MPR)					2.09
Mains Extension (PE x 1km)				1.02	1.01
Mains Extension per km (PE MAOP =<350kPa)			1.03		
Mains Extension per km (PE MAOP > 350kPa)	0.33	0.33			
AVERAGE	0 .57	0.57	1.12	1.10	1.44

Table 5.1: Long run marginal cost \$/GJ (Perturbation method)

ATCO cross-checked these theoretical values with actual and forecast projects. The project evaluations are based on a more practical scenario where the period evaluated is 20 years and a residual value is calculated for pipeline assets. The results are in Table 5.2.

The table shows the range of costs calculated depends on the type of asset constructed to augment capacity. The result is also dependent on how demand was forecast to grow over the forecast period.

Table 5.2: Long run marginal cost based	on actual/forecast projects	(\$/GJ real as at 31 December 2019)
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ASSET TYPE	LRMC A1	LRMC A2	LRMC B1	LRMC B2	LRMC B3
HP steel	2.52	2.76	3.50	6.98	10.46
HP PE	1.97	2.15	2.73	5.44	8.15
MLP ⁷ PE	1.38	1.51	1.92	3.83	5.74

⁷ MLP: Medium low pressure



ASSET TYPE	LRMC A1	LRMC A2	LRMC B1	LRMC B2	LRMC B3
HP regulator	0.50	0.55	0.69	1.38	2.07
HP regulator	0.24	0.27	0.34	0.67	1.01
MP regulator	1.97	2.15	2.73	5.44	8.15
AVERAGE	1.43	1.56	1.98	3.96	5.93

The results in Table 5.1 and Table 5.2 were further cross-checked against calculated avoidable cost per GJ based on 2017 data, noting that avoidable cost may include elements of cost such as meters and service pipes which do not vary with the marginal GJ of consumption.

The average long run marginal cost values shown in Table 5.1 and Table 5.2 are compared to the forecast 2020 marginal tariff in Table 5.3.

Table 5.3: AA5 Long run	n marginal cost and	d avoidable cost e	estimates (\$/GJ real	as at 31 December 2019)
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	A1	A2	B1	B2	B3
Average perturbation method	0.57	0.57	1.12	1.10	1.44
Average forecast/actual projects	1.43	1.56	1.98	3.96	5.93
Avoidable cost	0.18	0.40	0.99	1.25	2.82
Forecast 2020 marginal usage tariff	0.04 ⁸	1.14	3.63	4.21	6.22

ATCO has used the data in Table 5.3 to guide the setting of the variable tariff components for AA5. ATCO has balanced the outcomes of the LRMC analysis against the need for stability in pricing, the allocation of Total Revenue to each tariff class and the need to fully recover Total Revenue.

⁸ Note that A1 usage charges are based on GJ Km. At an average length of 6 Km the marginal usage charge would be approximately \$0.21 per GJ. A1 tariff class customers are also charged a demand charge relative to peak demand and pipeline length. These charges also recover incremental costs related to incremental peak demand. ATCO has estimated demand costs on a theoretical basis at approximately \$137 per peak GJ Km and in the range of \$262 to \$277 per peak GJ Km based on a review of actual and forecast projects.



6. Avoidable cost and standalone cost

ATCO is required to demonstrate the revenue to be recovered by each tariff class lies on or between⁹:

- an upper bound representing a standalone cost of providing the reference service to customers who belong to that tariff class; and
- a lower bound representing the avoidable cost of not providing the reference service to those customers.

Standalone cost

The standalone cost for a tariff class is the cost of supplying only the tariff class considered while all other tariff classes are not supplied. The rationale for setting standalone cost as an upper limit for the expected revenue to be recovered is that standalone cost represents the cost for a new service provider to provide an alternative service for a single tariff class. If revenue received from a tariff class was greater than the standalone cost, it would create the possibility of inefficient bypass of the existing infrastructure. Standalone costs include both sunk costs as well as forward-looking costs.

Avoidable cost

The avoidable cost for a tariff class is the reduction in network costs that would occur if the tariff class were no longer supplied. It is assumed all other tariff classes remain supplied. The rationale for setting avoidable cost as the lower bound for expected revenue from a tariff class is that if customers were to be charged below the avoidable cost it would be financially beneficial to stop supplying the tariff class being considered.

