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ATCO Gas Australia Proposed Access Arrangement for the Mid-West and South-West Gas Distribution Systems

Review of Technical Aspects of the Proposed Access Arrangement

PUBLIC [REDACTED] version

Report to

Economic Regulation Authority of Western Australia

Energy Market Consulting associates

June 2014

This report has been prepared to assist the Economic Regulation Authority (ERA) with its assessment of ATCO Gas Australia's Access Arrangement for the Mid-West and South-West Gas Distribution Systems, for the period from 1st July 2014 to 31st December 2019 (AA4), which it is required to conducted in accordance with the National Gas Law (NGL) and the National Gas Rules (NGR).

This report relies on information provided to EMCa by the ERA and by ATCO Gas Australia up until 20th June 2014. EMCa disclaims liability for any errors or omissions, for the validity of information provided to EMCa by other parties, for the use of any information in this report by any party other than the ERA and for the use of this report for any purpose other than the intended purpose.

In particular, this report is not intended to be used to support business cases or business investment decisions nor is this report intended to be read as an interpretation of the application of the NGR or other legal instruments. EMCa's opinions in this report include considerations of materiality to the requirements of the ERA and opinions stated or inferred in this report should be read in relation to this over-arching purpose.

Some numbers in this report may differ from those shown in ATCO's Access Arrangement Information (AAI) or other documents due to rounding.

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About EMCa

Energy Market Consulting associates (EMCa) is a niche firm, established in 2002 and specialising in the policy, strategy, implementation and operation of energy markets and related access and regulatory arrangements. Its Director, Paul Sell, is an energy economist and previous Partner in Ernst & Young and Vice President of Cap Gemini Ernst & Young (now Capgemini). Paul has advised on the establishment and operation of energy markets and on matters such as electricity network open access, pricing and regulation and forecasts for over 30 years.

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1 Introduction

1.1 Purpose of this report

1. The Economic Regulation Authority (ERA), in accordance with its responsibilities under the National Gas Law (NGL) and the National Gas Rules (NGR), is currently reviewing ATCO Gas Australia's (ATCO) revised access arrangement (AA) proposal for the Mid-West and South-West distribution systems (the network) for the period 1 July 2014 – 31 December 2019 (AA4).

2. To assist with its assessment of ATCO's revised AA proposal, the ERA has engaged Energy Market Consulting associates (EMCa) to review and provide technical advice on the following aspects of the proposal:
   - the capital expenditure (capex) incurred (or to be incurred) by ATCO in the current AA period, which extends from 1 January 2010 to 30 June 2014 (AA3);
   - ATCO's proposed capex for AA4;
   - ATCO's proposed operating expenditure (opex) for AA4; and
   - the governance arrangements, forecast methodology and cost estimation processes employed by ATCO when developing its expenditure proposals.

3. The results of our technical assessment are set out in this report.

1.2 Regulatory framework

4. The provisions the ERA is required to have regard to when assessing ATCO's capex and opex proposals are set out in Part 9 of the NGR. In short, these rules require the ERA to accept ATCO's proposal if:
   - the capex complies with the conforming capex criteria in rule 79 of the NGR and any forecasts or estimates underpinning the capex proposal are arrived at on a reasonable basis and represent the best forecast or estimate possible in the circumstances (r. 74(2)); and

- the opex complies with the criteria set out in rule 91(1) of the NGR and any forecasts or estimates underpinning the opex proposal satisfy rule 74(2).

5. The ERA's discretion under rules 79 and 91(1) is limited, which means it may not withhold its approval, if it is satisfied the opex and capex proposals comply with the relevant rules and/or provisions in the NGL.

1.3 Scope of the review

6. The overarching objective of this review is to determine whether the actual capex incurred by ATCO in AA3 and its proposed capex for AA4 complies with the criteria set out in rule 79 of the NGR and its proposed opex for AA4 complies with rule 91(1).

7. In carrying out this review, the ERA has asked us to evaluate a range of matters that can affect capex and opex including, amongst others:

- ATCO's substantiation and justification for forecast increases in opex and capex;
- ATCO's project governance arrangements (e.g. procurement practices and delivery models), and the methods or models used by ATCO to estimate its expenditure requirements and to prioritise areas of expenditure;
- the methodology ATCO has used to develop capacity and utilisation forecasts as part of developing its capex and opex forecasts;
- the extent to which ATCO has factored efficiencies into the opex and capex forecasts;
- ATCO's ability to deliver its proposed capex programme;
- the asset lives assumed by ATCO when calculating depreciation; and
- the Key Performance Indicators (KPIs) used by ATCO to support its capex and opex forecasts including comparison with industry standards and any proposed changes to ATCO's operational and service level performance.

1.4 Data sources

8. In the course of carrying out this review, we have examined a large number of documents. This includes the AA Information (AAI) and other documents that ATCO provided to the ERA in support of its proposed AA, and a number of other significant documents that were provided by ATCO during on-site meetings (held on 9-10 and 15 April 2014), or in response to our information requests.

9. We wish to acknowledge the assistance that ATCO has provided during this review.

1.5 Structure of this report

10. The remainder of this report is structured as follows:

- Section 2 provides an overview of our key findings and recommendations;
- Section 3 describes the frameworks we have used to assess ATCO's proposed capex and opex and our general approach to undertaking this review;

- Section 4 outlines the results of our review of the governance arrangements, forecast methodology and cost estimation processes employed by ATCO when developing its expenditure proposals and the KPIs used by ATCO to support its proposal;
- Section 5 sets out the results of our examination of the capex incurred (or to be incurred) by ATCO in the AA3 period;
- Section 6 sets out the results of our assessment of ATCO's proposed capex for the AA4 period and the asset lives that have been assumed in ATCO's depreciation calculations; and
- Section 7 sets out the results of our review of ATCO's proposed opex for the AA4 period.

11. Further supporting information is provided in appendices.

1.6 Our qualifications

12. To support our management-level approach, the review team is comprised of people with senior management, and senior advisory experience in both gas and electricity network businesses. The credentials of the authors of this report are summarised in Appendix C.

2 Overview of findings and recommended adjustments

2.1 Introduction

13. In this section we provide an executive summary-style overview of our findings. Our specific findings, the supporting information for those findings and our recommended adjustments the capex and opex that ATCO has proposed are contained in sections 3 to 7. This section does not contain all findings or all arguments relating to those findings. It is for information purposes only and does not replace or modify the specific findings described in the remainder of this report.

2.2 Governance, forecasting framework and performance

14. Whilst it would appear that ATCO has an adequate governance framework insofar as this relates to actual expenditure, we consider that that there are some material deficiencies in its forecasting framework, including the governance of its forecasting process and the way in which performance is taken into account in justifying expenditure requirements. Our principle concerns are that:

- ATCO has not justified the Safety Case thresholds that it has applied, in particular, for supply security levels. It has proposed significant capital expenditure on the basis of a supply security threshold that is low by comparison with other gas utilities and which has not been justified by proper application of Australian Standards.
- ATCO has developed its forecasts using a bottom-up build process by incremental aggregation of detailed activity forecasts that have largely been determined by subjective assessments for which the assumptions cannot therefore be independently verified. We consider that the aggregate forecasts derived from this process have not been subject to sufficient top-down challenge and that the incremental result of conservatism has led it to over-forecast its requirements.

- In some cases, we have found that ATCO's supporting analysis, when properly considered, does not support the justifications that ATCO has claimed.
- ATCO has claimed that the significant increases in expenditure that it has proposed, are required to address existing performance issues. However, with few exceptions ATCO has been unable to provide evidence of those issues or to demonstrate the improvements in performance that would result from the proposed expenditure.
- ATCO's business case process includes, among other things, a requirement to assess the benefits from proposed expenditure. We have found that with a few exceptions, ATCO does not quantify tangible benefits. Further, we are of the view that ATCO has provided insufficient evidence that the tangible benefits from the significant investment in AA3 or of the even higher investment proposed in AA4 have been identified and taken into account in deriving the forecast expenditure.

15. We consider that ATCO's demand forecasts would be reasonable if ATCO was to continue to expand its network as it has proposed. However, we consider that ATCO has not justified the economic basis for this expansion of the network, as we point out in section 6 and we have adjusted the demand forecast accordingly.

16. We also note that ATCO's proposed capex and opex in this Access Arrangement is higher than in its recent Business Plan budgets, and that for the two years for which information was provided, ATCO underspent even those lower budget amounts.

2.3 AA3 conforming capex

17. ATCO reports that it has spent $270.5m on capex in AA3.[1] This is 3.5% more than the ERA allowed, although within this aggregate ATCO spent $53.7m less on Growth capex, due to a drop-off in demand for new connections and a decrease in usage per connection, and $29.3m more on "Sustaining capex" which ATCO explains as resulting from implementation of the Safety Case that was developed by the previous owners.

18. We consider that ATCO's deferral of its originally-proposed Growth expenditure and the actions it took and which led it to incur increased Sustain expenditure, were both prudent and justified. We recommend that the ERA allows $261.9m (97.5% of ATCO's expenditure) as conforming capex, and disallows $8.7m. The expenditure that we propose to disallow comprises the Blue Flame kitchen at Jandakot ($0.8m), the Jandakot sewerage extension ($0.7m) which appears to have been double-counted, and the $7.2m cost over-run that ATCO incurred on three IT projects.

2.4 Proposed AA4 capex

19. ATCO is proposing to spend $605.7m[2] on capex in AA4. Over a 5.5 year period, this equates to $110.1m p.a., which is 90% *higher* than the AA3 average annual allowance approved by the ERA in 2011. Most of this proposed increase can be attributed to the three-fold increase in proposed expenditure on Sustaining capex and the 37% increase in proposed Growth capex.

1 ATCO, AAI, March 2014, p118.

2 ATCO, AAI, March 2014, p160.

20. We have significant concerns with the expenditure that ATCO seeks to justify by the need to 'comply with the requirements of the Safety Case'.[3] We find that ATCO has adopted a low security of supply threshold that, whilst indirectly related to safety, is inadequately justified. It is the application of this low security of supply threshold that drives the very large increase in Sustain capex that ATCO proposes. We propose disallowing the majority of this "performance" component of Sustain expenditure. On the other hand we consider the remaining proposed Sustain expenditure, which largely involves replacing old, leak-prone end-of life assets to be directly safety-related and is justified. In aggregate we propose that ERA disallows $97.4m of the $311.3m Sustain capex that ATCO has proposed.

21. We do not accept ATCO's justification for "greenfields" growth developments or for proposed growth-driven spur lines. We consider that (a) ATCO's aggregate AA4 growth analysis is deficient and a more reasonable interpretation is that the NPV of the ***aggregate*** growth expenditure that ATCO has proposed is negative, and (b) we consider that a more granular analysis is required to adequately justify these large components of the proposed growth expenditure. We consider that "brownfields" new connections and associated capacity increase works are justified. In aggregate we consider that $143.4m of the proposed $228.5m of growth capex, has not been adequately justified and should be disallowed at this stage.

22. We consider that some IT projects are not adequately justified or, if they are, that the proposed level of expenditures is not prudent or efficient. We recommend that $4.8m of the $27.4m that ATCO has proposed, is disallowed.

23. We consider that all but $2.2m of ATCO's proposed $38.4m AA4 expenditure on structures and equipment is justified[4]. We also consider that the reductions in depreciation asset lives for mains is justified, and will bring ATCO's depreciation lives into line with those used other regulated gas networks.

24. In aggregate, we consider that:

- $357.9m of AA4 capex (59% of ATCO's proposal) can be considered conforming capex for the purposes of rule 78, and
- $247.8m of AA4 capex (41% of ATCO's proposal) has not been sufficiently justified and so should not be accepted for the purpose of the capex allowance for revenue determination purposes.

2.5 Proposed AA4 opex

25. ATCO is proposing to spend $453.8m on opex in AA4.[5] Over a 5.5 year period this equates to an average opex allowance of $82.5m p.a., which is 17% *higher* than the allowance approved by the ERA for AA3 and 30.5% *higher* than the amount actually spent by ATCO in AA3, on an annualised basis. Most of the proposed increase can be attributed to a proposed increase in corporate support costs, business development (BD) and marketing, and IT opex.

3 ATCO, AAI, March 2014, p160

4 ATCO, AAI, March 2014, p195

5 ATCO, AAI, March 2014, p59, noting that this included $3.8m for Ancillary services

26. We consider that $170.4 of the $183.1m of network opex that ATCO proposes is justified, leaving $12.7m that has not been adequately justified. The majority of ATCO's proposed increase in network opex, comprising $25m, arises from incremental recurring opex activities. We consider that ATCO's forecast methodology has led it to over-forecast its requirements through a process that aggregates subjective activity-based forecasts with insufficient top-down challenge. The allowed amount would still be higher on an annual basis than ATCO's AA3 network opex.

27. ATCO has proposed Corporate Support opex of $90.9m over the period. This is a 40% increase, amounting to $4.7m per year more than it spent in AA3. We consider that $21.2m of this is not justified. Our main concern is with an intercompany charge totalling $24.7m. As proposed by ATCO, this will increase from a level of $2m p.a. in 2011 to $5m p.a. over 2017 – 2019. This charge is presented as an allocation of corporate head-office costs from its parent company. However, ATCO has presented inadequate, specific evidence of services provided and which are accounted for within this charge, nor has it provided evidence of the prudency and efficiency of those head office costs, nor evidence of its relationship to the regulated business of ATCO Gas Australia vis a vis other businesses in the ATCO Group worldwide.

28. ATCO has also proposed an allowance for significant increases in Corporate Support headcount. Only anecdotal justification of the need for such increases has been provided, with no specific evidence of the current shortfall or future improvement that would result from such increase.

29. ATCO has proposed a significant increase in Business Development (BD) and Marketing opex to a level of $25.4m over the period. This compares with around $1.5m p.a. that ATCO has incurred over the last three years of AA3. We consider that ATCO's analysis that purports to justify this expenditure does not represent the best possible forecast in accordance with rule 74(2) as it includes a number of assumptions of benefits that are not supported by other evidence provided by ATCO, or benefits that appear to be unrelated or only weakly related to the proposed marketing expenditures. We recommend allowing continuation of ATCO's current levels of BD and Marketing opex of $1.8m p.a. or $9.7m over the period and disallowing the proposed increase.

30. ATCO has proposed $67m of IT opex. This is a significant increase from the AA3 expenditure of $35.6m, and significant amounts of the opex are to be paid by way of service charges to a related company, ATCO I-Tek. From our review of the components of proposed expenditure, we consider that $7.3m is not justified or, if it is justified, is not prudent or does not represent the best possible forecast.

31. ATCO has proposed $67.7m on UAFG. We consider that this is an over-estimate, based on ATCO's assessment of the starting point which is slightly higher than its most recent actual UAFG percentage. Much of ATCO's proposed capex is presenting as reducing UAFG. ATCO has shown only a modest reduction in AA4, but we would expect significant further reductions moving into AA5. We recommend disallowing $3.2m of the proposed AA4 expenditure.

32. In aggregate, we consider that:

- $383.2m of AA4 opex (84% of ATCO's proposal) can be considered conforming opex for the purposes of rule 91;
- $70.7m of AA4 opex (16% of ATCO's proposal) has not been sufficiently justified and so should not be accepted in the opex allowance for revenue determination purposes.

2.6 Aggregate implications

33. In aggregate, our findings lead to the following expenditure allowance implications:

- For AA3 conforming capex, we recommend allowing $261.9m, compared with ATCO's proposal to allow $270.5m. This implies a reduction adjustment of $8.7m.
- For AA4 conforming capex, we recommend allowing $357.9m compared with ATCO's proposed allowance of $605.7m. This implies a reduction adjustment of $247.8m.
- For AA4 opex, we recommend allowing $383.2m compared with ATCO's proposed allowance of $453.8m[6]. This implies a reduction adjustment of $70.7m.

[6] This figure includes $3.8m for ancillary services

3 Review framework

3.1 National Gas Law and National Gas Rules

34. As the owner (service provider) of a covered pipeline, ATCO is required to submit a full AA to the ERA and to obtain its approval for the price and non-price terms and conditions of access to the reference service(s) ATCO provides through the Mid-West and South-West distribution systems. The current AA expires on 30th June 2014.

35. When assessing the AA, the ERA is required to have regard to:

- the access arrangement provisions set out in Part 8 of the NGR;
- the price and revenue regulation provisions set out in Part 9 of the NGR; and
- the National Gas Objective (NGO) and the revenue and pricing principles (RPP) set out in sections 23-24 of the NGL.

36. Of particular relevance in this context are the provisions the ERA is required to consider when assessing the capex and opex elements of ATCO's revised AA proposal, which are set out in Part 9 of the NGR. An overview of these provisions is provided below.

3.1.1 Capex provisions

37. By virtue of the operation of rules 77(2)(b) and 78(b),[7] the ERA is required to carry out both:

- an ex post assessment of the capex incurred (or to be incurred) by ATCO in AA3 to determine whether it satisfies the conforming capex criteria in rule 79(1); and
- an ex ante assessment of the capex ATCO proposes to incur in AA4 to determine whether it is likely to satisfy the conforming capex criteria in rule 79(1).

38. Conforming capex is defined in rule 79(1) as capex that satisfies the following criteria:

- the capex 'must be such as would be incurred by a prudent service provider acting efficiently, in accordance with good industry practice, to achieve the lowest

[7] Rule 77(2) sets out how the opening value of the capital base at the commencement of a new AA period is to be calculated, while rule 78 sets out the value of the capital base during the AA period is to be calculated. In short, these two rules only allow conforming capex to be rolled into the value of the capital base.

sustainable cost of delivering pipeline services' (the 'prudent service provider test') (r. 79(1)(a)), and

- the capex must be justifiable on one of the following grounds (r. 79(1)(b)):
  - (a) the overall economic value of the expenditure is positive (the 'economic value test') (r. 79(2)(a));[8] or
  - (b) the present value (PV) of the expected incremental revenue exceeds the PV of the capex (the 'incremental revenue test') (r. 79(2)(b));[9] or
  - (c) the capex is necessary to:
    - (i) maintain and improve the safety of services (r. 79(2)(c)(i)); or
    - (ii) maintain the integrity of services (r. 79(2)(c)(ii)); or
    - (iii) comply with a regulatory obligation or requirement (r. 79(2)(c)(iii)); or
    - (iv) maintain the service provider's capacity to meet levels of demand for services existing at the time the capex is incurred (r. 79(2)(c)(iv)); or
  - (d) the capex is divisible into two parts, with one part referable to incremental services and justifiable under 79(2)(b) and the other part referable to a purpose under 79(2)(c) and justifiable on this basis (r. 79(2)(d)).

39. In accordance with rule 79(6), the ERA's discretion under rule 79 is limited. It cannot therefore withhold its approval of the capex incurred by ATCO in AA3 or the capex it proposes to incur in AA4, if it is satisfied the capex complies with:
    - the criteria set out above;
    - rule 74(2), which states that any forecast or estimate must be arrived at on a reasonable basis and represent the best forecast or estimate possible in the circumstances; and
    - any other relevant provision in the NGL and/or the NGR.

40. Finally, in determining whether capex is efficient and complies with other criteria prescribed in the rules, rule 71 states that the ERA may, without embarking on a detailed investigation, infer compliance from the operation of an incentive mechanism or any other basis the ERA considers appropriate. It must, however, consider, and give appropriate weight to, submissions and comments received.

[8] Rule 79(3) sets out the matters to be considered when applying the economic value test. In short, this rule only allows consideration to be given to the economic value directly accruing to the service provider, gas producers, users and end-users when determining whether the overall economic value of the capex is positive.

[9] Rule 79(4) sets out what is to be considered when applying the incremental revenue test. In short, this rule requires:
- a tariff to be assumed for the incremental services based on (or extrapolated from) prevailing reference tariffs, or an estimate of the reference tariffs that would have been set for comparable services if those had been reference services; and
- incremental revenue to be taken to be the gross revenue to be derived from the incremental services less incremental opex; and
- the discount rate is to be based on the rate of return implicit in the reference tariff.

Conforming capex vs non-conforming capex

41. Where the capex proposed by ATCO (in whole or in part) is found to:
    - satisfy rule 79, it will be considered conforming capex for the purposes of rules 77(2) and 78 and rolled into the capital base (i.e. it will be included in the derivation of the reference tariff(s)); or
    - not satisfy rule 79, it will be considered non-conforming capex and excluded from the capital base (i.e. it will be excluded from the reference tariff(s)).
42. In this context that while non-conforming capex cannot be recovered through the reference tariff(s), ATCO may still undertake this form of capex and either:
    - recover that expenditure, or a portion thereof, through a surcharge (r. 83) or a capital contribution (r. 82); or
    - include the investment in a notional fund, referred to as the 'speculative capital expenditure account', which may be rolled into the capital base at a later date if the capex is found to satisfy the conforming capex criteria (r. 84).

3.1.2 Opex provisions

43. The criteria the ERA is required to consider when assessing ATCO's proposed opex for AA4 are set out in rule 91 of the NGR, which is reproduced below:

> *Operating expenditure must be such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services.*

44. The ERA's discretion under this rule is limited (r. 91(2)), which means the ERA may not withhold its approval, if it is satisfied ATCO's proposal complies with:
    - the criteria set out in rule 91(1);
    - rule 74(2), which states that any forecast or estimate must be arrived at on a reasonable basis and represent the best forecast or estimate possible in the circumstances; and
    - any other relevant provisions in the NGL and/or the NGR.
45. In a similar manner to capex, rule 71 states that in determining whether opex is efficient and complies with other criteria prescribed in the rules, the ERA may, without embarking on a detailed investigation, infer compliance from the operation of an incentive mechanism or any other basis the ERA considers appropriate. It must, however, consider, and give appropriate weight to, submissions and comments received.

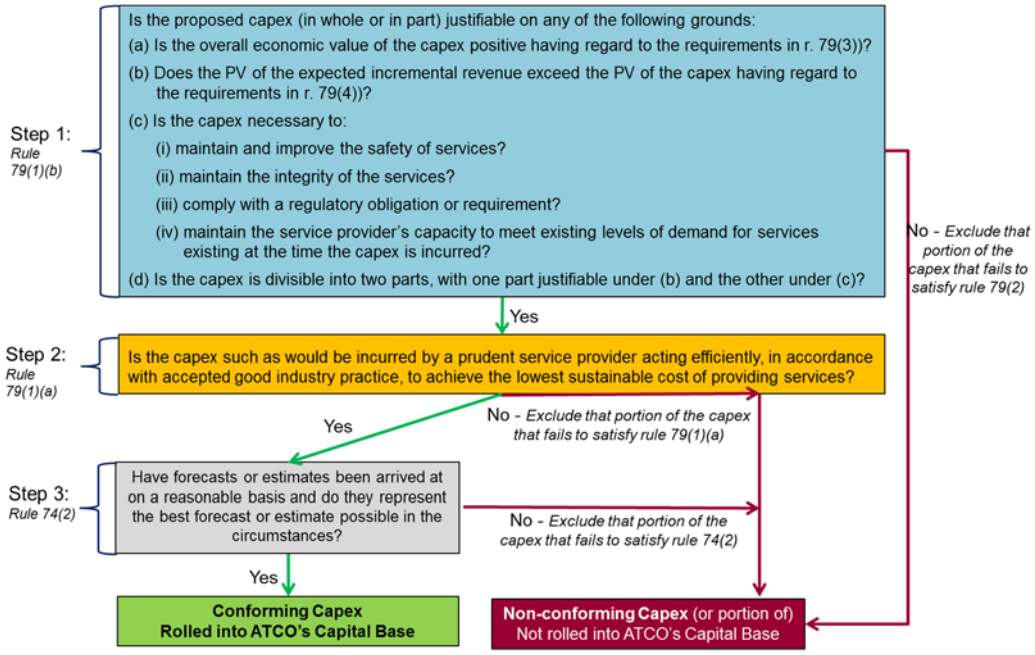
3.2 Assessment framework

46. An overview of the frameworks we have used to assess ATCO's capex and opex proposals is provided below.

3.2.1 Capex assessment framework

47. The framework we have used to assess whether the capex incurred (or to be incurred) by ATCO in AA3 and its proposed capex for AA4 can be considered conforming capex is depicted in Figure 1.

Figure 1: Capex assessment framework



48. As Figure 1 highlights, the framework consists of three steps, which are based on the specific requirements set out in rules 79 and 74(2). Where there is discretion as to which ground is relevant under rule 79(2), we have based our assessment on the grounds that ATCO has identified and have reviewed the evidence ATCO has provided in support of this ground. Further detail on the matters we have considered in each step is provided below.

Step 1: Is the expenditure justifiable on a ground set out in rule 79(2)?

49. The first matter we have considered when assessing ATCO's capex proposal is whether the expenditure can be justified on any of the grounds set out in rule 79(2).

50. For those capex projects (or a portion thereof) that ATCO has claimed the economic value is positive (r. 79(2)(a)) or that the expenditure satisfies the incremental revenue test (r. 79(2)(b)), we have had regard to a range of matters, including:

- rules 79(3) and 79(4), which set out how the economic value of a project and the present value of incremental revenue are to be calculated; and
- the analysis ATCO provided in support of its claim and its underlying assumptions.

51. For those capex projects (or a portion thereof) where ATCO has claimed the expenditure is necessary to maintain the safety or integrity of the services, comply with a regulatory obligation and/or maintain the capacity to meet existing levels of demand (r. 79(2)(c)), we have, amongst other things, had regard to:

- ATCO's Asset Management Plan (AMP);
- the WAGN Gas Distribution System Safety Case (Safety Case) and the formal safety assessments (FSA) carried out by ATCO;
- the Gas Standards (Gas Supply and System Safety) Regulations 2000;
- Australian Standards AS/NZS4645 (Gas Distribution Networks) and AS2885 (Pipelines – Gas and Liquid Petroleum Pipelines);
- other regulatory requirements that ATCO is required to comply with; and

- the analysis ATCO provided in support of its claim and its underlying assumptions.

52. As Figure 1 indicates, if the capex project in whole, or in part, is found to:
    - be justified under rule 79(2), we have then considered whether it satisfies the prudent service provider test in rule 79(1)(a) (Step 2); and
    - not be justified under rule 79(2), then we have deemed the expenditure to be non-conforming capex.

Step 2: Does the capex satisfy the prudent service provider test in rule 79(1)(a)?

53. The second matter we have considered is whether the proposed expenditure on capex projects that are justified under rule 79(2) is 'such as would be incurred by a prudent service provider acting efficiently, in accordance with good industry practice, to achieve the lowest sustainable cost of providing the service'.

54. In conducting this assessment, we have considered a range of matters (some of which are more or less relevant to particular projects or programmes of work), including:
    - The project governance framework employed by ATCO, the key elements of which are ATCO's: business planning process, AMP and Safety Case, investment governance arrangements, IT strategy and AMP, forecasting methodology, procurement policies, and risk management plan.
    - The project management and procurement processes employed by ATCO on particular projects and the nature of any outsourcing arrangements it has entered into (e.g. competitive tender or related party transaction).
    - ATCO's capability to deliver the proposed projects efficiently in the time proposed.
    - The extent to which ATCO has adequately assessed and accounted for any benefits from productivity or efficiency enhancing programmes (benefits realisation).
    - The actual costs incurred by ATCO in AA3 relative to what it has proposed for AA4.
    - ATCO's compliance with Australian standards: AS/NZS4645 and AS2885.
    - Benchmarking of approaches and/or costs against other gas pipelines and/or regulated businesses.

55. As Figure 1 indicates, where the expenditure in whole, or in part, is found to:
    - satisfy the prudent service provider test, we have considered whether the proposed expenditure satisfies rule 74(2) (Step 3); and
    - not satisfy the prudent service provider test, then we have excluded that portion of the expenditure that is deemed to fail this test.

Step 3: Do any forecasts or estimates comply with rule 74(2)?

56. The final matter we have considered is whether the forecasts or estimates underlying those capex projects that are justifiable under rule 79(2) and satisfy the prudent service provider test, have been arrived at on a reasonable basis and represent the best forecast or estimate possible in the circumstances, as required by rule 74(2).

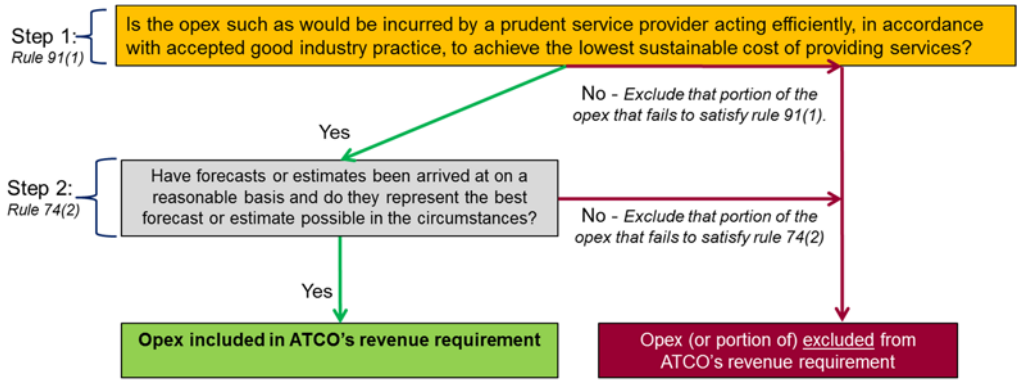
57. As Figure 1 highlights, where the forecasts and/or estimates are found to:
    - satisfy this rule, the proposed expenditure has been deemed to comply with the conforming capex criteria; and

- not satisfy this rule, then we have excluded that portion of the expenditure that fails to satisfy this rule, on the grounds that a prudent service provider would not expect to incur this expenditure (r. 79(1)(a)).

3.2.2 Opex assessment framework

58. Figure 2 sets out the framework we have used to assess ATCO's proposed AA4 opex.

Figure 2: Opex assessment framework



59. When compared with Figure 1, it is clear that the questions considered under steps 1 and 2 of this framework are broadly the same as those considered under steps 2 and 3 of the capex assessment framework. The matters that we have considered when applying this framework are therefore largely the same as those set out in section 3.2.1; albeit focused on opex rather than capex.

60. The only additional matters that we have considered under Step 1 of this framework, which are not relevant to capex are:

- The methods used by ATCO's parent company (the ATCO Group) to allocate corporate overheads to ATCO and the extent to which:
  - the ATCO Group provides services that justify this as an expenditure item recoverable through regulated tariffs; and
  - there is any overlap in services provided by ATCO and the ATCO Group.
- The nature of any discretionary opex projects proposed by ATCO (e.g. business development and marketing) and the extent to which these projects are expected to yield a net economic benefit for consumers.

3.3 EMCa's approach to this review

61. Our review has entailed:

- Carrying out a first pass review of ATCO's capex and opex proposals to identify any areas where there has been a material change in either:
  - the capex incurred (or to be incurred) by ATCO in AA3 relative to what was approved by the ERA in its 2011 final decision; and
  - the expenditure ATCO has proposed for AA4 relative to what it spent in AA3.
- Agreeing to a set of key focus areas with the ERA, which included:

  - The areas of ATCO's AA3 capex programme, which exceeded the allowance approved by the ERA in the 2011 AA3 final decision[10] (i.e. Sustaining[11] capex, Structures and equipment, and information technology (IT)).
  - The proposed increase in expenditure on Sustaining capex, Growth capex and IT during AA4.
  - The proposed increase in expenditure on network opex, corporate support costs, business development and marketing, and IT opex during AA4.
  - The assumptions underlying ATCO's proposed allowance for unaccounted for gas (UAFG) in AA4.

- Conducting a more detailed assessment of the agreed focus areas using the assessment framework outlined in the preceding section and having regard to information provided by ATCO in its initial submission to the ERA, the on-site meetings and in response to our information requests.
- Carrying out a high level review of the remainder of ATCO's capex and opex proposals.

62. In this way our review has placed emphasis on those matters that are of greatest significance in driving the level of reference tariffs the ERA is being asked to approve and we have deepened our assessment process on such components of proposed expenditure, so as to provide the ERA with the necessary supporting evidence and supporting logic on matters of most significance.

[10] ERA, Final decision on WA Gas Networks Pty Ltd proposed revised access arrangement for the Mid-West and South-West Gas Distribution Systems, 28 February 2011.

[11] The term 'Sustaining' capex has been defined by ATCO on page 129 of the AAI as expenditure is that required to maintain and improve safety and integrity of services and meet regulatory obligations and requirements.

4 Review of governance, expenditure forecasting and performance

4.1 Introduction

63. To inform our assessment of the capex incurred (or to be incurred) by ATCO in AA3 and its proposed capex and opex for AA4, we have reviewed the project governance framework, cost estimation process and forecasting approach (including demand forecasting) employed by ATCO. We have also examined the KPIs that ATCO has provided in support of its capex and opex proposals. The results of our review are set out below.

4.2 Overview of findings

64. We reviewed ATCO's governance and forecasting approach on the basis that a sound approach is more likely to result in prudent, efficient and well-justified expenditure projections. Our main findings are that:

- ATCO has not provided sufficient evidence of existing performance issues or justified the significant increases in capex and opex that it proposes, nor has it been able to show how performance outcomes would improve as a result of such higher levels of expenditure. The proposed expenditure in these instances fails to satisfy several components of NGR rule 79 and of rule 91(1);
- In several categories of expenditure, ATCO's proposed increased expenditure requirements are inconsistent with its chosen current actual expenditure levels and its most recent business plans prior to its AA4 budgeting. In these cases, the proposed expenditure fails to satisfy rule 79(1)(a);
- ATCO's devolved approach to budgeting has not been subject to sufficiently rigorous top-down challenge. In our experience, bottom-up budgets that are not

subject to a rigorous top-down challenge process are more likely to be over-estimated. In these cases, the proposed expenditure fails to satisfy rule 79(1)(a) and rule 9(1);

- Significant drivers such as the criteria used in claiming justification for expenditure based on ATCO's Safety Case, have not been adequately justified by reference either to fundamental impact analysis or to peer benchmarks. The use of these criteria has led ATCO to propose significant increases in expenditure. The relevant proposed expenditure fails to satisfy rule 79(1)(a); and
- ATCO's project costings and volume activity costings appear reasonable. In the relevant instances, the expenditure satisfies rule 79(1)(a) and 91(1).

65. These findings have led us to assess more closely the specific programmes of work and activities that ATCO has proposed, particularly where they represent material increases on past expenditures. The AA and AAI did not provide sufficient specific information to enable our assessments of these 'focus issues' and we had to request a significant amount of additional information in order to form our views.

66. Our assessments have focused principally on the need for and volume of proposed work. We are satisfied with ATCO's cost estimation and expenditure forecasting processes, for a given volume of work, and we have not proposed any portfolio-level or aggregate adjustments for these purposes. However for some components of ATCO's proposed expenditure, we are not satisfied that the proposed increases in the volume of work are justified, or would be incurred by a prudent service provider acting in the manner prescribed in rules 79(1)(a) and 91(1), and we have made adjustments accordingly. These specific adjustments are described in our assessments in Section 6 and 7.

4.3 Governance framework

67. We have reviewed ATCO's governance framework with the emphasis on the policies, processes, procedures and key documents that it has in place to:

- Develop projects and programs of work;
- Approve individual projects of work in the context of the business's portfolio of work, and
- Manage the delivery of approved work.

68. ATCO's methodology for forecasting work for the AA4 period is considered in Section 4.4, and its proposed KPIs are considered in Section 4.5.

69. Our review has focused on the following aspects:

- The alignment of the governance framework with ATCO's corporate objectives, including its regulatory and statutory obligations;
- The alignment with good industry practice;
- The evidence that the processes and procedures being used in practice, and
- The effectiveness of the governance process.

70. The AA3 program of work was derived in 2009/10 under the auspices of WAGN, the previous owners of the GDS. ATCO took over the GDS in July 2011. The AA3 program of work is still being delivered as this report is written. Where practicable and relevant, the changes over time are noted.

4.3.1 Business planning process

71. ATCO has developed the AA4 proposal capital and operating expenditure forecast using its Business Planning process.[12] It is an annual process that ATCO uses to identify and set strategic and business objectives, identify initiatives to deliver on those objectives and set performance measures and targets. In the context of formulating and executing the capex and opex expenditure proposals the key features of the Business Planning process are:

- Asset management - policy, strategy and plan;
- The Safety Case and FSAs;
- The IT strategy and IT asset management plan;
- Investment governance, including project management, and
- Procurement and contract management.

We have reviewed each of these elements.

4.3.2 Asset management

ATCO's approach

72. ATCO's AMP is a part of ATCO's annual planning process, drawing on individual asset class plans to present a five year outlook and annual maintenance and capital works programs.

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73. It is beyond the scope of our review to audit the AMP. We have however drawn on our experience in asset management, the 2011 AMS GL8 Audit Report[13] (as the 2013 AMS has not been finalised at the time of writing this report) and other documents provided by ATCO in assessing the role of the AMP in relation to the proposed Access Arrangement.

74. We have assessed the asset management plan from two perspectives: 1. the framework of the plan (i.e. is it consistent with good industry practice), and 2. the content of the AMP (i.e. are the assumptions and strategies consistent with rule 79 and 91).

75. Firstly, we found that the AMP *is* based on a sound asset management conceptual framework, and has been developed with reference to the regulatory, statutory and other obligations ATCO is required to respond to as a licensed gas distributor. The 2011 AMS Audit recognised improvements WAGN had made to its asset management framework and processes since the 2009 audit and made a number of recommendations to further improve asset management planning.

76. There is evidence that ATCO is improving its overall approach to Asset Management, particularly through its IT-based investments (discussed in Section 4.3.4). However, the benefits from these investments have either not been explicitly and quantifiably recognised by ATCO in its AAI or they have not yet been realised. ATCO's declared

[12] ATCO AAI, *Section 3.3*, Figure 5

[13] Worley Parsons, *GDL8 Asset Management System Review, Report for WAGN*, May 2011

intent to align its strategic asset management framework with the 2014 release of the ISO 5500X suite is supported.

77. Notwithstanding the improvements made to the asset management framework and approach, when we reviewed the *content* of the AMP, we found six aspects of it that we consider negatively affect the AA4 expenditure proposal in the context of the NGR requirements:

(i) Network risk assessment

- Consequence ratings - as discussed in detail in Chapters 5 and 6 and Appendix A, we do not support the supply interruption consequence rating introduced in the risk framework. ATCO has used this new criterion to underpin much of its proposed additional 'Sustaining capex' and we believe it fails rule 79(1)(a);
- ATCO relies on proxies for condition assessment in managing the lifecycle of its network assets. ATCO determines investment plans on the basis of such factors as age and failure rates rather than the assessed condition of the assets. This can lead to an overly conservative investment program in some categories and to not remediating or replacing assets that represent a higher risk in other cases. ATCO has identified several initiatives to progressively address this shortcoming[14], however it is unlikely that condition-based asset management based on robust asset condition information for the important classes of assets will be available for several years. This caused us to look at expenditure based on condition or proxies for condition in more detail to ensure that it satisfied rule 79(1)(a), in particular.

(ii) **Data management** – ATCO recognises the importance of data integrity as the basis for effective information and decision making, but it also recognises that '*In some cases…there is less control and no assigned responsibility for collection and integrity of data. This causes inefficiencies in data collection, and limits the reliability of information.'*[15]

This theme is common to the AMP and to the IT AMP. The potential impact on network investment decisions and operations management is also recognised[16]. The need for ongoing and new IT-based projects such as GNIS, NDV, SAM and MIS are required to consolidate and then leverage off the systems improvements made in AA3. The data management challenge extends to asset attributes and classification, as '*Regulatory, Asset Management, and Finance currently have their own asset classes with their own specific requirements*.'[17] Again, this led us to look in more detail at the significant expenditure programs to check the prudency of the proposed expenditure under rule 79(1)(a).

(iii) **Cost-benefit analysis (CBA)** – we have observed two significant issues, each of which relate to satisfying rule 79(1)(a) and 79(2)(c):

- ATCO has expressed a belief that projects that relate to safety do not require economic justification[18]. This stance is reflected in the lack of cost-benefit

[14] For example, ATCO Asset Class Plan – Pipelines, Mains and Services, *Section 1.4*

[15] ATCO Technology Plan, Section 3.3; whilst this comment is addressed to the ATCO Group as a whole, we found sufficient evidence to confirm that it is applicable to ATCO

[16] For example, AMP, Section 6.2; Technology Strategy, *Sections 3.3, 3.7.1, 3.7.2,*

[17] IT AMP, *Section 3.7.1*

[18] As declared by ATCO during the course of the on-site sessions

analyses in the FSAs with respect to the ALARP criterion and may be based on the assumption that satisfying rule 79(2)(c) does not require an economic test. However, as discussed in Sections 5 and 6 and in Appendix A, we believe such a test is required.

- In most asset classes, there no quantified link between investment and performance outcomes. This finding applies at an asset class level and at the portfolio level. At the portfolio level, the AMP does not declare the benefit in terms of quantified reduced risk or of any other KPI from the $540m capex investment proposed and the $183m of opex.[19] There are subjective claims, but evidence is lacking to support claims that the optimal solution and investment timeframe has been selected. The outcomes should be expressed in terms of the change to relevant network performance KPIs, and to asset health. ATCO has attempted to link investment to UAFG reduction, however the analysis is not without its issues.[20] Modelling the impacts of investment would allow for more comprehensive options analysis and would help justify investment strategies. The absence of such analysis weakens ATCO's justification for the expenditure under rule 79(2)(c).

(iv) **Optimisation of work plans** – ATCO acknowledges that there is room for operational improvement:

> *'Both portfolios are currently being managed via disparate, non-integrated solutions…[the improvement project is required to] enable greater efficiency in resource planning, allocation, project cost control and project related procurement at both a strategic and tactical level'*[21]
>
> *'The enhancement of SAP and GNIS to introduce the 'polygon' Functional Location tool for project work will 'improve [ATCO's] works management process.*'[22]

However, these enhancements were not available for the development of AA4 nor for the delivery of AA3. Depending on ATCO's capacity to both introduce the system improvements and leverage off them, there should be significant efficiency gains in operations during AA4. We have taken this into account in determining whether ATCO's expenditure satisfies rule 79(1)(a), in particular.

(v) **Capacity to deliver** – whilst this essential topic does not necessarily have to be addressed comprehensively in the AMP[23], it should at least provide an overview of the strategy and plan to deliver of the proposed portfolio of work. The absence of reference to this portfolio level assessment of the proposed asset management program points to incomplete top-down assessment by the ATCO Board/Executive of the prudency of the portfolio of work. In the absence of a compelling analysis by ATCO of its capacity to deliver the proposed work program, we have made our own assessment in respect of rule 79(1)(a).

[19] AMP, Tables 40, 42

[20] For example, there are challenges with measuring UAFG and the modelling of the impact of the various asset class investment on UAFG is at an immature stage – refer to the detailed assessment in Section 7. 8

[21] AMP, *AGA-22 Project Portfolio management*, p95

[22] IT AMP, *Section 3.7.1*

[23] It could, for example, refer to a separate Delivery Strategy and Plan

(vi) **KPIs** - ATCO has nominated KPIs and targets but has not shown an explicit link between the expenditure and the targets which it proposes. The rationale provided for the targets is weak in many instances. In most cases, the target represents such a low threshold that it is possible that no additional investment by ATCO would be required to achieve it. This makes performance reporting and assessment of the effectiveness of projects sub-optimal, potentially affecting the prudency and efficiency of network investment (and operational) decisions. ATCO's KPIs are discussed further in Section 4.5.

4.3.3 Safety Case and Formal Safety Assessments

ATCO's approach

78. The Safety Case 'provides a road map for the systems that the network operator must put in place for the safe operation of the Network. It describes systems for design, construction, operation, maintenance, training and supervision to manage risks arising from potential network hazards.'[24]

79. The Safety Case was developed by WAGN and accepted by Energy*Safety* in July 2011. ATCO fully implemented the Safety Case in January 2013.[25]

80. Formal Safety Assessments (FSA) are focused on:

- identifying hazards capable of causing ill health, fatality or injury to personnel or the public; or adversely impacting the community, environment, WAGN GDS or continuity of gas supply;
- assessing risks arising from each hazard in compliance with the requirements of all relevant legislation;
- identifying risk control and mitigation measures and applying these to the assessment of risk; and
- assessing the residual risk and agree upon reducing risk levels through further mitigation and risk control to acceptable limits (i.e. to ALARP).[26]

81. As we understand ATCO's FSA process, FSAs are developed and agreed to on a consensus basis by ATCO staff through an internal validation process as required by Australian Standards AS/NZS4645 and AS2885.[27]

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82. The Safety Case is a comprehensive document. In the AAI, ATCO says that the Safety Case is regularly updated, however ATCO advise that it has not been reviewed nor updated, nor have any changes been submitted to Energy*Safety* since ATCO assumed ownership of the GDS assets in July 2011. It has however, been subject to annual internal audits, with the 2013 Audit identifying two non-conformances, two corrective actions and 15 improvement recommendations.

[24] AAI, Section 3.3.2

[25] AAI, Section 1.2.1

[26] ATCO Safety Case, Section 4.1.2

[27] Based on verbal advice from Energy*Safety,* it does not approve FSAs (but it may offer observations)

83. Whilst the Safety Case was accepted by Energy*Safety* in 2011, the subsequent completion of a number of FSAs has driven significant increases in AA3 network capex[28] and in the proposed AA4 capex expenditure – most notably in the sustaining capex category (as discussed in detail in Sections 5.4 and 6.4).

84. We have examined the link between the Safety Case, FSAs and business case justification in forming our view that AA3 capital expenditure is justified. The absence of businesses cases supporting proposed AA4 expenditure[29] places even more importance on the thoroughness (or otherwise) of the FSA process and outcomes.

85. ATCO has also advised that as the network FSA is revised and additional FSAs are yet to be completed there are likely to be further adjustments required to the capital and operating programs.[30] If the current ATCO practice of undertaking FSAs without the supporting economic analysis is followed in these 'new' FSAs, it *may* result in unjustified additional (or substitute) capex and opex expenditure in AA4, contravening the requirements of rule 79(1)(a).

4.3.4 IT Strategy & IT AMP

ATCO's approach

86. The ATCO Technology Strategy (2014) documents the strategies that ATCO will pursue from 2014-19. The strategies are linked to the business objectives of the ATCO Group. It provides the context, subjective target outcomes, principles, implications, a 'call to action', and an outline of the technology governance for ATCO. The stated business outcomes from the technology strategy are:

- Increased cost effectiveness of operations;
- Increased competitiveness;
- Reduced business risk;
- Reduced resourcing issues, and
- Increased timeliness of access to information.

87. The IT AMP is designed around (i) confirming where ATCO requires IT systems to deliver services to customers and meet its regulatory obligations, (ii) assessing ATCO's existing IT systems to ensure they are being prudently maintained and are operating efficiently, and (iii) identifying where ATCO's service to customers can be delivered more efficiently and effectively through new IT systems. It responds to the direction provided in the Technology Strategy and the requirements of the AMP for improvement in asset management performance, and it adopts relevant IT Standards and methodologies.

[28] Summarised in AAI, Tables 41, 45

[29] The lack of approved business cases at this stage of the project development cycle is not unusual and ATCO has provided 'Feasibility Study' documents when requested for particular projects however these are not substitutes for rigorous approved business cases

[30] Responses to EMCa08 and EMCa09

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88. The Technology Strategy document is a sound, high level summary of the key factors that are necessary to provide direction to the IT AMP. We consider that the technology principles are sensible in the context of the business, with a common thread of leveraging off technology to improve operational performance and leveraging off the benefits of a common ATCO Group approach and COTS products where practicable.

89. However, it does not provide specific, measurable targets for the outcomes of the proposed strategies and investments. It refers to worthwhile outcomes in subjective terms, several of which have the potential to deliver the prudent and efficient investment required to satisfy the NGO and the NGR tests. However, in the absence of specific objectives, it is not possible to measure the effectiveness of the strategies and investments against the intended benefits at an aggregate level. Further, the approach does not provide a framework for accountability for delivering to specific targets. The emphasis on activity rather than outcomes pertaining to IT investment is mirrored in the KPIs for the ATCO Executives as there is an absence of specific measurable targets that match the desired business outcomes.[31]

90. The IT AMP is a challenging document to understand because it is structured in a somewhat convoluted manner. However, with several significant exceptions, it is aligned with good industry practice. It reveals that the IT Plan has been considered from a technical, bottom-up perspective and aligns with technology trends that are being pursued by most utilities.

91. There are however three areas of the IT AMP which reduce confidence in the proposed IT expenditure:

- **Lack of an overall IT architecture road map or design** – this could reside in either the Technology Strategy or IT AMP documents. There is not a coherent explanation of ATCO's IT architecture after the projects are implemented or a road map that shows the dependencies and sequencing of the projects over AA3 and AA4. Such a road map would provide (a) more confidence in the rationale for the portfolio of expenditure, (b) increased confidence that the prioritisation of the projects has been considered and factored in to the program expenditure profile, (c) increased confidence that the interdependencies had been adequately considered in designing the program (and when the projects are undertaken), and (d) a basis for assessing the physical resources required to deliver the portfolio of work.
- **Lack of recognition of the lessons learned and benefits gained from implementation of the AA3 IT projects** – such an assessment would provide some confidence that ATCO has used the lessons in defining its AA4 program and that it is capable of realising tangible benefits
- **Lack of an analysis of the capacity to deliver the proposed work program**– whilst this topic does not necessarily have to be addressed comprehensively in the IT AMP[32], it should at least provide an overview of the strategy and plan to deliver of the proposed portfolio of work. It appears that the Shared Asset projects (per Figure 12 in the IT AMP) and the Direct projects (Figure 10 in the IT AMP) have not been considered together to determine the total requirement of the business to undertake them whilst fulfilling day-to-day operational imperatives. It is often the case that IT

[31] Response to EMCa055

[32] It could, for example, refer to a separate Delivery Strategy and Plan

programs of works (and individual projects) fail to be delivered on time and on budget (or to deliver the intended benefits)[33]. The absence of reference to this portfolio level assessment of the proposed IT program is an indicator of inadequate top-down assessment by the ATCO Board/Executive of the prudency of the portfolio of work. In the absence of a compelling analysis by ATCO of its capacity to deliver the proposed IT work program, we have made our own assessment.