Avoidable cost is a forward looking concept. That is, costs that will continue to be incurred due to past network decisions cannot be avoided. For example, the costs of depreciation, funding and maintenance of pipelines already in the ground cannot be avoided, at least in the short term. Similarly, where facilities are shared among tariff classes, it is likely that avoided costs are nil or minimal as the facilities are retained, even if one tariff class is not supplied.

6.1 Method

ATCO has determined the standalone and avoidable costs using methods that allocate elements of the building block costs to each tariff class:

- Where costs are directly attributable to a tariff class they are allocated to that tariff class.
- Where costs are not able to be directly attributed to a tariff class, operations and asset managers have used their expertise and network modelling techniques to estimate the proportion of total costs required to serve an individual tariff class.

6.1.1 Operating costs

Using 2017 costs as a base, operating costs have been allocated to tariff classes on a standalone and avoidable cost basis using a three step process:

1. Direct costs such as unaccounted for gas and meter reading are directly allocated to tariff classes.

⁹ Per National Gas Rule 94(3)



- 2. Maintenance activities are evaluated as to the proportion of the activities' costs that would be required for each tariff class.
- 3. The balance of costs by cost centre in each tariff class are evaluated as to the proportion of the cost centre's costs that would be required for each tariff class.

Using 2017 actual costs as a base, the proportion of total operating costs required for each tariff class on a standalone or avoidable cost basis has been determined. That proportion is then applied to the operating costs over AA5 to arrive at the standalone or avoidable operating cost.

6.1.2 Return on and of assets

Depreciation and return on asset costs relating to the forecast asset base at 1 January 2020 and AA5 capital expenditure, are evaluated separately as described below.

Forecast asset base at 1 January 2020

Network modelling is used to allocate pipeline and telemetry assets to tariff classes on a standalone basis. Meters and service pipes are allocated based on tariff class delivery points. Other asset classes are allocated based on the experience of asset and operations managers.

Depreciation and return on asset costs relating to the opening asset base at 1 January 2020 are not regarded as avoidable, being sunk costs, and so no allocation is made on an avoidable cost basis.

AA5 capital expenditure

Capital expenditure is allocated to tariff classes depending on which tariff classes would require that capital expenditure.

Having allocated the assets, the value of depreciation and return on assets over AA5 can be calculated applicable to each tariff class.

6.1.3 Other building block components

For 'standalone costs', the remaining elements of cost of service (working capital allowance, tax and imputation credits) are allocated on the same basis as used for total cost allocation. In the case of avoidable costs, the remaining elements of cost of service are allocated based on the impact of avoidable capital expenditure.

6.2 Estimates of avoidable and standalone cost for AA5

The elements of cost of service on a standalone or avoidable basis are added together and the net present value over AA5 calculated for comparison to the tariff class expected revenue net present value.

The expected revenue lies between standalone and avoidable costs, as shown in Table 6.1.

TARIFF CLASS	STAND-ALONE COSTS	EXPECTED REVENUE	AVOIDABLE COSTS
A1	183.5	35.3	7.1
A2	277.3	21.4	2.8

Table 6.1: Standalone and avoidable cost (\$ net present value)

ATCO

AVOIDABLE COST AND STANDALONE COST

TARIFF CLASS	STAND-ALONE COSTS	EXPECTED REVENUE	AVOIDABLE COSTS
B1	433.9	51.7	9.5
B2	442.0	52.7	8.1
В3	781.9	683.6	120.8
Ancillary services	13.3	13.0	11.7
EXPECTED TARIFF REVENUE		857.7	



7. Setting AA5 tariffs – haulage tariffs

Having estimated LRMC as well as total cost, avoidable and standalone cost by tariff class ATCO has applied the tariff setting objectives outlined in section 2 and set tariff classes as stated in section 3 to determine the following tariff outcome for AA5:

- For the A1, A2, B1 and B2 tariff classes a 22.4% step change in prices on 1 January 2020 followed by annual 2.3% real increases during the AA5 period.
- For the B3 tariff class ATCO has:
 - Retained the fixed charge at 2019 levels in real dollars throughout AA5
 - Increased the marginal usage charge in 2020 to \$6.22 (\$ real as at 31 December 2019) taking into consideration long run marginal cost
 - Applied an annual 2.3% real increase to the usage charges
 - Retained no charge for the first 1.825 GJ to promote utilisation of the network and stability in distribution charges

Table 7.1 summarises the proposed price movements for each tariff class over AA5.