92. In summary, the issues identified above diminish our confidence that ATCO will (i) deliver the program of work and/or (ii) deliver the work at an efficient cost. This means the proposed program of work, or elements of it, do not satisfy rule 79(1)(a) or rule 91(1). We have therefore analysed the proposed IT program in greater detail.

4.3.5 Investment governance

ATCO's approach

93. ATCO's project governance framework is explained in the AAI (Section 7.4). The figure below shows the process diagrammatically.

Figure 3: ATCO project governance framework

Source: ATCO AAI, Figure 60

94. The works programme is reviewed and reported monthly to ATCO's executive to ensure scope and costs are closely controlled and remain aligned to business objectives.[34]

95. All capital and operating expenditure projects are subject to a five-phase governance process with Business Cases prepared for review in Stage 2 (Planning & Design). Business cases are required to provide a problem statement, outline the options investigated, the recommendation, business benefits, financial evaluation and economic modelling review, risk assessment and regulatory alignment. Approval 'gates' must be signed off by the relevant authority.

96. For Business Cases in excess of $100,000, ATCO requires a Capital Expenditure Approval Request (CEAR) which must be approved by the COO, Financial Director and President.

[33] Although there is evidence within ATCO itself, a broader reference (by way of example) is provided by an article by McKinsey & Co (2012), *Delivering Large Scale IT Projects on time, on budget and on value*

[34] AAI, Section 7.4.2

97. ATCO has a risk and compliance framework which comprises a Compliance Policy, Compliance Procedure, the GDS Safety Case, Risk Management Procedure, and FSAs.

98. ATCO's Project Management framework comprises a Project Management Manual, the Business Case approval process, and the Financial Delegation and approval process.

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99. ATCO's explanation of its governance procedures provided in the AAI is focussed heavily on project (and work programme) governance. We would expect to see a description and evidence of the top-down challenge of the portfolio of expenditure being proposed in the AAI. ATCO provided information about its review process separately - it indicates that the AA4 submission was presented to the appropriate levels of ATCO hierarchy for review. However, we have not been provided with evidence to show the progressive refinement of the AA4 submission through the challenge process, which we would expect to include consideration of the portfolio-level aggregate expenditure levels, comparison with business plan budgets, consideration of performance outcomes and the business's capacity to deliver the proposed expenditure programs[35].

100. The project-level governance, risk and compliance and project management processes are consistent with good industry practice, with the exception of three key aspects:

- **Options analysis** – the quality of options analysis varies from the superficial (where only one option and a do nothing option are assessed) to the comprehensive, where a full examination of options, including deferral of expenditure, is provided.
- **Lack of an explicit benefits realisation phase** - in which measures of success are assigned, monitored and controlled to ensure promised benefits are delivered. The benefits (or measures of success) should be defined in the Business Case and committed to by the relevant executive. Most of the business cases provided by ATCO for our review that promised to deliver productivity and efficiency benefits (among other things) failed to quantify them.[36]
- **Lack of risk ratings** assigned to all projects on a consistent basis and using them to compare relative risk levels across all projects to help ensure prudent prioritisation of investment across the various expenditure categories.

101. The impact of each of these issues on our assessment of capex and opex expenditure is discussed in Sections 5-7.

102. With these exceptions, the project governance and management approach and results under ATCO's ownership show improvement compared to WAGN's approach. However, the exceptions do diminish confidence in the prudency and efficiency of the proposed programs of work (per rule 79(1)(a)).

[35] Response to request EMCa031

[36] Noting that not all projects would reasonably be expected to deliver significant tangible cost savings

4.3.6 Procurement and contract management

ATCO approach

103. All purchasing decisions for capital expenditure are made in accordance with ATCO's Procurement Policy[37]. The principles, processes, scope and required actions are all consistent with good industry practice.

104. ATCO receives IT services from I-Tek, a related party. The two parties have a contractual agreement (Information Technology Services Agreement) which defines IT asset and service classifications and the fees for use of defined IT assets and the provision of services.[38]

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105. Importantly, when procuring goods and services, ATCO is required by its Procurement Policy to obtain competitive pricing. The Works program is delivered through a mixture of ATCO workforce and contractors.

106. It is common practice for utilities to retain an internal work force to enable it to meet its compliance obligations, including responding to emergencies, and to use contracted resources to both manage work load peaks and troughs caused by various demands and constraints.

107. As IT services are procured through a related party arrangement with I-Tek, we have assessed the commercial arrangements in some detail, as discussed in Section 7.7.2.

4.4 Assessment of ATCO's approach to forecasting

4.4.1 ATCO's approach to forecasting

108. We have reviewed the methods by which ATCO has forecast AA4 capex and opex and we established that ATCO has forecast its expenditure requirements using a "bottom up build" process in which:

- Unique capex project expenditures are identified and costed based on assessed building blocks, with expenditure phased over the project time-frame to meet the required commissioning dates;
- "Volume" capex project expenditures are projected based on forecasts of the volumes and unit costs for each volume project type;
- Maintenance expenditures are projected based on forecasts of the volumes and unit costs for each maintenance activity, and
- Non-network expenditures are projected based on factors such as forecast head-count and salary movements.

109. ATCO has presented its AA4 forecasting approach as being a continuation of the approach it uses for its annual five year business planning process. Its descriptions of

[37] Procurement Policy 2012

[38] IT AMP, Section 4

its forecasting approach are at a high level only, as shown by the following excerpts from the AAI:

> *"The [operational expenditure] forecast approach considers past activities and costs, external cost estimates and specific activities required during the period"*[39]

> *"The [capital expenditure] forecast method for each category of expenditure considers past experience, new information and implications for expectations about the future."*[40]

> *"Network operating costs are forecast by identifying the inspection, operating and maintenance activities necessary to deliver the requirements of the Safety Case and AMP. Costs are developed using a combination of historical unit costs, market tested rates and forecast resource requirements to deliver the reference services to the growing customer base."*[41]

> *"[Corporate] costs are estimated based on previous costs and known information about changes in costs and new costs."*[42]

4.4.2 Assessment

General approach to forecasting

110. Many aspects of ATCO's approach to forecasting align with good industry practice. For example, ATCO's expenditure requirements are categorised, forecast and later reported according to expenditure drivers (e.g. 'Growth' and 'Sustaining' capex) that reflect typical utility network management practices and it uses different approaches to forecast different expenditure components. However, we consider that ATCO's descriptions of its forecasting approaches for specific expenditure components are vague, listing a range of factors that have been 'taken into account' but without defining how. On further investigation, we find that there is significant subjectivity in the way that ATCO managers have made assumptions at detailed levels that then aggregate up to produce the proposed expenditure forecasts.

111. We sought further information so that we could review the actual build-up of ATCO's forecasts, and this was provided principally through responses to questions at the onsite meetings. We were also able to further observe assumptions made when we were provided with ATCO's forecasting models.[43] ATCO's approach has essentially been to devolve budget forecasting responsibility to managers according to their roles and responsibilities in the organisation. The process at that level has essentially involved those managers making judgments – for example as to future volumes of work, unit cost rates etc. at a relatively granular level, consistent with ATCO's bottom-up build approach.

112. While we do not question the professionalism of those managers, there is a high degree of subjectivity inherent in this process and, as we note below, we consider that there

39 ATCO, AAI, March 2014, section 6.1, p59.

40 ATCO, AAI, March 2014, section 8.1, p160.

41 ATCO, AAI, March 2014, section 6.2, p60.

42 ATCO, AAI, March 2014, section 6.2, p60.

43 Principally the capex and opex models provided in response to requests EMCa018 and EMCa019.

has been insufficient peer review of those assumptions and of the aggregate forecast resulting from this bottom-up build process. We consider that such an approach, when applied without strong top-down challenge and review, is likely to lead to over-estimation as levels of conservatism are incrementally built into each assumption.

113. Some elements of ATCO's expenditure forecasting process are of concern for the purposes of accepting the AA forecasts for regulatory purposes, and we address these below.

Expenditure forecasts not linked to performance outcomes

114. At the on-site meetings, ATCO noted the large increases in its proposed capex and opex, and claimed that this was required to address a range of issues,[44] including:

- Improving reliability and service to customers;
- Providing greater access to gas;
- Improving quality by reducing leaks and reducing under-pressure events; and
- Improving information provision.

115. In response to requests for further information at the on-site meetings and subsequently, ATCO was unable to provide sufficiently compelling evidence for its claims that there are such performance "issues", by reference (for example) to KPIs showing poor or deteriorating performance. Nor has ATCO been able to show in a coherent and strategic manner the improvements in performance outcomes that could be expected from the proposed significant increases in expenditure. ATCO was, for example, unable to identify any safety or non-supply incidents relating to "loss of pressure", and the rate of leaks (as indicated by UAFG) has been declining steadily over the past five years, yet despite significantly increased proposed expenditure ATCO does not forecast it to decline further from its most recent level.

116. We consider that this lack of strategic justification permeates the forecast and is consistent with the lack of evidence for strategic challenge to the proposed forecasts, which is our next point below.

ATCO forecast lacks formal and documented top-down challenge process to its forecasts

117. A principal concern is that ATCO could not provide evidence of having undertaken a top-down challenge process. We consider such a process to be an important ingredient in budgeting and normally leading to a lower forecast reflecting the application of prudent judgments on expenditure requirements that are better made at the aggregate level. In the absence of such a process we consider there is a likelihood that the aggregate proposed expenditure is over-stated.

118. We have applied prudent judgments in assessing ATCO's AA4 expenditure and we propose adjustments to a number of elements of the proposed AA4 expenditure. These adjustments are almost exclusively based on a lack of justification for the need for the proposed projects or volumes of work. We have less concern with ATCO's costing of work, for a given level of justified need and provided the component-level adjustments

[44] From ATCO presentation, 9th April 2014. Slide 4 and associated discussion.

that we recommend in sections 5 to 7 are made, we do not consider that any additional aggregate portfolio-level adjustment is required.

Assessment of needs driven by a Safety Case that is insufficiently justified

119. Another significant concern that influences our assessment is the manner in which ATCO's Safety Case has been defined and the proposed programmes of work derived from it.

120. ATCO's approach of using a risk framework to prioritise work based on a FSA aligns with general industry practice. However, we have significant concerns with ATCO's application of this approach, which we address more fully in section 6.4.2.

121. In brief, we consider that ATCO has adopted a relatively low risk threshold and has adopted criteria for security of supply that also imply a low threshold by industry standards and which are only tenuously related to safety. This has led ATCO to include significant increases in forecast expenditure to address risks for which the probability of occurrence is very low and which are manageable with operational controls rather than the proposed investment.

122. We consider that ATCO's forecasts in this regard have resulted from a lack of analytical rigour in its approach, in that ATCO:

- was unable to provide performance information on risk events that would have assisted in objectively assessing the levels of risk;
- was unable to provide benchmarks to support its assessment of risk thresholds; and
- had not undertaken analysis to support its assessment of relative costs and benefits as required by Australian standards AS/NZS4645 and AS2885.

Evidence of satisfactory capex project forecasting accuracy and budget governance

123. We assessed ATCO's forecasting performance for AA3 projects. The results are shown in Table 1:

Table 1: Assessment of AA3 capex project expenditures against forecasts

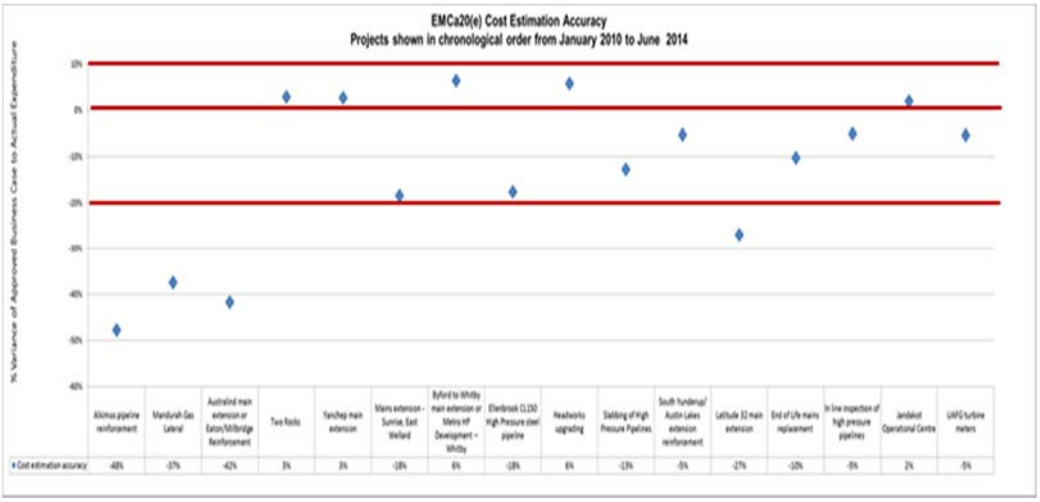
Project Types	ATCO AA3 Budgetted	AA3 actuals	Variance $	Variance %
Network projects >$0.25m proposed for AA3, and undertaken in AA3 (without material scope change)	58.0	54.8	-3.2	*-5.8%*
Network projects <$0.25m proposed for AA3, and undertaken in AA3 (without material scope change)	4.3	5.1	0.8	*15.7%*
Total network projects proposed for AA3, and undertal	**62.3**	**59.9**	**-2.4**	***-4.0%***
Replacement of unprotected and odd-sized steel pipeli	6.4	17.8	11.4	
Slabbing of High Pressure Pipelines	3.5	9	5.5	
Replacement of older pipelines and remediation work -	1.7	2.5	0.8	
Projects with material scope changes	**11.6**	**29.3**	**17.7**	***60.4%***
Roll-ins		23.3	23.3	
Roll-outs	21.7		-21.7	
Net roll-outs /roll-ins	**21.7**	**23.3**	**1.6**	***6.9%***
Aggregate forecasting outcome (network projects)	**95.6**	**112.5**	**16.9**	***15.0%***

Source: EMCa analysis from tables in section 7 of ATCO's AAI

124. This assessment shows that ATCO's AA3 forecast of the cost of projects that it proposed and undertook during this period, had an aggregate over-estimation / underspend of 2.4m (4.0%).

125. ATCO also provided its own analysis of project cost estimation outcomes, which is against its business case budgets, and is shown below. This shows outcomes over time and shows improving forecasting accuracy, with a slight bias towards over-estimation.

Figure 4: ATCO assessment of project outcomes against business case budgets



Source: ATCO response to information request EMCa020(e)

126. Where ATCO spent more against the AA3 allowance, it has sought to explain the difference by stating that the scope of work increased and this arose from strategic decisions taken following the FSA process.

127. As is expected over a time-frame of 4.5 years, ATCO found a need to undertake some projects that it had not originally envisaged. However, these projects that were 'rolled in' to the portfolio were largely offset by projects that were prudently deferred or cancelled (roll-outs).

128. We consider the evidence from this assessment of ATCO's AA3 project expenditure shows that ATCO has a satisfactory level of forecasting accuracy at the project budgeting level, and that it has a satisfactory level of strategic governance of its portfolio of approved projects and their delivery. This strategic governance, which includes an evident ability to reprioritise work in response to changing need, is likely for the most part to lead to ATCO incurring prudent and efficient costs. In our assessment of ATCO's proposed AA4 expenditure, we have therefore focused more on the justification of need for the proposed expenditure, which includes considering the amount that ATCO is likely to actually spend during AA4, and less on ATCO's stewardship of a given level of budget.

Volume forecasting approach is reasonable, but lacks challenge of assumptions

129. ATCO provided forecasts of so-called variable volume capex and opex works, comprising a range of 'standard' tasks and activities. These amount to $167m of proposed capex and $59.4m of proposed opex.[45]

130. While ATCO's approach of separately forecasting the volumes of such activities and the unit costs of each activity is a reasonable approach, we have some concerns with the extent to which these forecasts appear to rely on a large number of judgments that are not fully documented. For example, while ATCO's spreadsheets show historical trend information, the forecasts are a mixture of projections of such trends and manual adjustments, which we understand were arrived at in meetings with relevant managers and which have neither been fully documented nor subject to peer challenge.

131. Our assessment of ATCO's proposed expenditures is contained in sections 6 and 7.

Treatment of contingencies is considered appropriate

132. We reviewed ATCO's use of contingencies in its project costing processes. ATCO has stated that contingencies of up to 10% have been applied 'where the scope of work and location is unique or new variables are introduced' and that this applies to around 25% of projects.[46] In our review of ATCO's capex budgets we noted a range of contingencies including projects with zero contingency as claimed and projects with a range of single-digit contingency amounts.

133. ATCO has described these contingencies as being allowances for 'known unknowns' and this is an appropriate inclusion for budget purposes as it reflects amounts, which are likely to be incurred on a project by project basis, rather than a generalised risk factor. Taken together with the evidence of good project cost estimation outcomes above, we consider that it is reasonable to allow the inclusion of such contingency in ATCO's forecasts.

Labour cost escalation is considered appropriate

134. ATCO has proposed real internal labour cost escalation rates for the AA4 period at 2% above CPI for each year of the AA4 period. ATCO bases its assessment on 'its experience and processes for achieving balanced remuneration outcomes' and by

[45] From Variable volume capex and opex models, provided by ATCO in responses to EMCa018 and EMCa019. Figures are expressed in real 30 June 2014 values and include overheads where applicable. Note the figure of $59.4 differs from table 18 of the AAI.

[46] ATCO response to request EMCa044.

balancing 'statistical evidence, market intelligence, and actual experience.'[47] ATCO further states that in its qualitative process, it has taken into consideration:

- The ATCO and CEPU Enterprise Agreement (EA) 2013, which expires on 31 December, 2015;
- Expectations in regards to the ATCO and CEPU EA 2016;
- Expected increases for salaried employees based on: observed market practice, salary survey evidence from the Hay Group, Mercer and Ausrem, and the WA Wage Price Index (WPI) forecast; and
- Legislated increases in the superannuation guarantee rate.

135. We have assessed ATCO's proposed labour cost escalation pursuant to rule 79(1)(a), considering the following factors:

- The industry sector;
- The Western Australian context;
- Comparisons of actual ATCO labour costs and labour indices;
- Recent AER determinations, and
- ATCO's quantitative approach (including its obligations regarding superannuation increases).

136. Details of our analysis and the sources of information are provided in Appendix B. Based on our assessment, the following considerations support ATCO's labour cost escalation above CPI:

- Western Australia has for the past 3-5 years experienced labour wage escalation above CPI and above the national average, with Treasury's forward estimates for the WA WPI (to 17/18) at 1.0-1.25% above CPI;
- The EGWWS[48] sector has and continues to experience labour price escalation almost 1% above the WA WPI and is applicable to ATCO;
- ATCO has a legislative obligation to pay increased superannuation (and which it has estimated will add around 0.5% p.a. to labour costs;
- The most recent regulatory EGWWS sector determination (AER, January 2014) approved labour cost escalation above 2% p.a. real;
- The most recent Western Australian EGWWS regulatory determination (ERA, September 2012) approved labour cost escalation 2.0% or more above CPI; and
- ATCO's actual and projected labour costs through to 2015 are above CPI and its pay rates were on par with similar gas distribution businesses in Australia.[49]

137. We consider that the following are the key determinants of the forecast internal labour cost escalation for ATCO:

- The most recent Western Australian (WA) Department of Treasury WA WPI forecast of 1.0% to 1.25% above CPI;

[47] ATCO, AAI, *Section 6.6.1*

[48] Electricity, gas, water and waste water services (or 'Utilities' sector) of which ATCO is a part

[49] ATCO AAI, *Section 6.6.1*

- The EGWSS sector wages performance as this is the sector in which ATCO operates of 1.0% above CPI in the past year;
- Future superannuation costs of 0.5% p.a.;
- The most recent AER determination in the EGWWS sector (January 2014) of around 2.0%, and
- The most recent ERA determination in the EGWWS sector of around 2%.

138. Based on the above discussion, we consider that ATCO's assumption of labour cost escalation of 2.0% above CPI for the AA4 period is reasonable.

139. We have also confirmed that ATCO's labour cost assumptions are applied as expected in its opex budget forecasting model, in relation to internal labour costs. It is not possible to confirm that equivalent assumptions have been made for contract or outsourced work, as any such assumptions are implicit in forecast unit rates for such work and these are subject to a range of other factors.

Forecasting models and calculations are considered appropriate

140. While we have not conducted an audit of ATCO's forecasting models, we have reviewed key aspects of their forecasting calculations. We observe that the models are essentially driven by ATCO's input assumptions which comprise the level of need and a costing of that need. Expenditures are largely forecast in the first instance in real terms, and are then converted to nominal forecasts with the addition of overhead allocations. As far as we have observed reallocations, such as overheads, are debited and credited in such a way that they are not double-counted. Similarly we observe line items which (as is appropriate) deduct non-regulated expenditures (or allocations of expenditures), such as to the Kalgoorlie and Albany gas networks.

Poor relationship between AA4 forecasts and ATCO's Business Plans reduces credibility of AA4 proposed expenditure levels

141. Given ATCO's assertion that its AA4 cost projections were determined in the same manner as its BAU process for developing its annual Business Plans, we sought business plans for the previous four years, noting that these would contain plans that overlap with some of the years of the AA4 submission.

142. ATCO did not provide us with these business plans, but provided top-line capex and opex budgets that it advised were extracted from those plans. These budgets are shown in the following graphs and we have also compared those budgets with expenditure that ATCO has proposed in its AA.

[redacted]

[redacted]

[redacted]

143. As these figures highlight, ATCO's proposed expenditure in AA4 is significantly higher than its 2012 and 2013 Business Plan forecasts for the same years, and is also higher than the capex and opex forecasts in its 2014 Business Plan. For example:

- ATCO's 2012 and 2013 business plans projected opex through to 2017 and 2018 respectively at levels at or below [redacted] p.a. in real terms, whereas in its AA submission ATCO has proposed opex climbing from [redacted] in 2015 to [redacted] in 2019;
- The capex that ATCO has proposed in its AA is around [redacted] p.a. higher than it had projected as recently as 2013, and around [redacted] p.a. higher than it had projected in its 2012 business plan.
- In its AAI, ATCO's AA4 capex proposal is [redacted] higher than the forecast contained in the 2014 Business Plan, while its opex is [redacted] higher. ATCO has not sought to explain these differences.

144. In each of the two years (2012 and 2013) for which actual expenditure is available, ATCO incurred around [redacted] less opex and around [redacted] less capex than it had budgeted in its business plans prepared in those same years.

145. We consider that the fact that ATCO has typically spent less than it budgeted and that its AA4 proposed expenditure levels are much higher than it has budgeted in its recent internal business plans, combine to weaken the credibility of ATCO's claims that its AA process reflects its business as usual budgeting process. In turn, this weakens the credibility of ATCO's proposed AA4 opex and capex. We have addressed this concern in reviewing the justifications for those proposed requirements, as described in sections 6 and 7.

4.5 Assessment of ATCO's KPIs

4.5.1 Overview

146. Under rule 72(1)(f) of the NGR, ATCO is required to include the key performance indicators to be used by the service provider to support expenditure to be incurred over the access arrangement period.

147. ATCO has provided eight KPIs with targets and the rationale for each target in three categories[50]:

- Customer service
  - Domestic customer connections within timeframes
  - Attendance to broken mains and services within 1 hour
  - Attendance to loss of gas supply within 3 hours
- Network integrity
  - Total public reported gas leaks per 1 km main
  - SAIFI
  - Unaccounted for gas
- Expenditure
  - Operating expenditure per km of main
  - Operating expenditure per customer connection

148. We have assessed each of the KPIs from the following perspectives:

- The reason for the inclusion of the KPI – with reference to the requirement of rule 79(1)(f), ATCO's reporting obligations under GDL8, the provisions in AS4645.1 200851, and the performance targets of other Australian gas distribution businesses, and
- The rationale provided by ATCO for the target.

149. We have also considered whether alternative or additional KPIs should be introduced to form a more useful suite of key performance indicators.