Table 7.1: Summary of pricing outcomes

TARIFF CLASS	REAL PRICE CHANGE ON 1 JANUARY 2020		SUBSEQUENT ANNUAL REAL PRICE CHANGES (1 JAN 2021 – 1 JAN 2024)	
A1, A2, B1, and B2	22.4%		2.3%	
B3	Fixed: 0%	Marginal usage charge increased to \$6.22	Fixed: 0%	Variable: 2.3%

7.1 Background & Context

The AA4 period commenced on 1 July 2014, however due to the time required to complete the AA4 regulatory process prices remained at 2013/14 levels¹⁰ until 1 October 2015. This resulted in the AA4 price path where in 2019 the cost of service is below expected tariff revenue (see Figure 7.1). Also, over AA4 the standing charge for the B3 tariff class was increased to ensure recovery of fixed costs while B3 tariff class usage charges declined to a point where, based on analysis of actual network growth projects, the marginal usage tariff in 2019 is expected to be below long run marginal cost. Together this potentially results in price signals, if maintained, that will cause inefficient investment in the network and inefficient utilisation of the network.

The AA4 price path is a material driver of the increase required in reference tariffs on 1 January 2020. Figure 7.1 shows that almost two thirds (19%) of the price increase on 1 January 2020 is necessary just to return prices back to the average AA4 cost of service and the remainder of the price increase (10%) is required to recover the 2020 cost of service.

¹⁰ After adjustment for removal of carbon tax on 1 July 2014





Figure 7.1: Tariff revenue requirements to meet the cost to serve

Primary considerations in setting the tariff structures and tariffs for AA5, were to ensure economically efficient price signals, to acknowledge the competing preferences of customers, stability, compared to the preference of retailers to smooth the transition in tariffs from AA4 to AA5 and legislative compliance. In setting the AA5 tariff charging parameters ATCO has taken account of:

- the impact on small use customers and retailers
- re-establishing the alignment of cost of service and expected tariff revenue so that price signals promoting efficient investment in and utilisation of the network are re-created
- the preference of smaller customers to smooth tariffs within AA5 and across AA periods while acknowledging the preference of retailers to smooth the transition in tariffs from AA4 to AA5
- long run marginal cost when setting marginal usage charges required by NGR 94(4)(a)

7.2 Tariff structure

How these matters have been considered in relation to tariff structures is discussed in more detail below.

Usage charges: Usage charges reflect costs placed on the network by additional usage. That is, the marginal usage charge has been set taking account of long run marginal cost so that it reflects the cost of providing additional capacity. The first band of usage charges¹¹ is set for an initial level of consumption to assist with recovery of cost not recovered by the marginal usage charge. Usage charges have had to be increased compared to AA4 to align cost of service and expected tariff revenue to meet the national gas objective of efficient use and investment in the network. Using a two band tariff structure helps reduce the barrier of a higher fixed charge to customers connecting and thus promotes the sharing of fixed costs across a larger number of customers to the benefit of all customers. Using a 2 band tariff structure is also generally consistent with the band structure of retailers creating the potential for better transmission of distribution charge price signals to end



users. There is regulatory precedent for multiple usage bands in gas distribution recognising the positive incentive effects of multiple usage bands on network utilisation to the benefit of all customers.

- **Fixed charges**: The fixed charge is set to recover the cost of service *not recovered via the usage charges*. The use of fixed charges to recover this 'residual revenue' minimises the distortion to price signals and is supported by regulatory precedent.
- Efficient cost recovery: After setting the fixed charge and other than marginal usage bands as well as the marginal usage charge it was confirmed that the resultant expected tariff revenue by tariff class approximated the estimated costs of service by tariff class so that price signals promoting efficient investment in and utilisation of the network were created
- Comparison with historical tariffs: Comparisons were made against historical tariffs and distribution charges at average levels of consumption to ensure movements in the average distribution charge were within tolerable limits particularly for small use customers. Distribution charges at average consumption were found to be either lower than or only slightly higher than inflation increases over the AA4 period.
- Customer and retailer pricing preferences: The initial tariff increase in 2020 has been reduced by ATCO introducing a 2.3% real increase in tariffs for the years 2021 to 2024. The 2.3% annual increase was the highest annual increase possible that would keep the difference in cost of service and expected tariff revenue within 3% of cost of service. Keeping the differential in 2024 within 3% reduces the potential for price shock in the transition from AA5 to AA6¹².

7.3 Tariff charging parameters

The following sections describe the rationale for individual charging parameters for each tariff class.

7.3.1 B3 reference tariff

ATCO is proposing to apply a step change on 1 January 2020 to the usage charging parameters for the B3 reference tariffs followed by annual price increases. The standing charge for the B3 reference tariff will remain at 2019 levels in real terms over AA5.

B3 usage charges

The B3 tariff includes three usage charge bands based on the level of consumption. The bands are defined as follows:

Table 7.2: B3 usage bands

BAND	VOLUME	CHARGING BASIS
1	First 1.825 GJ	\$/GJ
2	Volume >1.825 < 9.855 GJ	\$/GJ
3	Volume > 9.855 GJ	\$/GJ

¹² In its July 2017 draft decision Australian Gas Networks Victoria and Albury gas access arrangement 2018 to 2022 the AER at page 28 noted its target range of 3% for the divergence of expected tariff revenue and forecast cost of service in the final year of the access arrangement period. The aim of the target range is to minimise price variance between access arrangement periods.



The first step in setting usage charges was to set the marginal usage charge at a value that considered marginal cost. Marginal cost estimation, outlined in Section 6 above, showed a wide range of values based on theoretical perturbation method calculation as well as the results from actual and forecast growth projects. Based on that analysis a value of approximately \$6 is reasonable. A value of \$6 is also consistent with historical levels of the marginal usage charge. Therefore, the marginal usage charge was set at \$6.22 per GJ. Although this is an approximate \$4 increase on the forecast value of the B3 tariff class marginal usage charge forecast for 2019, it must be borne in mind that usage charges have decreased during AA4 to below long run marginal cost due to a combination of the overall declining price path in AA4 while the B3 standing charge was increasing leading to disproportionate decreases in the B3 usage charges.

The first 1.825 GJ of consumption has been maintained at no charge over AA5. No charge on the first 1.825 GJ was introduced during AA4 to offset the impact on small use customers of an increasing standing charge. Although those standing charges have now reached a stable level it is proposed the no charge first 1.825 GJ is maintained. The reasons are:

- It provides an incentive to low volume users to stay connected or connect to the network which helps spread the fixed costs of the network across many customers to the benefit of all customers.
- Maintains consistency of pricing between AA4 and AA5 to allow an easier comparison of distribution charges across access arrangement periods contributing to a better understanding of price signals
- Maintaining stability in tariff structures is valued by retailers and end users which promotes understanding of the distribution charges leading to better price signals and avoids potential system changes by retailers and ATCO minimising transaction costs (NGR 94(4)(b) (i) and (ii))

Given the other charges set, including the standing charge (see below), the charge for the usage band greater than 1.825 GJ up to 9.855GJ was set to recover the "residual" cost of service for the B3 tariff class. The value proposed for 1 January 2020 is \$8.38 in real 31 December 2019 dollars.

After setting the tariffs for 1 January 2020 usage charges were increased at the rate of 2.3% real so that in NPV terms the cost of service approximated expected tariff revenue.

B3 Tariff – Standing (fixed) charge

The B3 fixed charge has been held constant at the forecast 31 December 2019 real dollar value of \$116.97. Over AA4 the B3 tariff class standing charge increased from \$77.93 to \$116.97 (\$ real as at 31 December 2019) to better approximate the fixed costs of a delivery point. The charge has now reached a level where fixed costs of an additional delivery point are recovered and so has been held constant over AA5 in real dollar terms.



Holding the fixed charge constant in real dollar terms reduces the barrier to new connections relative to what it would be with an increased standing charge. Lowering the barrier promotes new connections so that fixed costs can be spread over a larger customer base, provided as shown above the marginal delivery point cost is recovered by the standing charge, to the benefit of all customers. Holding the delivery point constant in real dollar terms in concert with the proposed usage charges ensures the economically efficient recovery of all B3 tariff class costs of service over AA5.

Figure 7.2: B3 Fixed Charges vs Cost of Delivery



7.3.2 A1-B2 reference tariff

ATCO is proposing to apply a step change on 1 January 2020 to all the charging parameters for the A1, A2, B1 and B2 reference tariffs followed by annual price increases.

As noted at section 7.1 tariffs have declined over AA4 to the point where tariff revenue is below cost of service. As required by NGR 92(2) and 94(5) tariffs must be set to equalise in NPV terms the cost of reference services and the expected revenue from reference services. To meet this requirement:

- A 22.4% real increase in tariffs on 1 January 2020, plus
- A real 2.3% increase per year from 2021 to 2024 is required.