[50] Targets and definitions are drawn from ATCO AAI, Table 2, Section 3.4

[51] AS4645.1 2008, *Gas Distribution Network Management, Section 10 – Performance Monitoring*

4.5.2 Setting target KPI levels

150. We believe that ATCO's targets should be representative of:

(i) the service levels that network end-users expect to receive and are prepared to pay for, and

(ii) the investment ATCO proposes in AA4 and the investment it has made in AA3.

151. When considering customer's expectations and 'preparedness-to-pay', we note that ATCO has 'sought input from interested parties during the development of the access arrangement revisions' from a number of stakeholder's'[52]. Whilst ATCO states that the feedback 'has been considered and incorporated in to the proposed access arrangement revisions where appropriate'[53], no specific, compelling evidence of customer expectations or preparedness-to-pay has been provided in the AAI to support its selected KPI targets. In the absence of such compelling evidence from ATCO, we have formed our own view about customers' expectations:

(i) Unless otherwise stated, we have derived a proxy for customers' expectations for the six customer service and network integrity KPIs by considering ATCO's past performance and available benchmark information from other Australian gas distribution utilities54, and

(ii) We have given more weight to more recent performance as we consider that it is more representative of the results of previous investment (noting that there is often a significant lag in investment in improved people, processes, systems, and infrastructure and improved network performance). We have therefore taken the average service performance over the most recent 3-year period (as provided by ATCO) as a reasonable proxy for customers' expectations.

152. When considering the link between ATCO's proposed KPIs, KPI targets and AA4 investment, we seek evidence from ATCO that, as a prudent operator, it has:

(i) explicitly stated the problem and objective, and

(ii) evaluated various options for investment, and

(iii) (among other things), modelled the impacts on the KPI of the options, and

(iv) selected the optimal investment to meet the objective, cognisant of the impact on the KPI.

Domestic customer service connections within timeframes

153. ATCO's description of this measure is: 'The percentage of new customer connections to established domestic dwellings on the distribution network provided within any applicable regulated time limit.'[55]

[52] ATCO AAI, *Section 2.3.2*

[53] *Ibid*

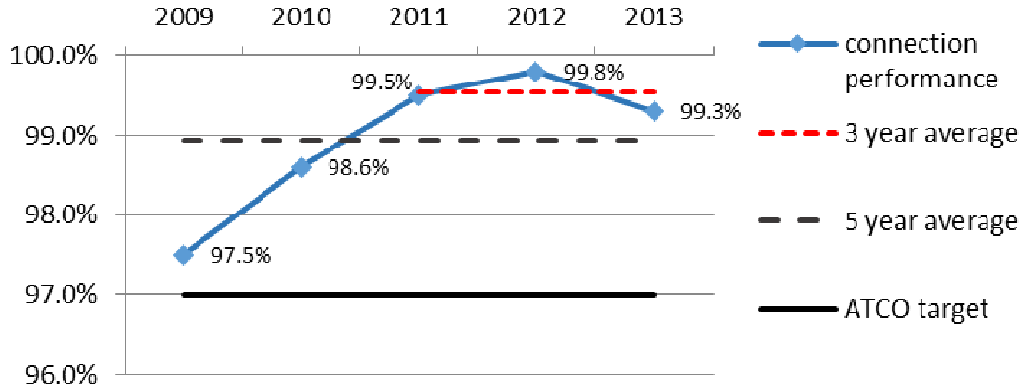
[54] We refer to relevant KPIs in current gas distribution network Access Arrangements approved by the AER or the ERA; in referencing benchmarking information, we acknowledge that the differences between gas distribution businesses often limit the value of comparisons

[55] ATCO pay $40 to affected end users if domestic connection is not completed within the designated five business days for domestic customers (B3 tariff class)

154. ATCO include this KPI as it is aiming to increase the number of customer connections above the 'latent' growth rate through its BD & marketing strategy and expenditure.[56] ATCO includes this indicator and has set the target to help ensure that it maintains connection times within customers' expected timeframes despite the forecast increase in connections.

155. The figure below shows the five year performance and ATCO's AA4 connection target of 97%. The three year average performance was 99.5% and the five year average was 98.9%. We also note that ATCO's AMP designates an AA4 target of >98%, an increase from the current target of 92%.[57]

Figure 7: ATCO's domestic customer connection performance (%)



Source: EMCa analysis from ATCO AAI, Figure 7

156. For B3 customers, ATCO has forecast 2.1% p.a. growth in connections over AA4, which is slightly *less* than the average growth rate over AA3 (2.26%) and is also *less* than the long-term B3 connections growth rate of 2.79% (to 2013). It expects its increased BD & marketing effort[58] to add 1,515 new customers in 2014 tailing off to 1,196 additional new connections from 2017 to 2019.

157. ATCO also propose significant expenditure on depots and other equipment and systems to enable it to achieve its customer service and safety requirements. Therefore under rule 79(1)(f), ATCO's inclusion of the KPI in its AA is supported.[59]

158. As discussed in detail in Section 4.6, we believe that ATCO's connection forecasts are optimistic and consequently we do not believe there will be undue pressure on ATCO to sustain its B3 connection performance. Even if ATCO's forecast growth rates are attained, we consider that its connection performance should not deteriorate materially. Similarly, the forecast net connection growth in other tariff classes is not sufficiently high (or compelling) to lead to significant extra pressure on ATCO's connection performance.

[56] Discussed in Section 6.7.3(d) of the AAI and assessed in Section 7.6 of this report

[57] *ATCO AMP, Section 2.3, Table 10*

[58] Discussed in Section 7.6

[59] Whilst this is a common metric for gas network businesses, of the current gas business Access Arrangements governed by the AER, it is included only in the Actew AGL AAI ACT, Queanbeyan and Palerang gas distribution network, June 2009

159. ATCO has not provided any explicit, compelling information linking its forecast expenditure to the KPI outcome.

160. In the absence of evidence to the contrary from ATCO, our view is that setting a target of 97% does not support any increased expenditure requirement as it is likely that ATCO would achieve a 97% connection rate without any additional investment.

161. Conversely, if ATCO's target was at 99.5% or higher (assuming such a target was justified) it would be more consistent with ATCO's proposed AA4 investment in new and upgraded depots (near growth areas), in IT systems, and in new and upgraded vehicles, all of which ATCO itself argues will lead to better field service performance.

162. The only relevant benchmark information available on this KPI is from Actew AGL's gas network. Its target for 2010-2015 is 100%[60].

163. On the basis of the above information and the taking into account the adjusted expenditure that we recommend, we are of the view that ATCO should be able to achieve a considerably higher rate of domestic connections within 5 days, for example at or around on average 99.5% of the time or better over the AA4 period.

Attendance to broken mains

164. ATCO's description of this measure is: 'The percentage of attendance to broken mains and services within 1 hour of service request being received.'

165. ATCO note that this indicator is included in the Safety Case and is covered by the Guarantee Service Level Scheme. ATCO pay $25 to affected end users if attendance within one hour is not achieved. ATCO propose including this KPI as it is a key safety indicator. ATCO offer only one direct link between its expenditure proposal and this KPI:

> *[ATCO's] strategy is to locate resources, both personnel and equipment, in areas where it can serve customers more efficiently throughout the entire Network. Having equipment available locally to incidents will also minimise response times, allowing work crews to respond to broken mains and services within one hour.*[61]

166. On the basis that (i) ATCO seeks to support its proposed AA4 expenditure through this KPI, and (ii) it is a recommended KPI in AS4885[62], we consider that this indicator is appropriately included in ATCO's AAI under rule 79(1)(f).

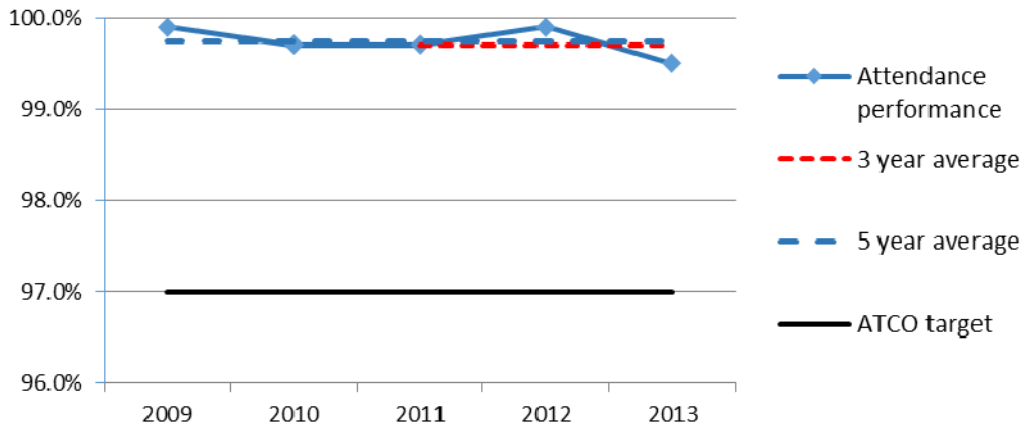
167. The figure below shows the five year performance against the attendance target. The three and five year average performance is 99.7%.

[60] Actew AGL, Access Arrangement Information for the ACT, Queanbeyan and Palerang gas distribution network, June 2009, Table 13.2

[61] ATCO AAI, *Section 8.6.1*

[62] AS4645.1: 2008, *Appendix M, Section M.5, Contingency Management*

Figure 8: Attendance to broken mains performance (%)



Source: EMCa analysis from ATCO AAI, Figure 8

168. ATCO has not provided any explicit, compelling information linking its forecast expenditure to the KPI target.

169. In the absence of evidence to the contrary from ATCO, our view is that setting its target at 97% does not support any increased expenditure requirement, as it is likely it would achieve attendance within 1 hour 97% of the time on average without any additional investment over and above AA3 levels.

170. Conversely, if ATCO's target was at 99.5% or higher (assuming such a target was justified) it would be more consistent with ATCO's proposed AA4 investment in new and upgraded depots (near growth areas), in IT systems, and in new and upgraded vehicles, all of which ATCO itself argues will lead to better field service performance.

171. The only relevant benchmark information available on this KPI is from Actew AGL's gas network. Its target for 2010-2015 is 100%[63].

172. On the basis of the above information and the taking into account the adjusted expenditure we recommend, we are of the view that ATCO should be able to attend to a considerably higher rate of broken mains within 1 hour, for example at or around on average 99.5% of the time or better over the AA4 period.

Attendance to broken services (loss of gas supply)

173. ATCO's description of this measure is: 'The percentage of attendance to loss of gas supply within three hours of service request being received.'

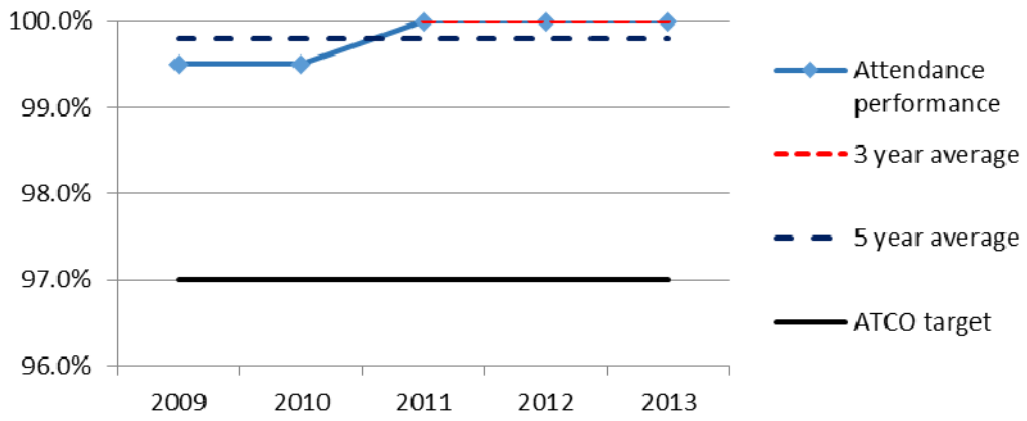
174. ATCO note that this indicator is included in the Safety Case and is covered by the Guarantee Service Level Scheme. ATCO pays $25 to affected end users if attendance within three hours is not achieved. ATCO proposes including this KPI as it is a key safety indicator. ATCO also links its performance in this measure to the same expenditure described in support of the preceding KPI.

[63] *Ibid*

175. On the basis that (i) ATCO seeks to support its proposed AA4 expenditure through this KPI, we consider that this indicator is appropriately included in ATCO's AAI under rule 79(1)(f).

176. The figure below shows the five year performance against ATCO's proposed target of 97%. The three and five year average performance is 99.7%. We also note that ATCO's AMP designated an AA4 target of >98%, an increase from the current target of 95%.[64]

Figure 9: Attendance to loss of gas supply performance (%)



Source: EMCa analysis from ATCO AAI, Figure 8

177. ATCO does not draw an explicit link in Section 3.4.1 of the AAI between specific expenditure and the rationale for the target of 97%. ATCO does, however, propose expenditure of $311.3m on Sustaining capital expenditure of which $133.6m is allocated to Asset performance and safety. The expenditure is described as improving network security, reducing the risk of loss of supply.[65]

178. In the absence of evidence to the contrary from ATCO, our view is that setting its target at 97% does not support any increased expenditure requirement as it is likely it would achieve attendance within 3 hours 97% of the time on average without any additional investment above AA3 levels.

179. Conversely, if ATCO's target was at 99.5% or higher (assuming such a target was justified) it would be more consistent with ATCO's proposed AA4 investment in new and upgraded depots (near growth areas), in IT systems, and in new and upgraded vehicles, all of which ATCO itself argues will lead to better field service performance.

180. We could not find relevant benchmark information for this KPI.

181. On the basis of the above information and the taking into account the adjusted expenditure we recommend, we are of the view that ATCO should be able to attend to loss of supply incidents within 3 hours at a considerably higher rate, for example on average 99.5% of the time or better over the AA4 period.

[64] *ATCO AMP, Section 2.4, Table 11*
[65] ATCO AAI, *Section 8.5.1, Table 57*

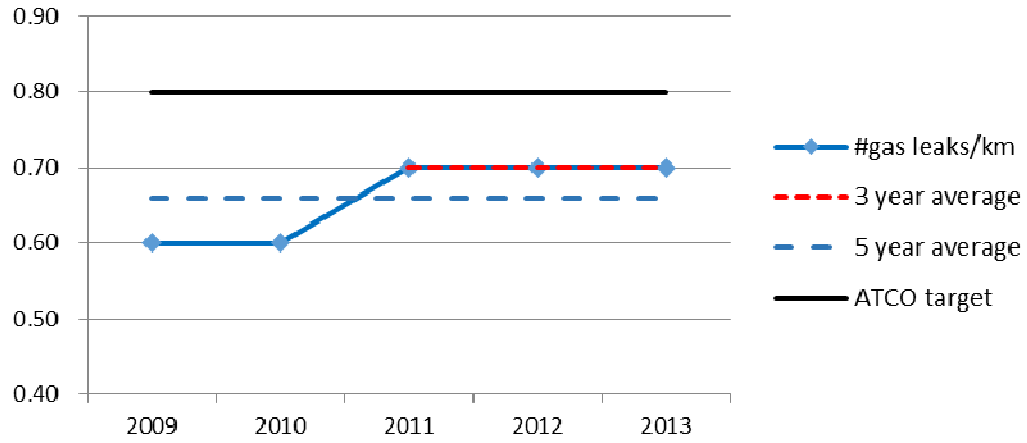
Total public reported gas leaks per 1km main

182. ATCO's description of this measure is: 'Total number of confirmed gas leaks reported by the public (excluding third party damage) per kilometre of main.'

183. ATCO has chosen this KPI as it is more likely to reflect the performance of the network and ATCO's investment in performance improvement than the number of leaks reported by ATCO. ATCO links its target to its proposed increased expenditure on preventative maintenance, asserting that it should reduce the number of publically reported leaks.

184. The figure below shows the five year performance against ATCO's proposed target of 0.8 reported leaks per km of main. The three year average performance was 0.7 and the five year average was 0.66.

Figure 10: Total public reported gas leaks per 1 km main



Source: EMCa analysis from ATCO AAI, Figure 9

185. Although not commonly included in Access Arrangements[66], it is a recommended KPI in AS4645[67] and ATCO has sought to support its expenditure with reference to this KPI, its inclusion is therefore supported in accordance with rule 72(1)(f).

186. ATCO does not draw an explicit link in AAI Section 3.4.2 between specific expenditure and the rational for the target of 0.8. However, ATCO's preventative maintenance is designed to offset the impact of a steadily ageing (deteriorating) mains asset base. ATCO therefore proposed increased expenditure on volumetric activities such as leak surveys and cathodic protection. Furthermore, ATCO's Medium and High pressure mains strategy is based on replacing end-of-life (EOL) mains, prioritising the mains showing the highest leakage rates. This is a long term project but should enable ATCO to at least help sustain if not reduce the publically-reported leak rate.

187. In the absence of evidence to the contrary from ATCO, our view is that setting its target at 0.8 does not support any increased expenditure requirement, as the work ATCO will be able to undertake in AA4 with the expenditure we consider to be compliant with the Rules is likely to lead to a reduction in publically reported gas leaks.

[66] The exception in current AAs being Actew AGL's 2009 AAI which has a target of 0.3 publically reported gas leaks per km for 2010-2015

[67] AS4645.1:2008, *Appendix M, Section M2, System Condition*

188. Conversely, if ATCO's target was at 0.7 or lower (assuming such a target was justified) would be more consistent with ATCO's proposed AA4 preventative maintenance and EOL mains strategies.

189. The only relevant benchmark information available on this KPI is from Actew AGL's gas network. Its target for 2010-2015 is 0.3[68].

190. On the basis of the above information and the taking into account the adjusted expenditure we recommend, we are of the view that the network condition will not deteriorate to the extent that there will be more than 0.7 reported gas leaks per km on average over the AA4 period.

System Average Interruption Frequency Index (SAIFI)

191. ATCO's description of this measure is: 'Number of supply interruptions experienced by the average customer as a result of sustained interruptions:

> *(Σ number of customers interrupted)/(number of customers served)'*

192. As ATCO says in the AAI, SAIFI is an accepted and common measure of the reliability and security of gas supply[69] and links it in broad terms to proposed expenditure as follows:

> *'ATCO Gas Australia will continue to invest in the Network, including installation of high pressure pipelines, interconnections and associated pressure reduction infrastructure to provide supply security for customers'*.[70]

193. Although not commonly included in Access Arrangements, it is a recommended KPI in AS4645[71] and ATCO has sought to link its expenditure with reference to this KPI, its inclusion is therefore supported in accordance with rule 72(1)(f).

194. The figure below shows the five year performance against ATCO's proposed target of <0.005. The three year average performance was 0.0035 and the five year average was 0.0039.

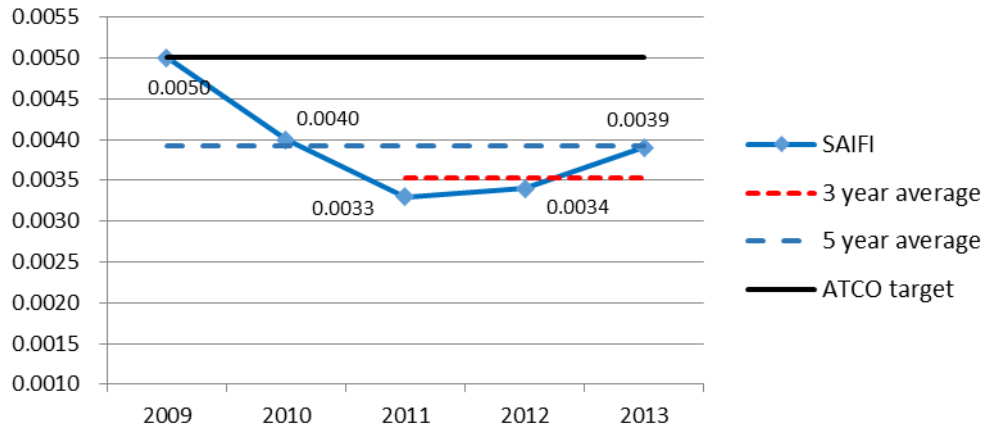
[68] Actew AGL, Ibid, noting that its KPI is measured per 10 km – the figure above has been adjusted to per/km

[69] However, our review of the current AAIs of other gas distribution businesses shows that only Actew AGL include SAIFI as a KPI (with a target of 1.0 per 1,000 customers (or 0.001)

[70] ATCO AAI, *Section 3.4.2(b)*

[71] AS4645.1, *ibid, section M1 System reliability*

Figure 11: Historical SAIFI performance



Source: EMCa analysis from ATCO AAI, Figure 10

195. ATCO's AMP and AAI are based on investing to improve SAIFI (among other things).[72] Based on the proposed AA4 program and the increased expenditure proposed in AA4 (allowing for our recommended reductions), we are of the view that the network condition and performance should not deteriorate over the course of AA4 and may improve.

196. On the basis of the above information and the taking into account the adjusted expenditure we recommend, we are of the view that ATCO's capital and operating expenditure will support sustained SAIFI performance at or better than 0.0035.

Unaccounted for gas (UAFG)

197. As ATCO propose expenditure of $67.7m over AA4 on UAFG, we have undertaken a detailed assessment, which is provided in Section 7.8, below.

198. Although not commonly included in Access Arrangements[73], it is a recommended KPI in AS4645[74] and ATCO has sought to link its expenditure with reference to this KPI and its inclusion is therefore supported in accordance with rule 72(1)(f).

Operating costs per kilometre and per customer

199. ATCO's definition of operating costs per kilometre is: 'total operating expenditure per year per total km of main' and its definition of operating cost per customer is: 'total operating expenditure per year per total number of customer connections.'

200. ATCO's proposed AA4 targets are $6,068/year/km and $116/customer. ATCO states that 'its operating costs are expected to increase over the AA4 period as a result of the investment in programs required to mitigate safety risks and to support Network growth'[75].

[72] ATCO AMP, *Section 2.5, Table14*

[73] Actew AGL's 2009 is the only current Access Arrangement that includes UAFG as a KPI – its target for 2010-2015 is 1.8% compared to ATCO's target of 2.9%.

[74] AS4645.1, *ibid, section M2 System condition*

[75] ATCO AAI, *Section 3.4.3*

201. As these are common KPIs in other Access Arrangements and as ATCO has sought to link its expenditure with reference to the KPIs, their inclusion in the AAI is supported in accordance with rule 72(1)(f).

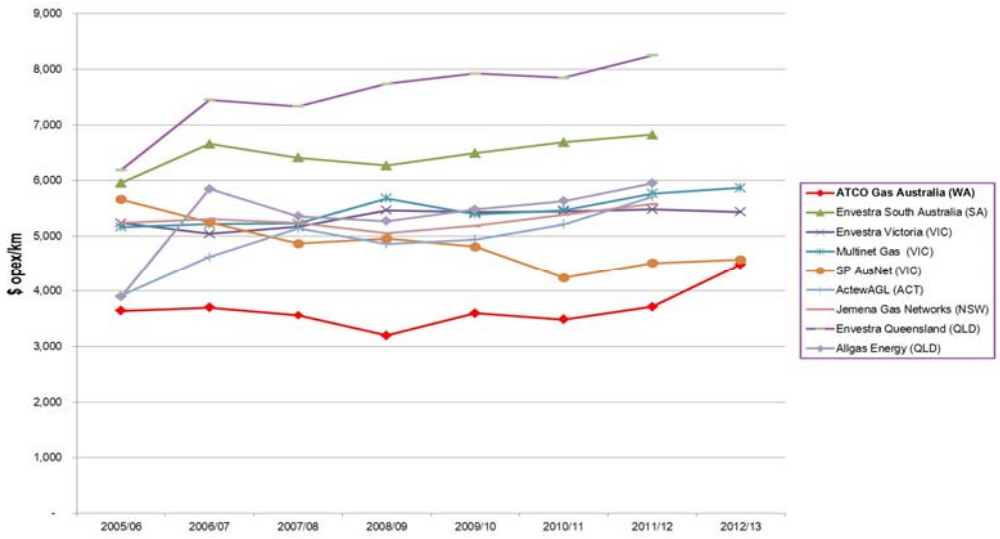
202. ATCO's AAI refers to two benchmarking studies with up to eight comparable Australian gas network businesses[76]. The benchmarking information as presented in the AAI indicates that ATCO's operating expenditure per km and per customer is the lowest of the distribution businesses in the sample.

203. However, as pointed out in the ACIL Allen report, whilst relatively low unit costs can indicate that a firm is cost efficient, there can there can be other factors that explain costs differences between firms including:

- the relative quality of service they provide
- historical or legacy features of the business such as the relative age of the network and historical levels of maintenance and renewals expenditure
- a range of features of the environment in which the firms operate which impact on costs including customer and energy density and business regulations.

204. The figure below shows the opex/km in current regulatory periods based on information in current access arrangements.

Figure 12: Total operating cost per year per km of main



Source: ATCO AAI, Figure 28

205. At $6,068, ATCO's projected 2019 ratio represents a significant increase from 2008/09 levels and would then place it above the band of median gas businesses (at least based on 2012/13 data as presented in the figure above).

206. We recommend an adjusted target based on our proposed reduction in AA4 opex (approximately 16%) and by pro-rating the new km of mains by a factor equivalent to

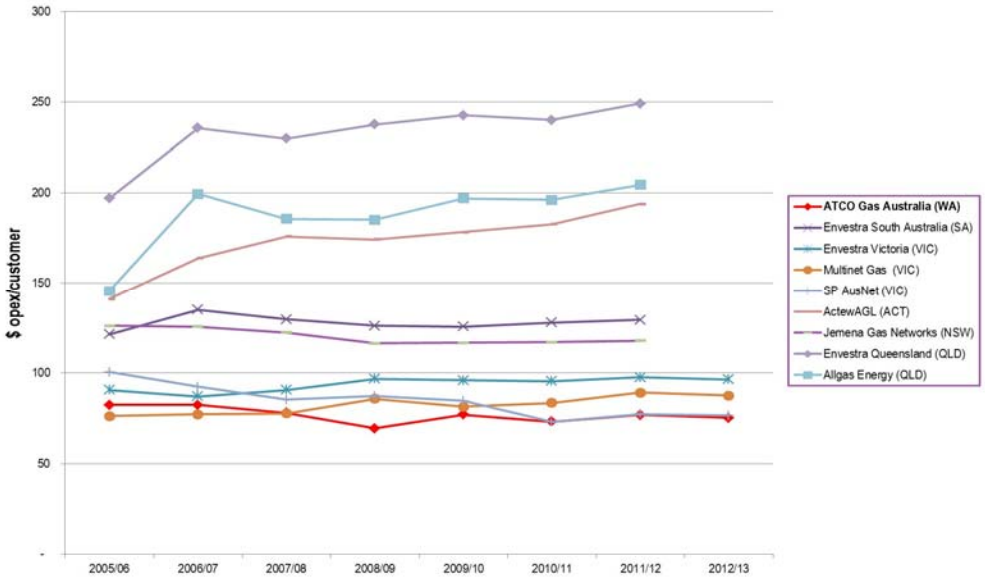
[76] Appendix 08: Benchmarking the Victorian Gas Distribution Businesses' Operating and Capital Costs Using Partial Productivity Indicators, Economic Insights Pty Ltd, March 2012 and Appendix 09: Gas Distribution Benchmarking, ACIL Allen Consulting, March 2014

our proposed 63% reduction in AA4 growth capex. This results in a revised 2019 target of $5,300/km mains, which is consistent with the band of median gas businesses.

207. Similarly the figure below shows the opex/customer benchmark information. The data provided by ATCO implies a significant increase in this ratio from the 2012/13 actual ratio in this graph, to $116/customer connection.

208. We recommend an adjusted target based on our proposed reduction in AA4 opex and revised 2019 customer connections forecast of 687,467. This results in a revised 2019 target of $106/customer connection, which maintains their position close to the ratios of the more efficient businesses shown in the figure below.

Figure 13: Total operating cost per year per customer



Source: ATCO AAI, Figure 29, noting that the data for ATCO in this figure do not match the information provided by ATCO in Figure 13 of the AAI

209. The benchmarking information [redacted] supports ATCO's assertion that increased expenditure is required to 'deliver a safe and reliable service and to sustainably grow the provision of services.[78]'

4.5.3 Alternative indicators

Non-Financial Indicators

210. The rationale ATCO present for inclusion of each of the three customer service KPIs and three network integrity KPIs is sound. With the exception of ActewAGL, ATCO has included more indicators than other gas distribution businesses in their respective Access Arrangements. The six non-financial KPIs are sufficient to give ATCO the opportunity to show the impact of its expenditure on customer service and network integrity.

[77] As declared by ATCO during the course of the on-site sessions

[78] ATCO AAI, Section 6.5

211. Ideally, ATCO would show the variation in outcomes with various levels of expenditure in accordance with its asset management strategies and illustrate how the proposed expenditure is optimal for attaining the targeted service/network integrity level. However, ATCO has failed to provide such support for its proposed expenditure.

212. We consider that rather than substitute or add similar indicators, ATCO should focus on (i) showing more clearly the link between investment and outcomes for the KPIs it has selected (noting that there are many more KPIs in its Asset Management Plan), and (ii) follow the lead of some other utilities in developing a network health measure. This is discussed below.

Financial benchmarks

213. ATCO proposes two financial KPIs – operating expenditure per km of mains and operating expenditure per customer. Both of these indicators are commonly used in Access Arrangements. We support their inclusion in ATCO's KPIs and consider that the addition of any other financial KPIs is not necessary.

Network health measure

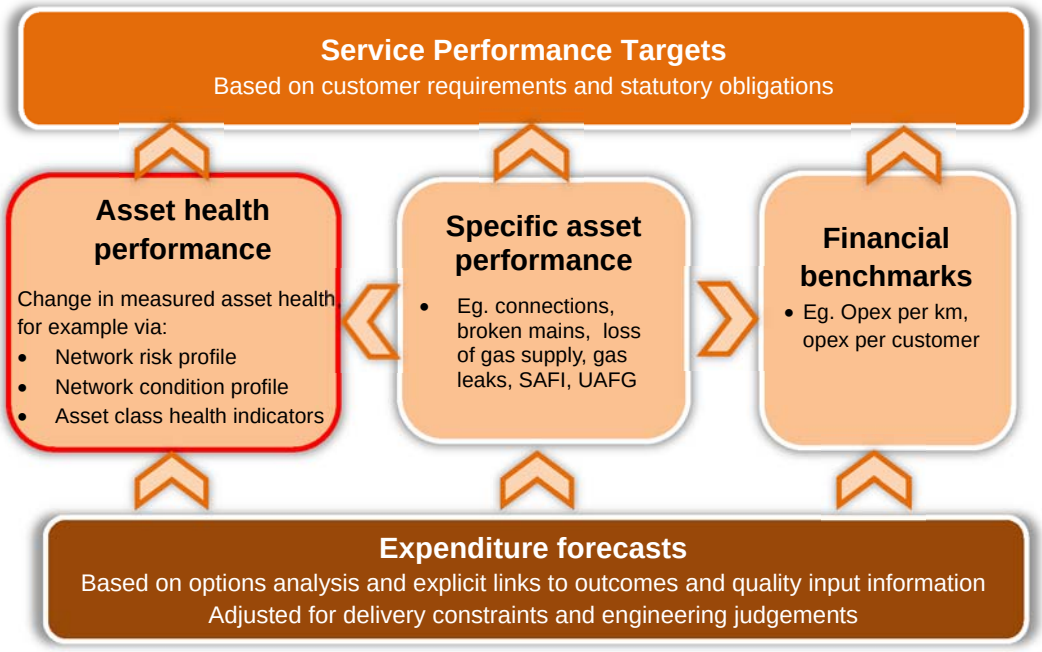
214. As indicated above, we consider that ATCO could include a measure relating to asset health to provide a valuable link between management of the network and the ultimate performance experienced by consumers. Such measures will assist in what we consider to be the important criteria for achieving a balanced set of leading and lagging measures and we consider it to be particularly important given the very significant increase in "Sustain" expenditure that ATCO proposes.

215. Delivering network services efficiently to consumers requires the use of sound asset management practices which in turn requires economic *and* technical evaluation of options to manage risk, cost and performance. These considerations raise the question of how service performance (as an output) can be linked to varying levels of expenditure (as the input). As discussed above, ATCO has proposed a number of service performance measures and targets, with an underlying assumption that the forecast expenditure proposed for AA4 will deliver these performance outcomes.

216. We have been unable to identify an explicit model that ATCO has used to quantify this link or test sensitivity to varying inputs in any of the documentation we have reviewed or in our discussions with ATCO. We consider that introducing an asset health performance measure at an overall asset level and for each asset class will provide ATCO's management and the ERA with a greatly improved link between expenditure and longer-term service performance.

217. The diagram below seeks to demonstrate how expenditure should operate to support customer and statutory targets with expenditure optimised to provide the appropriate balance between overall asset health, individual asset performance and financial benchmarks. The diagram also illustrates that asset investment and outcomes are linked to financial performance and overall asset health

Figure 14: Hierarchy linking expenditure to service performance targets



Source: adapted from Strata Energy Consulting & EMC technical advisor report on Transpower New Zealand Ltd IPP Proposal for RCP2, May 2014) to the New Zealand Commerce Commission

218. The proposed measure will need to:

(a) address how changes to asset condition data and models occurring during the access arrangement period will be accounted for, and

(b) provide flexibility to make efficient adjustments within the access arrangement period (for example, an efficient capex/opex trade-off allowing deferral of an asset replacement).

4.5.4 Compliance with Rule 72(1)(f)

219. Based on the assessment above, in our view:

- The eight KPIs proposed by ATCO all relate to the expenditure to be incurred over the access arrangement period
- Of the eight KPIs, ATCO provide a direct link between expenditure and the expected outcomes in two KPIs: opex/km main and opex/customer connection. For the remaining five KPIs (and which comprise mainly outcome performance measures) ATCO has not provided information that indicates that it has modelled the impact of its proposed expenditure on the KPIs it proposes nor that it has optimised its proposed expenditure in the context of justified targets. The absence of such modelling limits the value of the KPIs in supporting its expenditure proposal over the access period. We also question the validity of ATCO's modelling of the impacts of its expenditure on reducing UAFG.
- Based on the information available, we have assessed the likelihood of the attainment of ATCO's proposed performance targets based on the information provided - in each case we propose targets that are more challenging but, in our

opinion, more reasonable than those proposed by ATCO cognisant of the adjusted expenditure we also propose. The table below summarises our findings.

Table 2: Summary of findings on KPIs

KPI	ATCO Target	EMCa adjusted target
Domestic customer connection within timeframes	>97%	>99.5%
Attendance to broken mains within 1 hour	>97%	>99.5%
Attendance to broken services within 1 hour	>97%	>99.5%
Attendance to loss of gas supply within 3 hours	>97%	>99.5%
Total public reported gas leaks per 1 km main	<0.8	<0.7
SAIFI	<0.005	<0.0035
UAFG	<2.9%	2.57%
Opex per km of main	$6,068	$5,300
Opex per customer connection	$116	$106

220. We also recommend that ATCO develops an asset health performance measure over the course of the AA4 period and the complementary models to support the necessary links between expenditure and service outcomes.

4.6 Assessment of ATCO's demand forecast

4.6.1 ATCO's Demand Forecast

221. ATCO has produced forecasts of growth in customer connections, maximum demand and volumes to support its justifications for growth capex, as shown below.

Table 3: ATCO demand forecasts for AA4

	2014	2015	2016	2017	2018	2019
Total connections	676,287	691,553	706,799	722,009	737,183	752,322
Growth %		*2.26%*	*2.20%*	*2.15%*	*2.10%*	*2.05%*
Total volume (GJ)	26,843,277	27,172,470	27,595,169	28,221,150	28,973,656	29,780,135
Growth %		*1.23%*	*1.56%*	*2.27%*	*2.67%*	*2.78%*
Max demand (TJ/day)	120.83	122.31	123.88	127.08	130.42	134.05
Growth %		*1.22%*	*1.28%*	*2.58%*	*2.63%*	*2.78%*

Source: EMCa analysis from AAI table 9 and figure 25

222. A key component of that forecast is ATCO's forecast new connections, nearly all of which are residential tariff B3 connections. The following table shows ATCO's forecast for such new connections, net of disconnections and separately identifies the new connections that ATCO has attributed to its proposed increase in business development and marketing expenditure.

Table 4: ATCO B3 demand forecast for AA4 and impact of proposed marketing campaign

	2014	2015	2016	2017	2018	2019
Net new connections -	13,092	13,395	13,497	13,468	13,398	13,327
Additional connections due to	1,515	1,391	1,239	1,196	1,196	1,196
Total connections	**664,763**	**679,549**	**694,284**	**708,948**	**723,542**	**738,065**

Source: EMCa analysis from AAI table 9 and table 6

223. The following table shows ATCO's volume forecast by tariff class. Again, from ATCO sources, we have isolated the impact of additional volumes that ATCO has assumed will result from its proposed increase in marketing. Note that in its AAI ATCO has shown only marketing impacts for B3 customers, further inspection of its analysis models and of the Core report shows that ATCO has also assumed significant additional volume will result for other tariff classes.

Table 5: ATCO volume forecasts by tariff, and ATCO's assessment of the impact of proposed marketing

	2014	2015	2016	2017	2018	2019	*Average annual growth rate*
A1	**11,922,065**	**12,029,555**	**12,143,688**	**12,370,908**	**12,673,841**	**13,008,602**	*1.8%*
A2 baseline	2,073,786	2,148,644	2,225,018	2,325,268	2,443,941	2,572,930	
Add volume due to marketing	30,000	60,000	90,000	120,000	150,000	180,000	
Total A2	**2,103,786**	**2,208,644**	**2,315,018**	**2,445,268**	**2,593,941**	**2,752,930**	*5.5%*
B1 baseline	1,642,379	1,647,309	1,661,760	1,690,031	1,725,765	1,764,269	
Add volume due to marketing	10,000	19,975	29,925	39,850	49,751	59,626	
Total B1	**1,652,379**	**1,667,284**	**1,691,685**	**1,729,881**	**1,775,516**	**1,823,895**	*2.0%*
B2 baseline	1,191,509	1,171,669	1,160,885	1,161,479	1,168,313	1,177,773	
Add volume due to marketing	2,975	5,943	8,903	11,855	14,801	17,739	
Total B2	**1,194,484**	**1,177,612**	**1,169,788**	**1,173,334**	**1,183,114**	**1,195,512**	*0.0%*
B3 baseline	9,913,524	9,977,358	10,110,510	10,285,548	10,479,351	10,679,668	
Add volume due to marketing to new connections	24,539	47,017	66,980	86,211	105,393	124,527	
Add volume due to marketing to existing customers	32,500	65,000	97,500	130,000	162,500	195,000	
Total B3	**9,970,563**	**10,024,375**	**10,274,990**	**10,501,759**	**10,747,244**	**10,999,195**	*2.0%*
Grand total	**26,843,277**	**27,107,470**	**27,595,169**	**28,221,150**	**28,973,656**	**29,780,134**	*2.1%*

Source: EMCa analysis from AAI table 9 and ATCO marketing NPV model

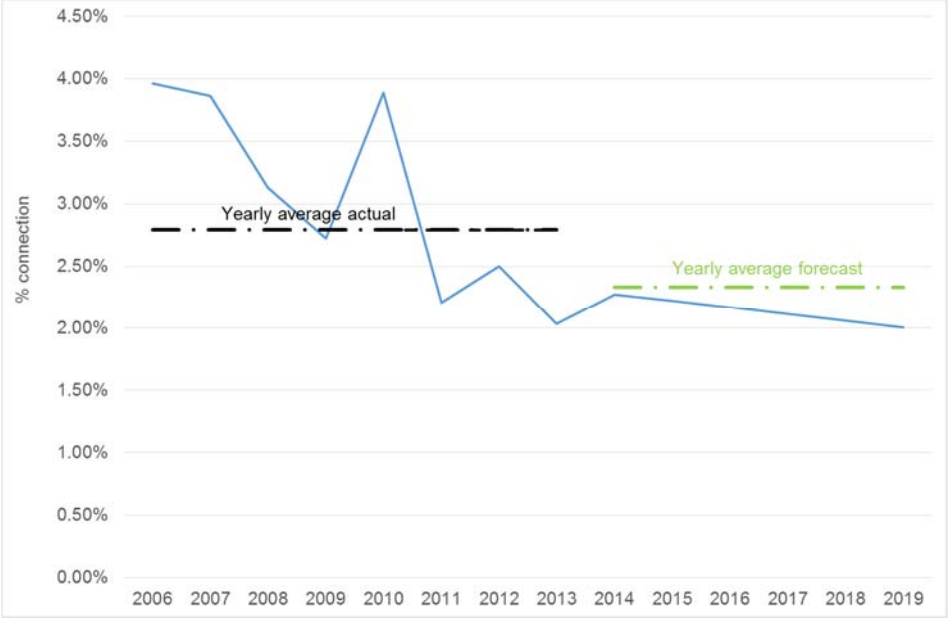
224. Of ATCO's customer base of 676,287 customers[79] 664,763 (or 98.3%) are "tariff B3" residential customers. However these account for only 37% of volumes, with the seventy A2 customers (large industrial) accounting for 44% of volumes and the

[79] Current figures quoted here are for 2014 and are taken from the AAI Table 9

remaining 19% of volumes spread across three other tariff classes (denominated as A2, B1 and B2).

225. ATCO has forecast a 2.2% p.a. growth in connections and a 2.1% growth in demand volumes over AA4, indicating a declining average volume per connection. For B3 customers, ATCO has forecast 2.1% p.a. growth in connections over AA4, which is slightly less than the average growth rate over AA3 (2.26%) and also less than the long-term B3 connections growth rate of 2.79% (to 2013) as is shown in the figure below.

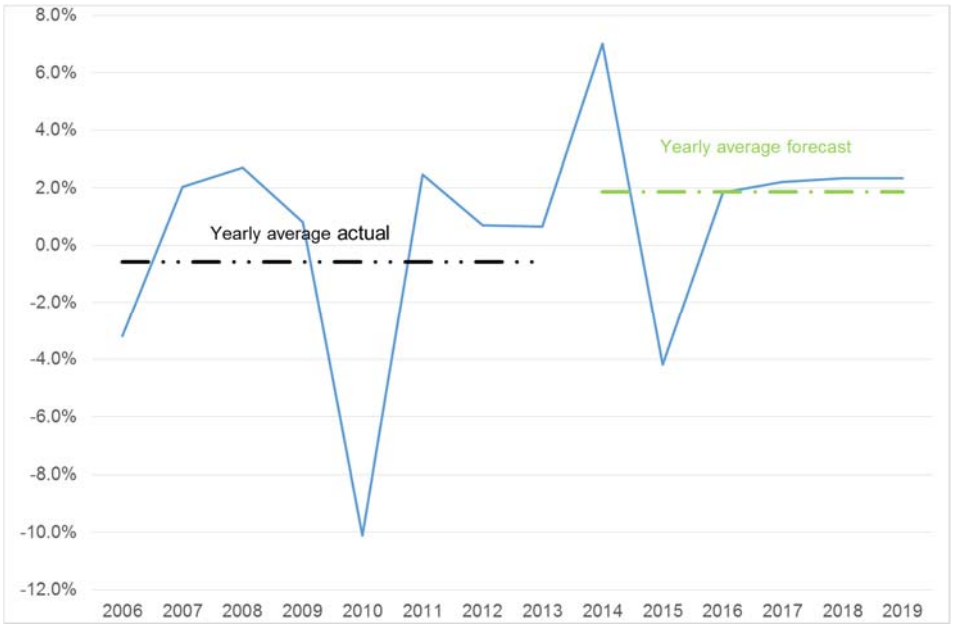
Figure 15: Annual growth in connections for B3 customers



Source: EMCa analysis from ATCO tariffs model data

226. ATCO's forecast demand volume growth for B3 customers in AA4 is 2.0%. From the last year for which ATCO has provided actual data (2013) its forecast is for a volume growth rate of 1.87%, compared with an actual growth rate of -0.57% from 2006 to 2013, as is illustrated in the figure below.

Figure 16: Annual growth in volumes for vB3 customers



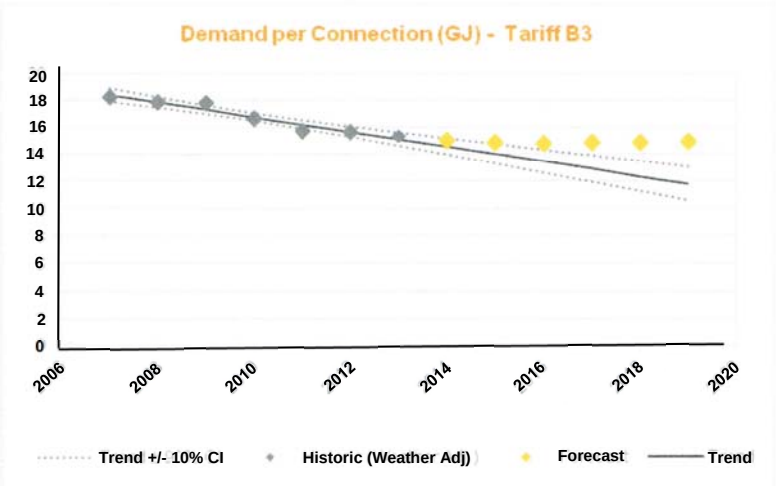
Source: EMCa analysis from ATCO tariffs model data

227. ATCO has relied on B3 connection growth forecasts from Economics Consulting Services (ECS), a Perth-based advisor. ATCO has excluded the Albany and Kalgoorlie connections that are included in that report, to arrive at a forecast for new B3 connections to the regulated network of 17,490 in 2014, 17,740 in 2015 and 17,760 thereafter. These 'raw" connection forecasts were then adjusted by another advisor to ATCO, Core Energy Group Pty Ltd (Core), which appears to be an Adelaide-based advisor. ATCO provided Core with its own forecast of additional new connections and additional volumes that it expects from the increased marketing effort that ATCO has proposed[80], being 1,515 additional new customers in 2014 tailing off to 1,196 additional new connections from 2017 to 2019. ATCO also forecast 250 additional new connections to be accounted for from introduction of a new meter (A10). Core then produced aggregate connection forecasts using these inputs, and deducting its forecast of disconnections, numbering from around 3,100 to 3,500 per year over the period.

228. It would appear that ATCO's connection forecasts for other tariff classes have been developed in-house; these numbers of connections are small by comparison, at around 540 per year. Core has then used these forecasts in its modelling of volume growth.

229. To produce its volume forecasts, Core developed volume forecasts per connection, by tariff type, using regression analysis taking account of factors such as normalised weather (in effective degree-days (EDD), trending and price elasticity. Core then modified the regression-based forecast for qualitative factors which included (for example) ATCO's assessment of the impact on volumes of its proposed additional business development and marketing expenditure. The effect of such moderation of the regression-based forecast can be seen in Core's forecast for B3 volumes per customer, in the figure below.

Figure 17: Historical and forecast demand per connection for Tariff B3



Source: Report by Core Energy, presented as Appendix 4 of the AA. Figure 6.6. Note EMCa does not have access to the data for this graph, hence it has been necessary to copy this from the Core Energy Group report

[80] See section 7.6

230. Core then produced its total volume forecasts as the product of the connections forecasts and the per-customer volume forecasts.

4.6.2 Assessment

Purpose of EMCa's assessment

231. Our terms of reference required us to investigate the key drivers behind the capacity and utilisation forecasts and how these have been used to develop ATCO's capex and opex forecasts, and to report on trend information. Opex is not materially affected by the demand forecast as such, though growth in the network that may result from demand growth does have a flow-on effect on maintenance and inspection requirements.

232. We have therefore considered ATCO's demand forecasts insofar as they drive capex and there are two material effects to be considered:

- Growth in new connections requires ATCO to install new service connections
- Demand growth requires reinforcements to meet the additional Maximum Demands, growth of which is (to a first order) driven by growth in volumes (at least to first.

233. This distinction is consistent with ATCO's distinction between Customer Initiated capex and Demand capex, and reflects the growth drivers for each of these components of capex.

234. As noted in sections 6.5 and 7.6, we consider that neither ATCO's proposed greenfield growth capex nor its proposed business development and marketing opex have been adequately justified for inclusion in regulated tariffs. If ATCO does not proceed with these expenditure programs, then its demand forecasts need to be adjusted accordingly. We have undertaken a proxy assessment of this demand impact to assist the ERA in assessing the overall tariffs impact of the reduced expenditure that we propose arising from our technical assessment. An econometric review of ATCO's volume forecasts is not required for our technical review of ATCO's proposed expenditure requirements.

B3 connection forecasts

235. The ECS report describes a number of factors that could be considered to affect new B3 connections, including population growth, land activity and housing activity. However the forecast is for constant volume of new connections being 18,040 new connections from the commencement of AA4 in July 2014 and increasing to 18,060 new connections annually from January 2016. However after discussing these factors, the forecast for the AA4 period is described simply as being "based on long term population growth rates of less than 2%"[81].

236. This forecast has not projected disconnections, Core Energy has forecast at over 3,000 p.a. The ECS report also makes no reference to the increased business development and marketing expenditure and its impact; however by comparison of information provided in the AA and in the Core report, we observe that the ECS forecast is assumed

[81] ECS report, appendix 3 of AA, page 25

to include the effects of such marketing, and Core has developed a "baseline" forecast that nets off the incremental new connections that ATCO itself has forecast[82].