Acknowledging the concerns of retailers regarding the magnitude of a one off price increase on 1 January 2020 ATCO has ameliorated the initial price increase by proposing an annual increase of 2.3% real for the years 2021 to 2024. The 2.3% annual increase was calculated as the maximum possible annual increase such that the difference between cost of service and expected tariff revenue in 2024 was 3% or lower. The reason to minimise this difference is to minimise the potential price movement from AA5 to AA6. Minimising price variability from year to year and across access arrangement period is important to customers as they value price stability. Providing pricing stability allows customers to commit to connection to the network with more certainty and promotes utilisation of the network to the benefit of all customers

Given 2019 expected tariff revenue is below cost of service and the annual tariff increases of 2.3% from 2021 to 2024, an initial price increase of 22.4% is required, to equate in NPV terms over AA5 the cost of service and expected tariff revenue as required by NGR 92(2) and 94(5).

For stability the relativities across tariff charges have been maintained with equal price increases across tariff classes A1, A2, B1 and B2 as well as the charging parameters within those tariff classes. The marginal usage charges have been confirmed to be within the ranges suggested by marginal cost analysis. Checks were also made against historical tariffs to confirm that tariffs were in line with historical averages. The proposed tariffs should take account of the impact on small use customers and retailers because they



will result in annual distribution charges at average usage that are in line with AA4 averages in real dollar terms.

7.4 AA5 Price Path summary

The graph below shows the percentage increase in the distribution charge at average consumption over AA4 compared to the distribution charge at average consumption over AA5 by tariff class. In nominal terms the increases range from 4% to 11% which compares to inflation over the AA4 period of 10%.



Figure 7.3: Nominal price increases

Although the same percentage tariff increases have been applied to all tariffs the percentage increase in the distribution charge at average consumption will vary due to the movement in average consumption from AA4 to AA5 and the relative effects of different tariffs at average consumption for different tariff classes.

7.5 Indicative prices

This section details indicative prices for each tariff class over AA5. The actual prices charged in each year are likely to differ from these indicative prices due to the annual operation of the tariff variation mechanism, which allows prices to change due to inflation, the annual update for cost of debt and cost pass-through events. The tariff variation mechanism is detailed in ATCO's Access Arrangement.

Customers relying on this information to make business or investment decisions should consider the potential volatility between an indicative price and final outturn price and the risks inherent with relying on them.

Table 7.3 shows the indicative AA5 prices for each tariff class, subject to any annual tariff variation.



CHARGING PARAMETER	UNITS	2020	2021	2022	2023	2024
REFERENCE TARIFF A1						
Standing charge	\$/year	39,712.90	40,626.30	41,560.70	42,516.60	43,494.48
Demand charge		-	-	-	-	-
First 10 km	\$/GJ km	167.42	171.27	175.21	179.24	183.36
Distance > 10 km	\$/GJ km	88.13	90.16	92.23	94.35	96.52
Usage charge		-	-	-	-	-
First 10 km	\$/GJ km	0.03542	0.03623	0.03706	0.03791	0.03878
Distance > 10 km	\$/GJ km	0.01784	0.01825	0.01867	0.01910	0.01954
REFERENCE TARIFF A2						
Standing charge	\$/Year	21,977.90	22,483.39	23,000.51	23,529.52	24,070.70
First 10 TJ	\$/GJ	2.13	2.18	2.23	2.28	2.33
Volume > 10 TJ	\$/GJ	1.14	1.17	1.20	1.23	1.26
REFERENCE TARIFF B1						
Standing charge	\$/Year	1,114.12	1,139.74	1,165.95	1,192.77	1,220.20
First 5 TJ	\$/GJ	4.22	4.32	4.42	4.52	4.62
Volume > 5 TJ	\$/GJ	3.63	3.71	3.80	3.89	3.98
REFERENCE TARIFF B2						
Standing charge	\$/Year	277.70	284.09	290.62	297.30	304.14
First 100 GJ	\$/GJ	7.08	7.24	7.41	7.58	7.75
Volume > 100 GJ	\$/GJ	4.21	4.31	4.41	4.51	4.61
REFERENCE TARIFF B3						
Standing charge	\$/Year	116.97	116.97	116.97	116.97	116.97
First 1.825 GJ	\$/GJ	-	-	-	-	-
Volume > 1.825, < 9.855 GJ	\$/GJ	8.38	8.57	8.77	8.97	9.18
Volume > 9.855 GJ	\$/GJ	6.22	6.36	6.51	6.66	6.81

Table 7.3: Indicative AA5 tariffs (\$ real as at 31 December 2019)

The most significant elements of the AA5 prices are:

- B3 standing charge fixed in real terms at 2019 level.
- B3 marginal, band 3, usage charge increased from \$2.11 estimated charge in 2019 to \$6.22 per GJ in 2020.
- B3 band 2 usage charge increased from \$4.88 in 2019 to \$8.38 per GJ in 2020 to ensure recovery of B3 tariff class cost of service given that the standing charge is not increasing.
- A 22.4 percent real increase in tariffs for A1, A2, B1 and B2 tariff class tariffs on 1 January 2020.