237. While ECS states that it has used a population forecast of "less than 2%" as the sole driver of its new connection forecast, its report provides three such forecasts the highest of which (Band E) declines from 2.0% to 1.8% p.a. over the period 2015 – 2019. The central forecast is 0.2% p.a. lower and the lower forecast provided is around 0.2% p.a. lower again. On this basis, ATCO's B3 customer connection forecast of 2.1% p.a. over the period is at the optimistic end of the spectrum.

238. We also note a slight difference between the ECS forecast of 18,060 customers per year and the forecast of 17,760 gross new connections in the Core report that is attributed to the ECS forecast.

239. As an observation, we note the significant number of assumed gas disconnections, which represent close to 20% of the assumed number of new connections. An increase in the disconnection rate, which could for example be precipitated by significant increase in fixed annual charges such as ATC has proposed, does not appear to have been taken into account.

Volumes per customer

240. For the dominant B3 customer group, Core Energy has projected a levelling of the decline in average volume per customer that has been evident for the past seven years, with volumes per B3 connection assumed to stabilise at around 14.8GJ per customer as shown in the Core graph (Figure 17) shown above. This results from a qualitative adjustment that Core has made to the per-customer volume forecasts resulting from its regression model.

241. From information provided by ATCO, this seems to be a reasonable current value. However it is difficult to reconcile Core's assumption that this decline has now stabilised, with the evidence of continuing decline each year in the annual volumes for newly connected B3 customers. As shown in section 6.5.2, the most recently connected customers have an annual volume of less than 12 GJ, though it will take time for these lower volumes to dilute total annual volumes.

Impact of proposed increase in business development and marketing

242. We have calculated the total impact that ATCO has assumed to result from its proposed increase in marketing. Deducting the additional customer numbers and additional volumes that ATCO has allowed for (and which were shown in Table 5:

ATCO volume forecasts by tariff, and ATCO's assessment of the impact of proposed marketing), produces the following adjusted forecast that could be assumed to apply if the proposed additional marketing did not proceed or did not have the impact that ATCO has assumed:

[82] This appears to have been produced for comparison purposes only, as the end forecast resulting from Core report, and which aligns with ATCO's forecast, includes the effect of its proposed additional marketing effort.

Table 6: Customer connection and volume forecasts following adjustments to remove the effects of the increase in marketing.

	ATCO AAI (2019)	Less marketing	Net
Connection numbers	752,322	-8,020	744,302
Demand (GJ)	29,780,135	-576,893	29,203,242

Source: EMCa analysis from AAI table 6 and table 9 and information in ATCO growth NPV model

Assumptions regarding development of spur lines and greenfields gas reticulation

243. For reasons stated in section 6.5.2 we find that ATCO's proposed greenfields development capex has not been adequately justified in its AA, and we have recommended therefore that it is disallowed. If ATCO chooses not to extend its network into greenfields developments, then ATCO would not have an ability to service the greenfields portion of the new connections that it has currently forecast. In effect, ATCO's AA forecast assumes that new connections are customer demand-driven and are not constrained by ATCO's ability to supply them.

244. We have made a proxy assessment of the impact that this might have on ATCO's connections and volumes. This is made on the simplifying assumption that this limits the number of new B3 customers, but has no material effect on the forecast number of other customers which, in any case, are small in number and more likely to be able to be supplied from the existing network.

245. We have also assumed that ATCO has some current ability to connect greenfields customers, without requiring AA4 capex to do so, and that this continues for the remainder of 2014 and at half-rate for 2015. In effect this assumption acknowledges that, if ATCO was to cease extending its network into greenfields areas on the basis of unsatisfactory economics, it nevertheless has a latent demand to complete connection of dwellings where it has already built mains extensions. As the AA4 period commences on 1st July 2014 it is reasonable to expect that ATCO will continue to connect new customers at least over the remaining 6 months of 2014 and that there would be a gradual scaling back of new connections as the current demand for new connections to recently-extended mains is fulfilled. The adjusted demand therefore assumes this continuation of new greenfields connections for the remainder of 2014 and at a slowing rate in 2015. We have made equivalent ramp-down assumptions in considering greenfields new connection capex (see section 6.5.2).

246. The resulting adjusted customer and volume forecasts are shown below, which also reflects the effect of ATCO not undertaking the additional marketing. This table is therefore a reasonable proxy for the demand implications of the expenditure findings.

Table 7: Customer connection and volume forecasts following adjustments to remove the effects of the increase in marketing and greenfields growth

Tariff class	2014	2015	2016	2017	2018	2019	Average annual growth rate
A1 tariff							
Connection numbers	70	70	70	70	70	69	-0.3%
Demand (GJ)	11,922,065	12,029,555	12,143,688	12,370,908	12,673,841	13,008,602	1.8%
A2 tariff							
Connection numbers	109	114	117	120	123	127	3.1%
Demand (GJ)	2,073,786	2,148,644	2,225,018	2,325,268	2,443,941	2,572,930	4.4%
B1 tariff							
Connection numbers	1,400	1,448	1,498	1,549	1,602	1,657	3.4%
Demand (GJ)	1,642,379	1,647,309	1,661,760	1,690,031	1,725,765	1,764,269	1.4%
B2 tariff							
Connection numbers	9,897	10,276	10,687	11,130	11,606	12,116	4.1%
Demand (GJ)	1,191,509	1,171,669	1,160,885	1,161,479	1,168,313	1,177,773	-0.2%
B3							
Connection numbers	663,248	670,337	671,201	672,037	672,803	673,498	0.3%
Demand (GJ)	9,913,524	9,886,371	9,839,601	9,835,803	9,850,995	9,872,868	-0.1%
Total							
Connection numbers	674,724	682,245	683,573	684,906	686,204	687,467	0.4%
Demand (GJ)	26,743,263	26,883,549	27,030,952	27,383,489	27,862,856	28,396,442	1.2%

Source: EMCa analysis from information in AAI table 9 and table 6, and in the ATCO Asset Management Plan, table 27

5 Review of AA3 capex

5.1 Introduction

248. This section contains the results of our review of the capex incurred (or to be incurred) by ATCO in AA3. We have undertaken this review using the assessment framework set out in section 3.2.1 and having regard to the findings in section 4.

249. As agreed with the ERA, we undertook:

- a more detailed review of those aspects of ATCO's AA3 capex programme where there has been a material deviation between the amount spent by ATCO and the allowance approved by the ERA in its 2011 AA3 final decision; and
- a higher level review of the other areas of ATCO's AA3 capex programme.

250. The results of our review and our overall assessment of whether this capex can be considered conforming capex (r. 79) for the purposes of rule 77(2) are set out below. Unless otherwise stated all references to dollar values are expressed in 30 June 2014 dollars.

5.2 Overview of findings

251. ATCO reports that it has spent $270.5m on a range of capex projects in AA3.[83] While at an aggregate level, this is just 3.5% more than the total capex allowance approved by the ERA in 2011, when the comparison is undertaken at a more disaggregated level it is clear that there have been some significant deviations across a number of capex categories from the ERA's approved allowance across a number of capex categories[84]

252. The deviations between the amount spent by ATCO and the allowances approved by the ERA in the AA3 revisions process appear to have arisen for a variety of reasons, including:

[83] ATCO, AAI, March 2014, p118.

[84] For example, ATCO spent $31.1 million more on Sustaining capex than was approved by the ERA and $43.2 million *less* on Growth capex.

- the implementation of the Safety Case, which has resulted in a number of additional Sustaining capex projects being carried out that weren't anticipated during the AA3 revisions process;
- lower than expected housing activity, which has resulted in a number of Growth capex projects being deferred;
- ATCO's acquisition of the network, which occurred in 2011; and
- changes in the scope of some projects relative to what was envisaged during the AA3 revisions process.

253. Based on our review of the capex programme undertaken by ATCO in AA3 and the supporting information it has provided, we are of the opinion that:

- $261.9m (97% of ATCO's expenditure) complies with the criteria set out in rule 79 of the NGR and can therefore be considered conforming capex for the purposes of rule 77(2) and rolled into the opening value of the asset base for AA4; and
- $8.7m (3% of ATCO's expenditure) does not comply with the criteria set out in rule 79 and should not be included in the opening value of the asset base.

254. The specific aspects of ATCO's AA3 capex programme that in our opinion do not satisfy rule 79 are:

- the $0.8m Blue Flame Kitchen, because it has not been adequately justified under any of the grounds set out in rule 79(2);
- the $0.7 m Jandakot sewerage extension, because the costs of this project appear to have also been included in the Jandakot Redevelopment Project total (i.e. there appears to have been some double counting of these costs);
- the $7.2m overrun that ATCO incurred on the Network Data Visualisation (NDV), Field Mobility and the GNIS upgrade IT projects, because we are not satisfied that it complies with the prudent service provider test in rule 79(1)(a).

255. Given the scale and nature of the IT capex undertaken in AA3, we are also of the opinion that a 10% annual efficiency dividend from the incurred AA3 IT capital expenditure (i.e. $1.93m p.a.) should be applied to AA4 opex.

5.3 Overview of AA3 capex

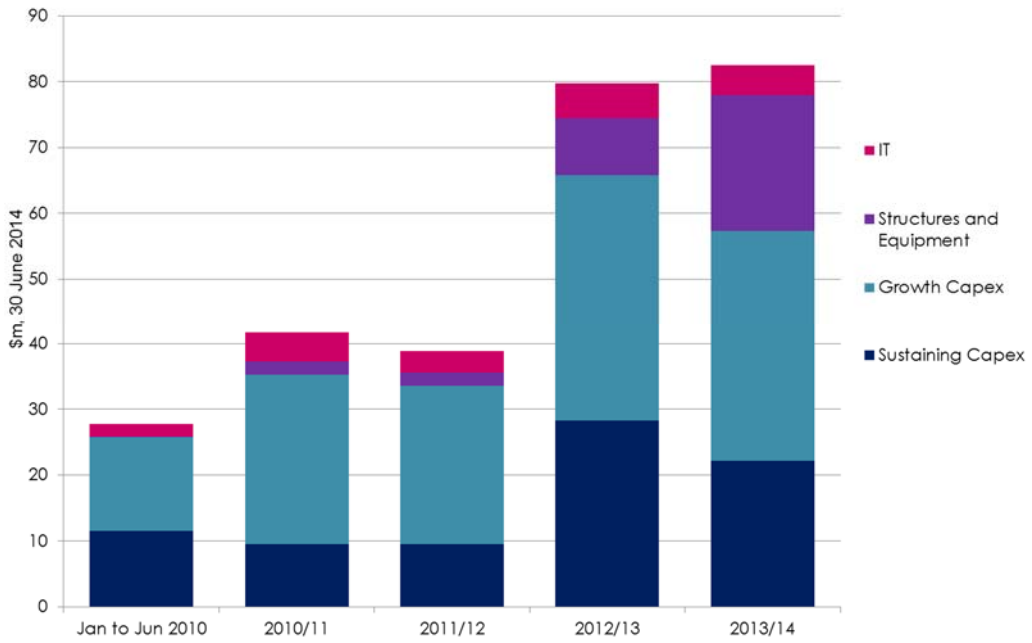
256. During AA3 ATCO has spent $270.5m on:[85]

- Growth capex (i.e. projects that are carried out to extend or expand the network to accommodate new connections) ($136.6m);
- Sustaining capex (i.e. projects that are required to maintain and improve the safety or integrity of services and/or comply with a regulatory obligation or requirement) ($81.2m);
- Structures and equipment ($33.5m); and
- IT ($19.3m).

[85] ATCO, AAI, March 2014, table 24.

257. As Figure 18 reveals, most of this expenditure has occurred in the last two years of AA3 following the ATCO Group's acquisition of the Network,[86] with capex increasing from around $40m in 2010/11 to over $80m in 2013/14.

Figure 18: Capex incurred by ATCO in AA3



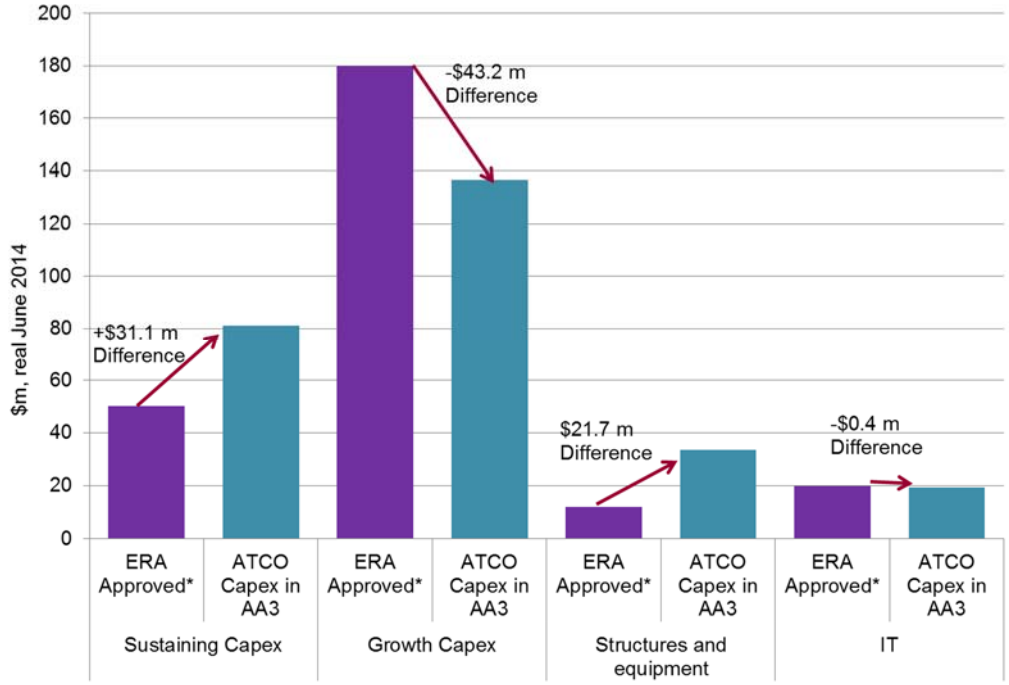
Source: EMCa analysis from data in ATCO, AAI, Table 24.

258. At an aggregate level, the $270.5m spent by ATCO in AA3 is just 3.5% ($9.1m) *higher* than the allowance approved by the ERA in its 2011 final decision ($270.5m versus $261.4m).[87] However, some care should be taken with this aggregate measure, because when the comparison is carried out at a more disaggregated level, it is clear that there have been some significant deviations between the amount spent by ATCO and the allowance approved by the ERA. Some insight into the extent of this deviation can be found in Figure 19, which compares the expenditure incurred by ATCO in AA3 with the allowances approved by the ERA.

86 ATCO, AAI, March 2014, p120.

87 ATCO, AAI, March 2014, table 26.

Figure 19: Capex incurred by ATCO in AA3 vs capex approved by the ERA



Source: EMCa analysis from data in ATCO, AAI, Tables 26, 36 and 41.
*Notes: * Includes the effect of reclassifications carried out by ATCO, with $1.8m deducted from the ERA's approved allowance for Sustaining capex, $10.5m deducted from the approved allowance for Growth capex, $10.4m added to the approved allowance for Structures and equipment and $1.9m added to the approved allowance for IT.*

259. As Figure 19 indicates, ATCO has spent far more than the allowance approved by the ERA on Sustaining capex ($31.1m) and Structures and equipment ($21.7m) in AA3. Most of the increased expenditure on these two categories of capex has been offset though by a $43.2m underspend on Growth capex.

260. The reason for the significant deviation between the amount spent by ATCO during AA3 and the allowance approved by the ERA has been explained by ATCO as follows:[88]

> *Growth related capital expenditure during the AA3 period was lower than forecast due to economic conditions affecting new housing developments and gas connections. Sustaining related capital expenditure was higher than forecast over the period due to the implementation of the Safety Case during the second half of the AA3 period.*

261. Notwithstanding the significant variation between the allowance approved by the ERA and the amount spent by ATCO on most capex categories, ATCO has claimed that the $270.5m satisfies the conforming capex criteria in rule 79 of the NGR for the following reasons: [89]

- *It was incurred to provide haulage services utilising a network that is managed in accordance with accepted good industry practice. ATCO Gas Australia has incurred the expenditure on a prudent basis in line with business planning and investment governance systems and processes, and the use of efficient*

[88] ATCO, AAI, March 2014, p118.

[89] ibid.

procurement practices to achieve the lowest sustainable cost of providing services

- *Growth related capital expenditure satisfies the incremental revenue test*
- *The remainder of the capital expenditure satisfies at least one of the criteria under rule 79(2)(c) of the NGR*

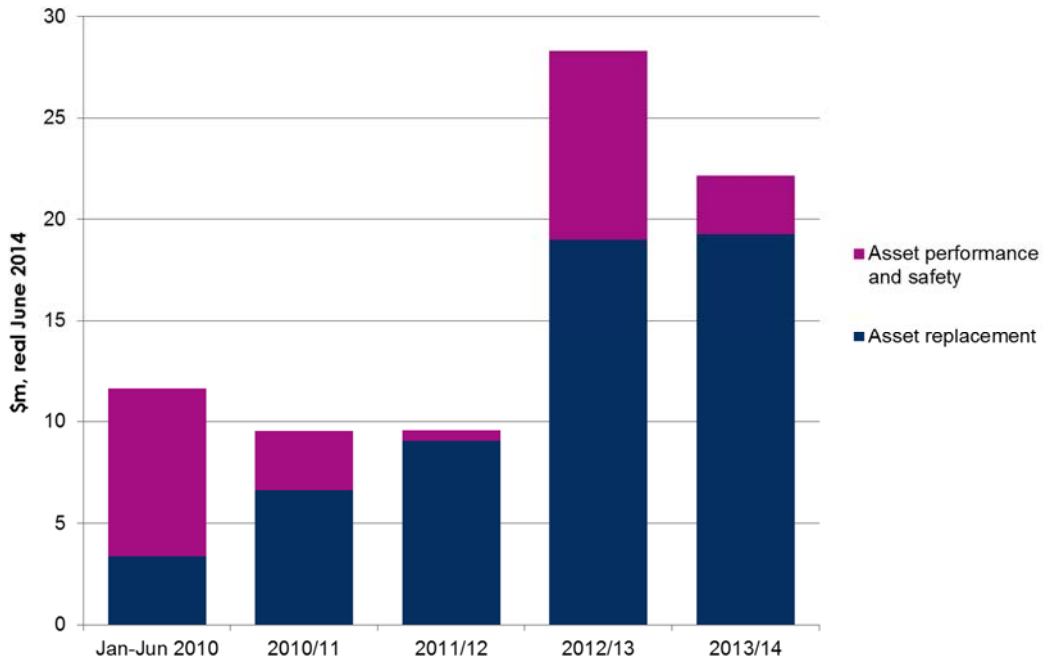
5.4 Sustaining capex AA3

5.4.1 ATCO's proposal

262. Over the last 4.5 years, ATCO has spent $81.2m on Sustaining capex (see Figure 20).[90] Of the $81.2m:

- $57.3m was spent on Asset replacement, which, amongst other things, has involved the replacement of: end of life (EOL) cast iron mains in Fremantle; odd sized and unprotected steel mains across the network; distribution infrastructure within multi-storey buildings; and gas meters;[91] and
- $23.8m was spent on Asset performance and safety, which, amongst other things, has involved the installation of concrete barriers to protect high pressure pipelines and over pressure shut off (OPSO) devices on high pressure regulating equipment.[92]

Figure 20: AA3 expenditure on Sustaining capex



Source: EMCa analysis from data in ATCO AAI, Table 23.

90 ATCO, AAI, March 2014, table 26.

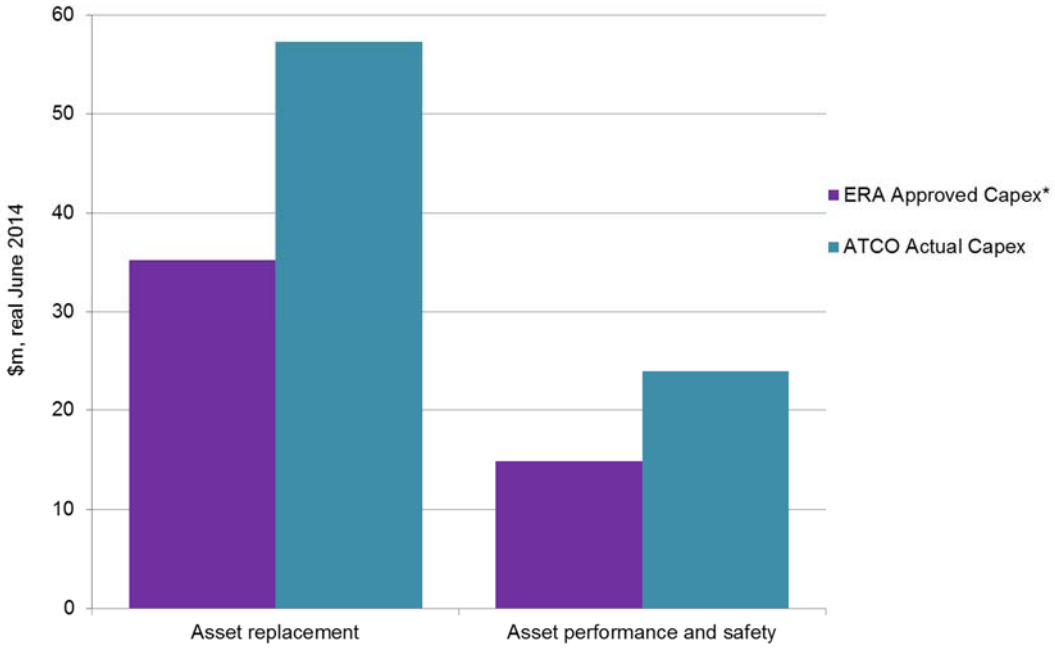
91 ATCO, AAI, March 2014, p144.

92 ATCO, AAI, March 2014, pp. 147-148.

Difference between ATCO's expenditure and the ERA approved allowance

263. The amount spent by ATCO on Sustaining capex in AA3 was $31.1m[93] *higher* than the amount approved by the ERA. The difference between the amount that ATCO spent on Asset performance and safety and Asset replacement and the allowances approved by the ERA for these two categories is illustrated in Figure 21.

Figure 21: ATCO's expenditure on Sustaining capex vs ERA allowance



Source: EMCa analysis from data in ATCO AAI, Tables 26, 36, 40, 41 and 44.
*Notes: * The ERA's approved capex allowance includes the effect of reclassifications carried out by ATCO. See footnote 93 for further detail.*

264. According to ATCO, the increased expenditure on Sustaining capex can largely be attributed to 'new requirements' under the FSAs, which it has conducted as part of the Safety Case accepted by Energy*Safety* following the ERA's AA3 final decision.[94] The additional projects that ATCO claims to have carried out as a result of the FSAs and its rationale for undertaking these projects are set out in Table 8.

93 Note that this amount includes the effect of the following reclassifications:

- the Mandurah Gas Lateral, which was approved by the ERA in the AA3 revisions process under rules 79(2)(b) and 79(2)(c) (25% of costs under 79(2)(b) and 75% under rule 79(2)(c)), but was all included in the Growth capex category. The reclassification is in keeping with ATCO's original proposal, which is that 25% should be attributed to Growth and 75% to maintaining the existing capacity;
- the Jandakot Operational Centre redevelopment, which was originally classified as an Asset replacement project but is now classified as a Buildings project; and
- the Telemetry replacement project, which was originally classified as an Asset replacement project but is now classified as an IT project.

94 ATCO, AAI, March 2014, p143.

Table 8: Projects carried out as a result of the FSAs in AA3

Project	Amount Spent in Excess of ERA Approval	ATCO's Rationale For the Expenditure	ATCO's Justification Under Rule 79(2)
Asset replacement			
Replacement of end of life unprotected buried metallic mains and odd sized steel pipelines	$11.4	The FSA identified that the risk associated with these assets is not as low as reasonably practicable due to the risk of loss of containment and leak tracking into a building.	Rule 79(2)(c)(i)-(ii)
Replacement of distribution infrastructure within multi-storey buildings.	$7.1	The FSA identified the risk of gas leakage and consequences associated with infrastructure as not being as low as reasonably practicable. ATCO engaged with EnergySafety to develop a solution to reduce this risk.	
Replacement of M6WA meters with plugs	$2.2	The FSA identified the risk of meters with faulty plugs as not being as low as reaonably practicable.	
Asset performance and safety			
The installation of concrete barriers to protect high pressure pipelines from excavation strikes	$5.5	The Safety Case identified the network risk of excavation strikes in sensitive areas was not as low as reasonably practicable.	Rule 79(2)(c)(i),(iii)
The installation of OPSO devices on high pressure regulating equipment	$1.6	The OPSO devices mitigate the risk of network damages and/or significant release of gas if over pressurisation occurs and is required by AS/NZS 4645 and AS 2885.	Rule 79(2)(c)(i)-(iii)
Total Expenditure in Excess of ERA Allowance	**$27.8**		

Source: EMCa analysis from data in ATCO, AAI, pp. 143-144.