7.6 Tariff Revenue

Given the above indicative tariffs, ATCO has confirmed that the expected tariff revenue:

- 1. in net present value terms equates to Total Revenue;
- 2. for each tariff class approximates the forecast Total Revenue for the tariff class; and
- 3. for each tariff class lies between the lower bound avoidable cost and the upper bound standalone cost over the AA5 period.

The results of these tests are shown in Table 7.4.



Table 7.4: NGR 93 and 94(3) test results (\$M present value)

TARIFF CLASS	TOTAL COSTS ALLOCATED	STAND ALONE COSTS	EXPECTED REVENUE	AVOIDABLE COSTS
A1	32.4	183.5	35.3	7.0
A2	22.1	277.3	21.4	2.8
B1	54.9	433.9	51.7	9.5
B2	48.7	442.0	52.7	8.1
В3	686.3	781.9	683.6	120.8
Ancillary services	13.3	13.3	13.0	11.7
TOTAL	857.7		857.7	



8. Setting AA5 tariffs – reference ancillary services

The five reference ancillary services provided in AA4 have been retained in AA5. An additional reference service, special meter read, has been added for AA5. The service has been added due to increasing demand related to the entry of new retailers to the Western Australian market and the consequent requirement for meter reads when customers change retailers.

Tariffs for ancillary services are based on the cost to provide those services to promote efficient use of the services.

Tariffs for ancillary services include:

- The direct cost of operations staff and contractors providing the service.
- The direct administration cost of providing the service.
- An allocation of corporate costs such as accounting services and IT services.

Table 8.1 shows the reference ancillary services tariffs.

Table 8.1: Reference ancillary services tariffs (\$ real 2019)

TARIFF CLASS	2020	2021	2022	2023	2024
Apply Meter Lock	49.14	49.14	49.14	49.14	49.14
Remove Meter Lock	26.73	26.73	26.73	26.73	26.73
Deregistration Request	122.54	122.54	122.54	122.54	122.54
Disconnect Service	97.92	97.92	97.92	97.92	97.92
Reconnect Service	138.62	138.62	138.62	138.62	138.62
Special meter read	12.82	12.82	12.82	12.82	12.82

Retailers have raised the matter of charges for cancelled ancillary services. During AA4 cancelled services were charged at the same rate as completed services for simplicity given the number of cancelled services at the time of the AA4 review were not significant. Increased competition in the retail market for gas has led to a greater number of completed and cancelled ancillary services. Approximately 75% of revenue from cancelled services related to cancelled special meter reads. Approximately 50% of special meter reads were cancelled more than 2 days before the planned read date. If that trend were to continue and special meter reads cancelled more than 2 days before the planned activity date had no charge the charge to retailers would reduce by an estimated \$40,000 per year.

ATCO is currently investigating the effectiveness of implementing changes to its billing system to allow it to monitor the timing of cancelled service orders so that service orders that incur no cost do not incur a charge. It is estimated that changes to the proprietary software billing system, will incur costs in the order of \$50,000. Additional IT capital costs to implement the charging of a reduced fee are not currently in the IT capex forecast and would have to be included in the forecast capex program for AA5 if this functionality is required.



9. Summary

ATCO's primary considerations when setting tariff structures and tariffs, were to ensure economically efficient price signals, to acknowledge the competing preferences of customers, *stability*, compared to the preference of retailers to smooth the transition in tariffs from AA4 to AA5 and legislative compliance.

AA4 tariff structures supported by regulatory precedent have been retained in AA5 to support market stability valued by customers and to minimise transaction costs. ATCO has set tariffs for AA5 balancing several factors:

- The desirability of price stability.
- Ensuring tariffs reflect the cost to provide services and thus provide appropriate price signals to the market.
- Balancing the competing priorities of retailers and customers by accommodating a moderation of the price increase that would be required in 2020 compared to ATCO's 2020-24 Draft Plan.
- Regulatory compliance.