Basis on which ATCO has sought to justify Sustaining capex in AA3

265. With the exception of the Mandurah Gas Lateral, ATCO has sought to justify all of the expenditure on Sustaining capex in AA3 under one or more of the grounds in rule 79(2)(c) of the NGR (i.e. safety, integrity, compliance and/or maintaining capacity to meet existing levels of demand).[95] ATCO has also claimed that the expenditure satisfies the prudent service provider test in rule 79(1)(a).[96]

5.4.2 EMCa assessment

266. Based on our review of the expenditure incurred by ATCO on Sustaining capex in AA3, it would appear that around 90% of the $31.1m of additional expenditure incurred in AA3 can be attributed to the five projects set out in Table 8, which were not identified during the AA3 revisions process but have been driven by the FSAs carried out by ATCO. We have therefore reviewed these five projects to determine whether they satisfy the conforming capex criteria in rule 79. We have also conducted a closer examination of the Mandurah Gas Lateral, the costs of which have been divided by ATCO between Sustaining and Growth capex.

267. The results of our review are set out below.

Justification for the expenditure (r. 79(2))

268. To determine whether the five projects in Table 8 and the Mandurah Gas Lateral comply with conforming capex criteria, we have, in the first instance, considered whether the projects are justified under one or more of the grounds set out in rule 79(2) of the NGR. In doing so, we have had regard to:

- the rationale provided by ATCO for each project;

95 ATCO, AAI, March 2014, pp. 144-149.

96 ATCO, AAI, March 2014, pp. 122-128.

- the Safety Case that was accepted by Energy*Safety* following the completion of the AA3 review process in mid-2011;
- the FSAs (essentially a risk assessment process) conducted by ATCO, which we understand from the on-site meetings are agreed to on a consensus basis by ATCO staff through an internal validation process as required by Australian Standards AS/NZS4645 and AS2885;[97]
- Australian Standards AS/NZS4645 (Gas Distribution Networks) and AS2885 (Pipelines – Gas and Liquid Petroleum Pipelines);
- the AMP; and
- the practices employed by other gas distribution pipelines.

269. The results of our review are summarised in Table 9.

Table 9: Observations on the projects carried out as a result of the FSAs

Project	Observations
Replacement of EOL unprotected buried metallic mains and odd sized steel pipelines. (**Total cost: $17.8 m + $2.5 m**)	The replacement of EOL unprotected metallic mains to address high leakage rates is justified on both a safety and integrity basis (r. 79(2)(c)(i),(ii)). The replacement of odd sized steel pipelines is also justified on these two bases, but not for the reasons cited by ATCO (i.e. the 25,000 customers at risk threshold). We consider that this project is instead justified on the basis that the pipelines are nearing the end of their lives and the odd sized pipelines compromise ATCO's ability to respond to emergencies. *Note that this work programme continues through to AA4.*
Replacement of distribution infrastructure within multi-storey buildings. (**Total cost: $7.1 m**)	The replacement of distribution infrastructure within multi-storey buildings is a high priority given the potential for loss of containment and is justified on both a safety and system integrity basis (r. 79(2)(c)(i),(ii)). *Note that this work programme continues through to AA4.*
Replacement of M6WA meters with plugs (**Total cost: $2.2 m**)	The replacement of M6WA meters was also high priority, given the potential loss of containment at meters that are located in close proximity to buildings. This project is therefore justified on both a safety and integrity basis (r. 79(2)(c)(i),(ii)).
The installation of concrete barriers to protect high pressure pipelines from excavation strikes (**Total cost: $9 m**)	Protecting high pressure pipelines from excavation strikes in sensitive areas (e.g. schools and aged care facilities) is a legitimate risk mitigation measure and is justified on a safety basis (r. 79(2)(c)(i)). It is worth noting though that the slabbing technique used by ATCO is not the only option that can be employed and that there may be other cost effective long term solutions.[98]
The installation of OPSO devices on high pressure regulating equipment (**Total cost: $1.6 m**)	The installation of OPSO devices has the potential to overcome hidden regulator failures and prevents large gas discharge and is justified on both a safety and integrity basis (r. 79(2)(c)(i),(ii)). *Note that this work programme continues through to AA4.*
Mandurah Gas Lateral (**Reclassified[99] from Growth $11m**)	We consider that this project is a combination of both Growth and reinforcement and is justified on the basis of maintaining minimum pressures plus a provision for growth over a 20 year horizon.

[97] We understand that on some very specific matters, such as the assets within multi-storey buildings Energy*Safety* also had some involvement in the risk assessment, but Energy*Safety* has made it clear that they did not approve the FSAs, they 'registered no objections'.

[98] The total cost of $9m is for two projects - slabbing CL150 ($7m) and CL600 ($0.6), with $1.1m overheads for managing the projects and $0.3m for inflation to June 2014, as per ATCO response to IR EMCa89

[99] Note that while ATCO has referred to this as being a reclassification from Growth (demand) capex to Sustaining (performance and safety) capex, it would appear from our review of Frontier's report that this project was originally proposed and assessed under rules 79(2)(b) and 79(2)(c), with 25% of the costs approved under 79(2)(b) and 75% under rule 79(2)(c)). However, all of the expenditure was reportedly recorded as Growth capex, which is why it has been referred to by ATCO as a reclassification. See Frontier Economics, Review of

	While a lower capex option may have resulted if the project was only carried out to maintain minimum pressures rather than providing for connection growth, the cost is unlikely to be less than the 75% of the actual costs that ATCO has allocated to sustaining performance in its growth NPV analysis. With 25% of the cost included in the growth NPV analysis, that analysis nevertheless satisfies rule 79(2)(b) (see section 5.5.2). On a combined basis, the project appears therefore to be justified under rule 79(2).

270. As the information in Table 9 indicates, we are satisfied that the additional $27.8m ATCO spent on the five projects in Table 8 is justified under one or more of the following grounds:

- maintaining and improving the safety of the services (r. 79(2)(c)(i)); or
- maintaining the integrity of the service (r. 79(2)(c)(ii)); and/or
- complying with regulatory obligations or requirements (r. 79(2)(c)(iii)).

271. We are also satisfied that the Mandurah Gas Lateral is justified under rule 79(c)(iv) and 79(2)(b) (see section 5.5.2).

Prudent service provider test (r. 79(1)(a))

272. In keeping with the assessment framework set out in section 3.2.1, we have assessed whether the expenditure on the five projects in Table 8 and the Mandurah Gas Lateral satisfies the prudent service provider test set out in rule 79(1)(a). In carrying out this assessment we have examined the business cases ATCO has prepared for each project.

273. On the basis of this review it would appear that ATCO considered a number of options when deciding how to address the identified risks and also took into account the costs, risks and benefits associated with each option when making its decision. This approach is consistent with what we would expect a prudent service provider acting efficiently, to achieve the lowest sustainable cost and is in keeping with good industry practice.

274. When coupled with our observations about the relatively sound nature of ATCO's governance of ***approved*** projects (as distinct from its forecasting processes), its procurement arrangements and its ability to deliver capex projects in aggregate within the budget allowances that it proposed and which were approved by the ERA, we are satisfied that expenditure incurred by ATCO on these projects complies with the prudent service provider test in rule 79(1)(a).

Compliance with the conforming capex criteria

275. Based on the findings set out above, we are satisfied the expenditure on the five projects in Table 8 and the Mandurah Gas Lateral complies with rule 79 and can be considered conforming capex for the purposes of rule 77(2) of the NGR.

Other projects

276. In relation to the other Sustaining capex projects undertaken by ATCO in AA3, which with the exception of a small number of relatively small scale projects were all approved by the ERA in the 2011 final decision, we have undertaken a higher level review having regard to both:

Application of New Capital Expenditure Criteria to the WA Gas Networks Gas Distribution System, June 2010, p4.

- ATCO's rationale for carrying out these projects; and
- ATCO's governance arrangements and delivery performance (see section 4.34.3).

277. In short, we are of the view that these other projects can be justified under one or more of the grounds in rule 79(2)(c) and that ATCO's expenditure on these projects satisfies rule 79(1)(a). We are therefore satisfied that this capex can also be considered conforming capex.

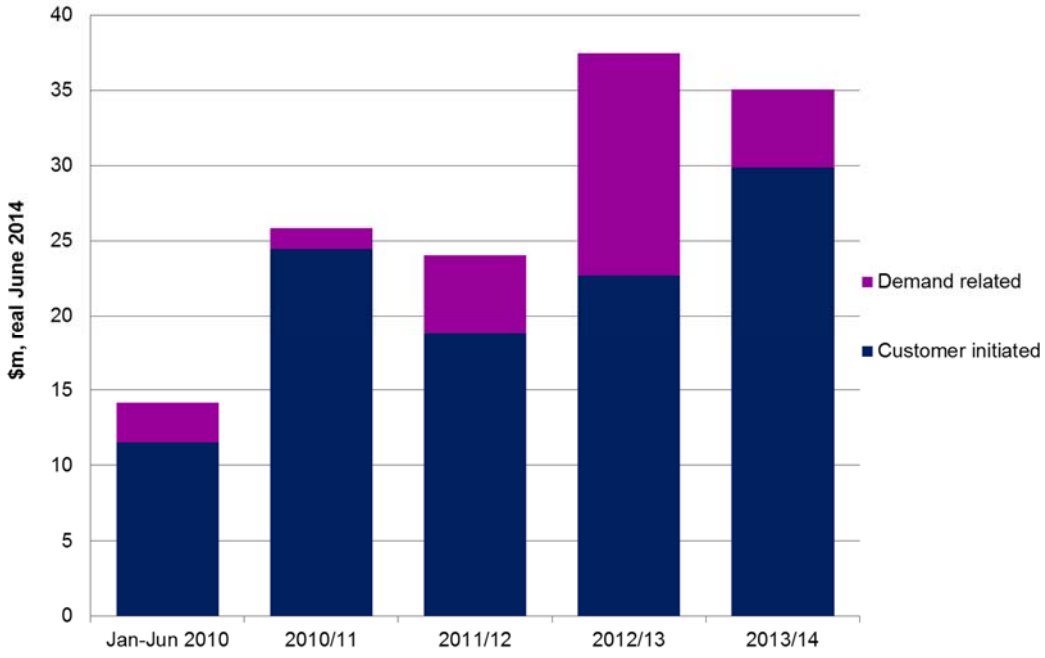
5.5 Growth capex AA3

5.5.1 ATCO's proposal

278. In AA3 ATCO spent $136.6m on Growth capex (see Figure 22).[100] Of the $136.6m:

- $107.4m was spent on Customer initiated capex (i.e. the costs of connecting new customers to the network through the installation of mains, services and meters);[101] and
- $29.2m was spent on Demand capex (i.e. the costs of reinforcing the network to ensure the network maintains pressure (hydraulic capacity) to meet the growth in connections).[102]

Figure 22: AA3 expenditure on Growth capex



Source: EMCa analysis from data in ATCO, Tariff model.

[100] ATCO, AAI, March 2014, table 27.

[101] ATCO, AAI, March 2014, pp. 134-135.

[102] ATCO, AAI, March 2014, pp. 136-142.

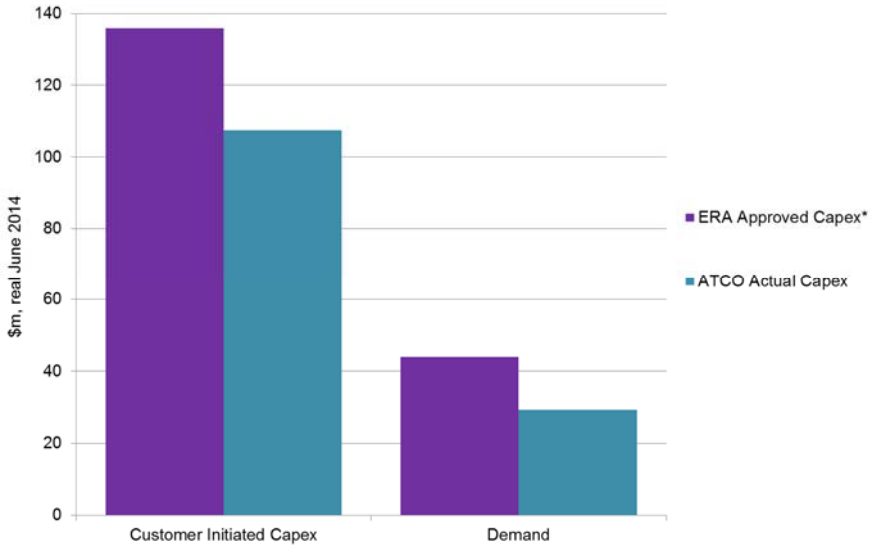
Difference between ATCO expenditure and ERA approved allowance

279. In total, the amount spent by ATCO on Growth capex was $43.2m[103] *lower* than the amount approved by the ERA. The difference between the amount spent by ATCO on Demand and Customer initiated capex in AA3 and the allowance approved by the ERA is illustrated in Figure 23.

280. As this figure highlights, ATCO spent $28.5m less than the allowance approved by the ERA on Customer initiated capex and $14.7m less on Demand capex. The reasons for the underspend were explained by ATCO as follows:[104]

> *New connections declined further than forecast over the AA3 period, contributing to a lower level of expenditure in services and meters than forecast. Lower than forecast new housing activity and subdivision growth on the periphery of the network also resulted in the deferral of high pressure network extensions until AA4.*

Figure 23: ATCO's expenditure on Growth capex vs ERA allowance



Source: EMCa analysis from data in ATCO, AAI, tables 32 and 35.
Note that $10.5m has been deducted from the ERA's approved allowance for Demand capex, to account for the reclassification of the Mandurah Gas Lateral (see footnote 93 for further detail).

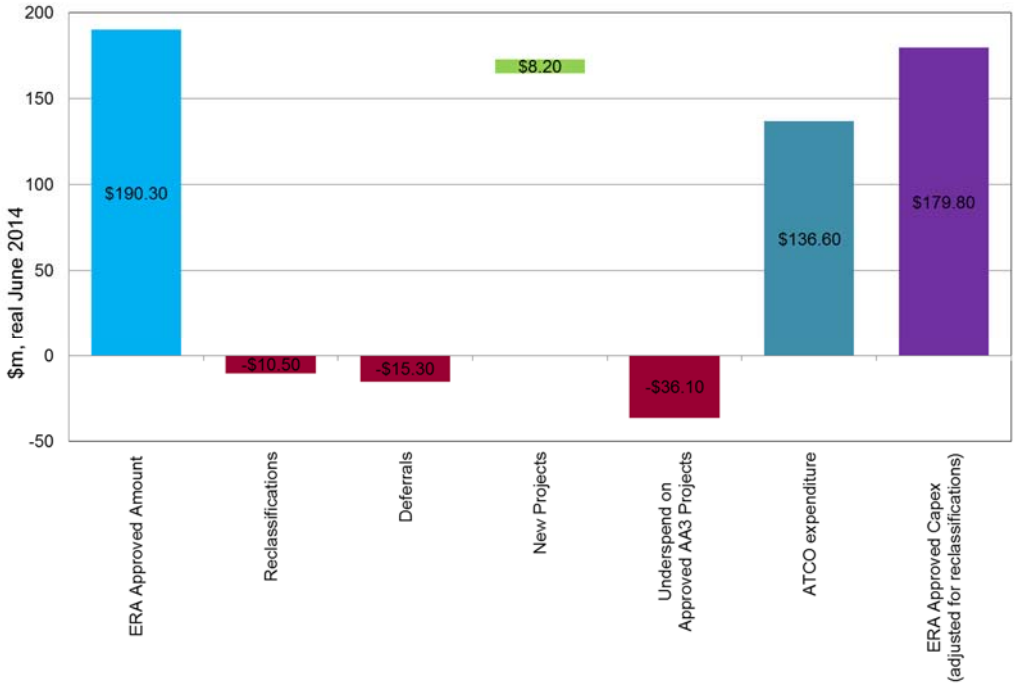
281. The three projects ATCO has deferred from AA3 to AA4 are the Capel to Busselton reinforcement, Pinjarra reinforcement and Baldivis spur line projects, which were estimated to cost $15.3m.[105] While these projects have been deferred, ATCO has undertaken some additional Demand related projects ($8.2m), which were not identified during the AA3 revisions process, including the Two Rocks ($4m) and Yanchep ($1.8m) extensions. The effect of these deferrals and new projects on the amount spent by ATCO in AA3 is illustrated in Figure 24.

[103] Note that this amount includes the effect of a $10.5 million reclassification of the Mandurah Gas lateral, which was classified as a growth project in AA3 and is now classified as an Asset performance and safety project.

[104] ATCO, AAI, March 2014, p129.

[105] ATCO, AAI, March 2014, table 28.

Figure 24: Effect of deferrals, new projects and underspend on Growth capex



Source: EMCa analysis from data in ATCO, AAI, tables 32, 35, 36.

Basis on which ATCO has sought to justify Growth capex in AA3

282. ATCO has sought to justify its expenditure on Growth capex during AA3 on the following grounds:[106]

- Customer initiated capex – the incremental revenue test (r. 79(2)(b)); and
- Demand capex – the economic value test (r. 79(2)(a)) and/or the incremental revenue test (r. 79(2)(b)). In some cases, ATCO has also claimed the projects are justified on safety, integrity, compliance and/or maintaining capacity grounds (r.79(2)(c)).

283. ATCO has also claimed that the expenditure on capex in AA3 satisfies the prudent service provider test in rule 79(1)(a).[107]

5.5.2 EMCa assessment

284. Based on our review of the material provided by ATCO, it is clear that lower housing activity levels in AA3 has resulted in less growth opportunities and considerably *less* being spent on new mains, connections, services, pipeline extensions and reinforcements than was anticipated when the AA was approved in 2011.

285. While less has been spent in this area, we have still conducted a review of the $136.6m that ATCO has spent in AA3 to determine whether it complies with the conforming capex criteria in rule 79.

[106] ATCO, AAI, March 2014, pp. 129-143.

[107] ATCO, AAI, March 2014, pp. 122-128.

Justification for the expenditure (r. 79(2))

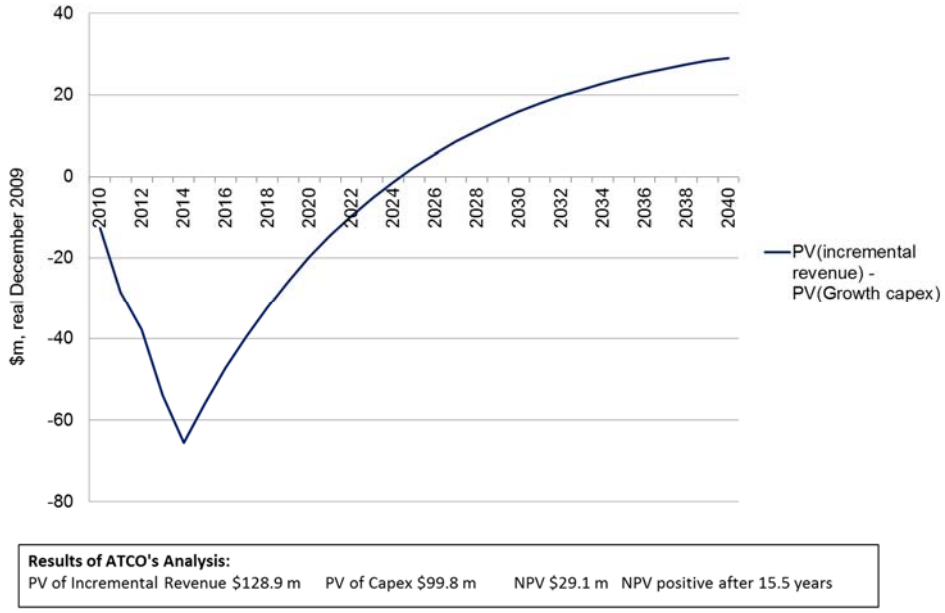
286. As noted above, ATCO has claimed that its expenditure on Growth capex is justified on a number of different grounds under rule 79(2) of the NGR. The analysis it has presented in support of this expenditure is, however, all based on the incremental revenue test set out in rule 79(2)(b):[108]

$$PV(Expected\ incremental\ revenue\ generated\ as\ a\ result\ of\ expenditure) > PV(Capex)$$

287. The results of ATCO's analysis are reproduced in Figure 25. As this figure indicates, ATCO has estimated that:

- in PV terms, the incremental revenue associated with AA3 Growth capex exceeds the $136.6m that has been spent on Growth capex in AA3; and
- the expenditure will be NPV positive by 2025 (which it describes as 15.5 years).

Figure 25: ATCO's NPV Analysis of Growth Capex



Source: EMCa analysis from data in ATCO, AAI, Figure 64 and Table 31.

288. To determine whether the $136.6m of Growth expenditure can actually be justified under rule 79(2)(b), we have reviewed the NPV analysis carried out by ATCO and the assumptions underlying this analysis.

289. ATCO has stated that in calculating the incremental revenues it has used tariffs as at 2010 and then imposed a 2% p.a. decline starting from 2015. This is a conservatively low revenue assumption, since ATCO's tariffs have increased considerably since then. For example, we have calculated that the standing charge for B3 customers in ATCO's AA3 justification analysis, when converted to 2014 values, is $59.46 and the usage charge is $12.65/GJ. These tariffs were applied across the whole of AA3 to the first half of 2014, while in its AA4 NPV analysis ATCO has assumed a 2014 second half B3 standing charge of $71.05 and a usage charge of $14.15/GJ[109]. While there is some

[108] ATCO, AAI, March 2014, pp. 131-134.

[109] The usage charges quoted here are for the first tranche of usage which, for AA3, was <=10GJ and for AA4 is assumed to be <=45GJ.

variation, ATCO's 2014 actual tariffs are typically around 12% higher than it has assumed in the NPV analysis.

290. On the other hand ATCO has used incremental volume assumptions that would have the effect of overstating incremental revenues. Using data ATCO provided in response to information request EMCa056, we derived average annual usage figures per **new** B2 and B3 tariff customer (being those customers connected during AA3). These are shown in the table below and it can be seen that they are considerably lower than ATCO's assumptions, which relate more closely to the averages for **existing** customers. ATCO's data shows clearly that new customers are using less gas than existing customers but had not taken this into account.

Table 10: ATCO's assumed volumes vs actual volumes for new B2 and B3 customer

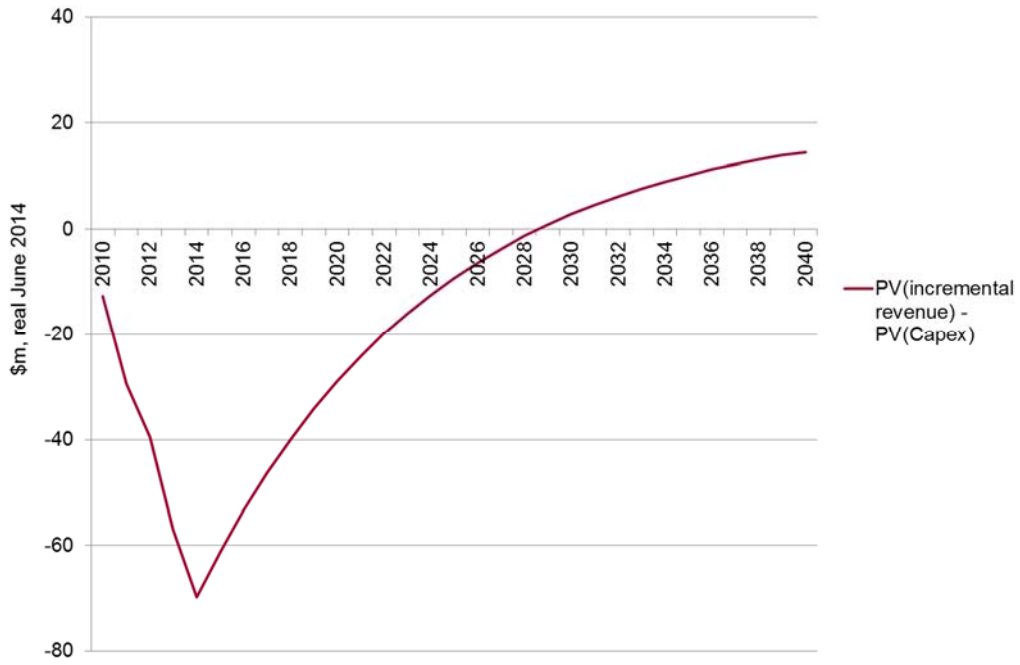
GJ p.a.

	2010	2011	2012	2013
B2 customers				
ATCO assumption	141.7	139.3	132.6	129.5
Actual	80.2	73.0	76.0	73.6
B3 customers				
ATCO assumption	15.2	15.7	15.2	15.3
Actual	13.6	12.5	13.0	13.0

Source: EMCa from data provided by ATCO in AA3 and AA4 growth NPV test models and in response EMCa056

291. We have undertaken a sensitivity test on ATCO's annual volume assumption, and the resulting NPV chart is shown in Figure 26.

Figure 26: EMCa assessment of growth NPV with B2 and B3 volumes reduced to actual levels during AA3



Source: EMCa analysis based on mod8ified assumptions in ATCO's AA3 growth NPV model

292. In our sensitivity analysis with reduced volume assumptions, the NPV is reduced from $29.0m to $14.5m, and becomes positive after 19 years rather than the 15.5 years estimated by ATCO. While this is a long pay-back period (i.e. consumers will be worse

off for three further regulatory periods before net benefits materialise), it appears to satisfy the incremental revenue test in rule 79(2)(b).

293. In making any judgment involving future forecasts, we are mindful of uncertainty. In this instance we consider that there is little down-side risk. The actual volume usage of these customers is known and we consider it less vulnerable to significant change than assumptions regarding the volumes of customers who are yet to be connected, given the inertia of appliances with average lives of around 15 years. As we have noted above, ATCO's tariff assumptions also appear conservatively low compared with its current tariffs and its AA4 tariff assumptions which continue to increase significantly through to 2019.

294. On this basis we consider that the growth expenditure that ATCO has incurred should be accepted as meeting the test prescribed in rule 79(2)(b)

Prudent service provider test (r. 79(1)(a))

295. The second matter that we have considered when assessing whether the $136.6m that ATCO spent on Growth capex in AA3 complies with the conforming capex criteria, is whether the amount spent by ATCO satisfies the prudent service provider test in rule 79(1)(a).

296. In carrying out this assessment, we had regard to the following:

- *The project governance framework employed by ATCO* – While we have identified some limitations with ATCO's governance framework as it relates to assessing future expenditure needs (see section 4.3), we consider the framework for procuring and managing the delivery of projects is generally sound and in keeping with what we would expect a prudent service provider acting efficiently and in accordance with good industry practice to employ.
- *The procurement processes employed by ATCO (Customer initiated capex)* – We understand that during AA3 work on new mains extensions and services has been contracted out through a competitive tender process.[110] Given the competitive nature of the procurement process, we are of the view that expenditure on Customer initiated capex can be presumed to satisfy the prudent service provider test. Further support for this view can be found in the fact that ATCO's unit costs for new mains and services were 9-15% *lower* than those approved by the ERA.[111]
- *ATCO's expenditure performance (Demand capex)* – To assess ATCO's performance, we have compared the amount it spent on the Demand related capex projects with the amount approved by the ERA. This comparison indicated that on an aggregate basis, ATCO spent 5% *less* than the amount approved by the ERA on the 11 projects that were approved by the ERA and were undertaken in AA3.[112] This observation is broadly consistent with the findings in section 4.4 and, in our opinion, confirms that the expenditure incurred by ATCO on Demand capex complies with the prudent service provider test.
- *ATCO's decision to defer over $15m of capex* – In our view, the decision by ATCO to defer the Capel to Busselton reinforcement, Pinjarra reinforcement and Baldivis

[110] ATCO, AAI, March 2014, pp. 135-136.

[111] ATCO, AAI, March 2014, tables 33-34.

[112] ATCO, AAI, March 2014, table 36.

spur line projects, is judicious and in keeping with what we would expect a prudent service provider to do.

297. Based on our assessment of these matters, it would appear that ATCO's expenditure on Growth capex in AA3 satisfies the prudent service provider test.

Compliance with the conforming capex criteria

298. On the basis of the findings set out above, we are satisfied that the $136.6m spent by ATCO on Growth capex in AA3 can be considered conforming capex for the purposes of rules 79 and 77(2) of the NGR.

5.6 Structures and equipment AA3

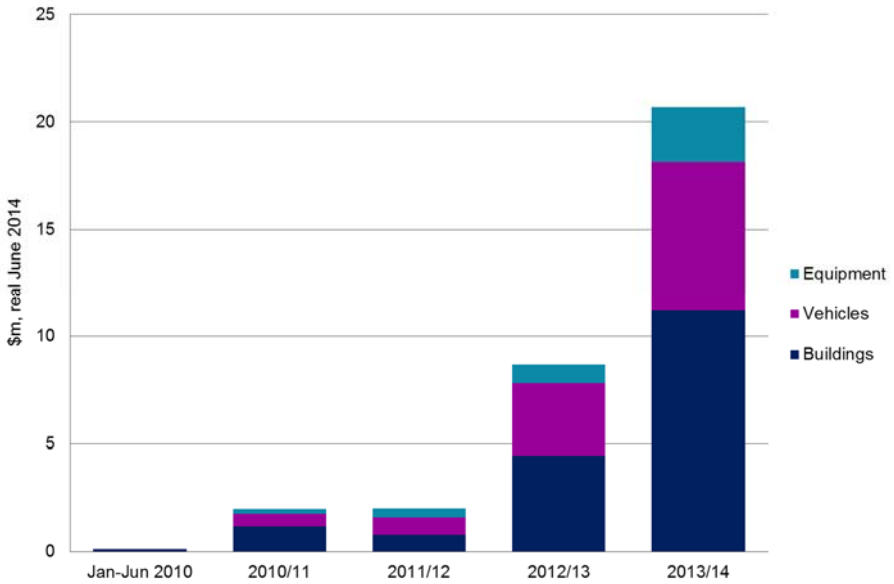
5.6.1 ATCO's proposal

299. During AA3 ATCO spent $33.5m on Structures and equipment. Of the $33.5m:

- $17.7m was spent on the construction of the new Jandakot head office, the Blue Flame Kitchen and the upgrade of a number of depots;
- $4.1m was spent on plant and equipment, such as high and low pressure flow stopping equipment, underground services detection equipment, gas detectors and welding equipment; and
- $11.7m was spent on vans, utilities, trucks, motorbikes, trailers, compressors, excavators and passenger vehicles following a decision by ATCO to move away from leasing to owning vehicles. [113]

300. The profile of ATCO's expenditure on buildings, equipment and vehicles in AA3 is illustrated in Figure 27.

Figure 27: AA3 expenditure on Structures and equipment



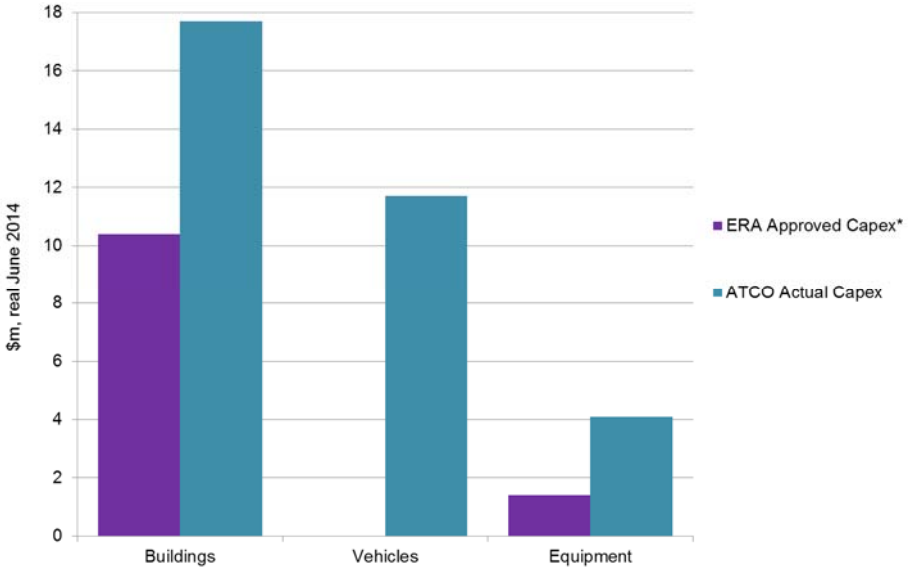
Source: EMCa analysis from data in ATCO, AAI, Table 23.

[113] ATCO, AAI, March 2014, *table 23 and section 7.7.3*

Difference between ATCO expenditure and ERA approved allowance

301. On an aggregate basis, the amount spent by ATCO on Structures and equipment was $21.7m[114] *higher* than the amount approved by the ERA. The difference between the amount spent by ATCO on buildings, vehicles and equipment in AA3 and the allowance approved by the ERA is illustrated in Figure 28.

Figure 28: ATCO's expenditure on Structures and equipment vs ERA allowance



Source: EMCa analysis from data in ATCO, AAI, Table 23.
Note that $10.4m has been added to the ERA's allowance for Buildings to account for the reclassification of the Jandakot Operational Centre (see footnote 93 for further detail).

302. As this figure highlights, ATCO has spent far more than the approved allowance on vehicles ($11.7m), buildings ($7.3m) and equipment ($2.7m). The additional expenditure in these areas can largely be attributed to:

- the development the Jandakot Head office;
- the development of new depots, which weren't identified during the AA3 process; and
- ATCO's decision to implement a 'built for purpose and ownership strategy for buildings and vehicles on the basis that costs over time are lower than leasing.'[115]

Basis on which ATCO has sought to justify expenditure on Structures and equipment in AA3

303. ATCO has sought to justify its expenditure on buildings, vehicles and equipment on the following grounds:

- Buildings – ATCO has claimed that its expenditure on buildings is justified on one or more of the following grounds:[116]
  - the economic value test (r. 79(2)(a));

[114] Note that this amount includes the effect of a $10.4 million reclassification of the Jandakot Operational Centre.

[115] ATCO, AAI, March 2014, *section 7.7.3*

[116] ATCO, AAI, March 2014, pp. 150-151.

- the incremental revenue test (r. 79(2)(b)); and/or
- to maintain and improve the safety of services, maintain the integrity of services and/or comply with a regulatory obligation or requirement (r. 79(2)(c)(i)-(ii)).

- Vehicles – ATCO has claimed that its expenditure on vehicles is justified under the economic value test (r. 79(2)(a)) and on the grounds of safety and integrity of services grounds (r. 79(2)(c)(i)-(ii));[117] and
- Equipment – ATCO has claimed its expenditure on equipment is justified under the economic value test (r. 79(2)(a)) and on the grounds of safety and integrity of services grounds (r. 79(2)(c)(i)-(ii))[118]

304. ATCO has also contended that its expenditure across these three categories in AA3 satisfies the prudent service provider test in rule 79(1)(a).[119]

5.6.2 EMCa assessment

305. As the preceding discussion highlighted, most of the increased expenditure on Structures and equipment can be attributed to ATCO's expenditure on the Jandakot Head office, the development of depots and its decision to move away from leasing to owning vehicles. We have therefore focused on these aspects of ATCO's proposal.

Jandakot Head Office

306. ATCO established the Jandakot Operational Centre at a cost of $14.0m. The Business Case[120] for this development was approved on the basis of a capital cost of $13.0m (including 6% contingency) and the following rationale:

- Provides for growth to meet future business requirements, noting that current facilities at Jandakot were at maximum capacity;
- Reduces operational expenditure, leading to a project NPV of $2.98M, due primarily to relocation of all employees from leased accommodation in the Perth CBD;
- Improves materials management and logistics by returning space currently utilised for administrative purposes within the existing warehouse to its original purpose;
- Provides for improvements to satisfy requirements of the City of Cockburn and environmental regulatory agencies; and
- Improved communications.

307. The delivered cost of Jandakot was $1.0m (7%) higher than the Business Case estimate and $3.6m (35%) higher than the allowance approved by the ERA. The increase was reportedly driven by an allowance for increased staff numbers and site remediation. ATCO also linked the additional work carried out at the Jandakot depot to maintaining and improving the safety of services, maintaining the integrity of services and complying with regulatory obligations, which in our view is reasonable for those aspects of work.[121]

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117 ATCO, AAI, March 2014, p151.

118 ATCO, AAI, March 2014, p151.

119 ATCO, AAI, March 2014, p152.

120 ATCO, Jandakot Redevelopment Business Case, March 2012

121 *ibid,* section 2.2.

308. Despite the cost overrun, the revised scope of work appears to be prudent and the NPV remains positive, thereby satisfying the economic value test in rule 79(2)(a).

309. We have therefore considered whether the expenditure satisfies the prudent service provider test in rule 79(1)(a). In doing so, we have considered:

- ATCO's cost estimate – While a detailed analysis of the cost estimate has not been undertaken, the majority of the expenditure is based on the results of a competitive tender process which can be presumed to deliver an efficient cost; and
- Project management – In our view ATCO's project management followed good industry practice in developing and delivering the project as evidenced by (i) project governance, and (ii) the project outcomes (time, budget, quality).

310. On the basis of this assessment, we are satisfied that the expenditure complies with rule 79(1)(a) and can therefore be considered conforming capex.

Depots and other building works

311. ATCO deferred or undertook other work at the following depots in AA3:

- Eglinton depot – ATCO deferred $0.7m expenditure to AA4 due to slower than anticipated growth of the network footprint. In our view, this is a prudent response.
- Mardella depot – The driver for this new depot in Mandurah was to be able to respond to pipeline breaks in less than one hour. This is a requirement under the Safety Case and is reflected in the AMP. We are therefore satisfied that this project is justified under rule 79(2)(a)(c)(i). The increase from the $0.7m allocation in AA3 to the $1.1m expenditure forecast has been explained by ATCO as being due to higher land and construction cost that estimated in 2010. In our view this is a legitimate reason for the increase.
- Jandakot warehouse redevelopment – The driver for the $0.7m warehouse development is the replacement of unsafe, end-of-life warehouse, gas testing and stores areas. The facilities were redeveloped to comply with relevant OH&S requirements. In our view, this project is justified with rules 79(2)(c)(i)-(ii)).
- Wangara depot upgrade – The driver for the project is replacement of unsafe end-of-life assets. The facilities were redeveloped to comply with relevant OH&S requirements. In our view, this project is justified under rules 79(2)(c)(i)-(ii)).

312. Based on our review of these projects, we are satisfied they are justified under rule 79(2). Given the nature of the governance arrangements ATCO employs for these types of projects and its demonstrated ability to deliver capex projects within budget, we are also satisfied that expenditure incurred by ATCO on these projects complies with the prudent service provider test in rule 79(1)(a) and can therefore be considered conforming capex.

313. The same cannot be said though for the following projects undertaken by ATCO in AA3:

- Jandakot sewerage extension ($0.7m) – Based on our review of the Business Case for the Jandakot Redevelopment project, it would appear that the costs of the sewerage extension were included in the scope of works and budget for the redevelopment. The inclusion of the sewerage extension as a separate line item in

Table 49 of the AAI appears therefore to amount to double counting. We are *not* therefore satisfied that the separate inclusion of this expenditure satisfies rule 79.[122]

- Jandakot Blue Flame Kitchen – ATCO has sought to justify its $0.8m expenditure on this kitchen under rules 79(2)(a),(b),(c)(i)-(ii). Whilst there is a relatively weak link to promotion of safe gas use with the proposed Blue Flame kitchen, it is primarily positioned as a marketing vehicle. It is not therefore in our view justified on safety or integrity of services grounds (r. 79(2(c)(i) or (ii)). In relation to ATCO's claim that the expenditure is justified under rule 79(2)(a) and (b), because it is part of its marketing and business development initiative, for the reasons set out in section 7.6, we are not satisfied that ATCO's broader marketing and business development initiative has been adequately justified under either the economic value or incremental revenue tests. We are *not* therefore satisfied that the $0.8m that has been spent on the kitchen is justified under rule 79(2).

314. It follows that, in our view, $1.5m of ATCO's AA3 capex on depots and other works does *not* satisfy the conforming capex criteria in rule 79 and should not therefore be rolled into the opening value of the capital base.

Plant and equipment

315. The plant and equipment capex category consists of a range of items that are required to enable the workforce to carry out prescribed activities on the network.[123] ATCO has advised that the purchases are assessed on a case by case basis and their procurement conforms to the Procurement Policy. As such business cases are not developed for these items.[124] The items identified by ATCO are typically required for gas distribution business operations and the level of expenditure does not appear excessive based on our experience.

316. We understand from the information provided by ATCO that in 2012 it was operating 178 vehicles, with 91 under lease agreements.[125] With the leases due to expire over the period 30 June 2012 – 30 April 2016, ATCO considered whether to renew the leases or purchase replacement vehicles as the leases expired.

317. The options analysis carried out by ATCO as part of the business case[126] indicated that purchasing designated vehicles[127] would result in a lower cost over a 20 year period than renewing the leases as they expire. ATCO's capital cost estimate is $3.3m ($2012) through to 2012 and a further $1.4m ($2012) to June 2016, with ongoing fleet replacement costs continuing thereafter. This expenditure will offset annual lease costs that ATCO's NPV assessment states are $1.2m rising to $1.8m p.a.[128] The expenditure was not included in the AA3 allowance, but ATCO claims the expenditure is justified:

- under the economic value test (r. 79(1)(a)), which has been applied by ATCO on a least cost basis; and

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122 *ibid*.

123 For example, gas detection equipment, underground asset locating equipment, flow stopping equipment, welding equipment.

124 Response to EMCa027

125 ATCO Business Case, *Purchase versus Lease Fleet Vehicles, Dec 2012* provided in response to IR EMCa027

126 *Ibid*

127 Vans, utilities and sedans per the Business Case

128 *ibid, section 1.2.*

- on safety, integrity and regulatory compliance grounds (r. 79(2)(c)(i)-(iii)) (i.e. to meet the Safety Case requirement to maintain a safe and reliable mobile fleet).

318. ATCO's economic evaluation shows a relatively small net benefit in moving from leasing to purchasing vehicles over a 20 year period. It is nevertheless positive and therefore appears to be justified under rules 79(2)(a) and 79(2)(c)(i)-(iii). The manner in which the business case has been conducted, coupled with our findings on ATCO's project-level governance arrangements (as outlined in section 4.3.5), in our view support ATCO's claim that its expenditure satisfies the prudent service provider test. We are satisfied therefore that this expenditure can be considered conforming capex.

319. The balance of the unbudgeted capex on fleet and equipment in AA3 was for purchase of fleet not covered under leasing agreements ($6.8m) [129] and 'additional operating plant and equipment to ensure activities were carried out in accordance with the Safety Case'[130] of $4.1m[131]. In our view this expenditure is likely to satisfy rule 79 and can be considered conforming capex.

Compliance with the conforming capex criteria

320. On the basis of the assessment set out above, we are of the opinion that of the $33.5m that ATCO has spent on Structures and equipment:

- $32m satisfies rule 79 and can therefore be considered conforming capex for the purpose of rule 77(2) of the NGR; and
- $1.5m of the expenditure does not satisfy rule 79 and cannot therefore be considered conforming capex.

5.7 IT capex AA3

5.7.1 ATCO's proposal

321. Over the last 4.5 years ATCO has reportedly spent $19.5m (see Figure 29) on a range of IT capex projects, including the Field Mobility, Network Data Visualisation, Gas Distribution Billing Data Verification/Gas Monitoring Data replacement and Neon Interval Metering projects.[132]

322. According to information provided by ATCO, the delivery of these IT capex projects has been managed by a related entity, ATCO I-Tek Australia (I-Tek), under an outsourcing contract that was originally entered into by WestNet Infrastructure Group and WA Gas Networks in 2010. This contract, which is referred to by ATCO as the Information Technology Services Agreement (ITSA), is due to expire at the beginning of 2015.

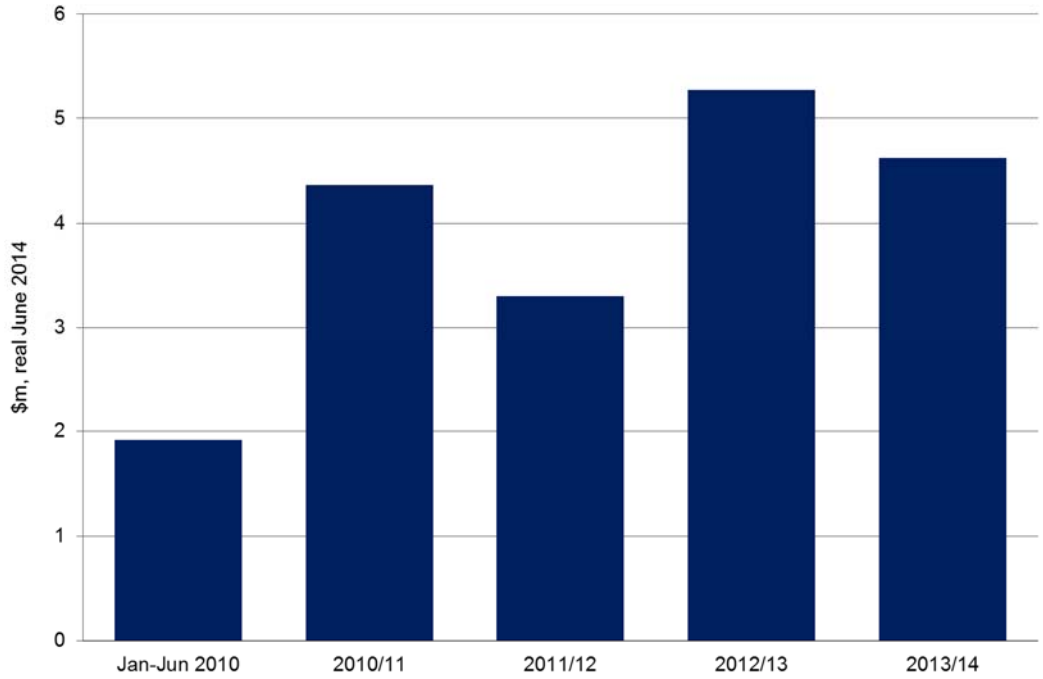
[129] ATCO, Response to information request EMCa083

[130] ATCO, AAI, March 2014, table 49.

[131] ATCO AAI, table 23

[132] ATCO, AAI, March 2014, table 26, noting that the $19.5m expenditure is different to that reported in section 7.7.4 of the AAI for reasons explained in ATCO's response to information request EMCa088

Figure 29: AA3 expenditure on IT capex projects



Source: EMCa analysis from data in ATCO, AAI, Table 23.

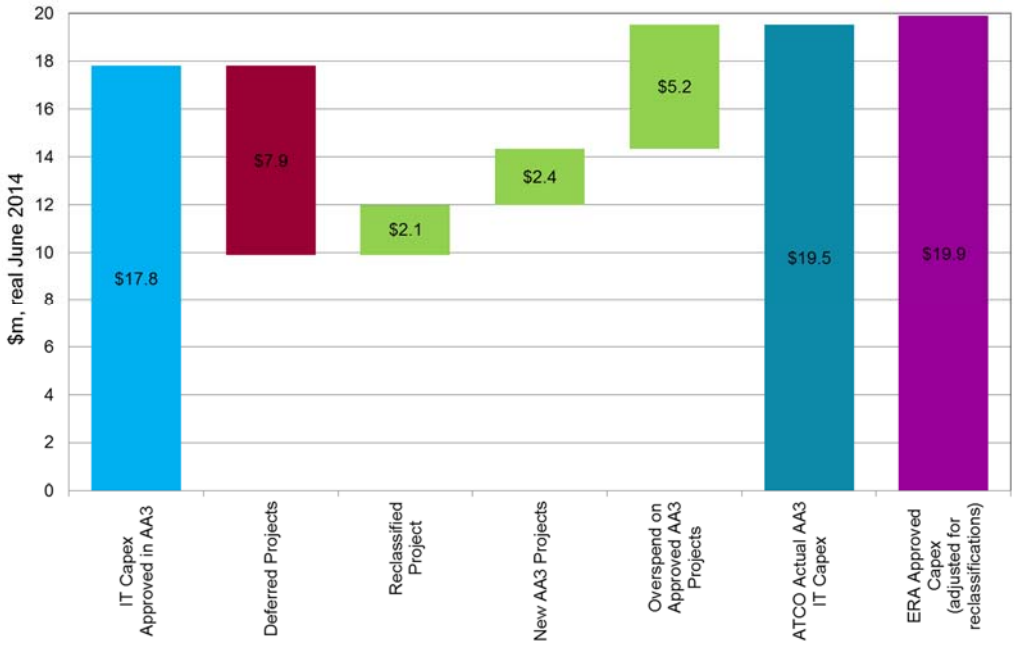
Difference between ATCO expenditure and ERA approved allowance

323. On an aggregate basis, the amount spent by ATCO on IT in AA3 was $0.4m[133] *lower* than the allowance approved by the ERA. However, this aggregate measure is somewhat misleading because some projects have been deferred to AA4, some additional projects that were not identified during the AA3 have been carried out and some projects overran their original budgets.

324. If these effects are excluded, then the difference between the amount spent by ATCO and the allowance approved by the ERA is $5.2m. The commentary provided by ATCO on each of the IT projects carried out in AA3 suggests that most of this overrun can be attributed to scope changes.

[133] Note that this amount includes the effect of a $1.9 million reclassification of the Telemetry replacement project, which was originally classified as an Asset replacement project.

Figure 30: Effect of deferrals, new projects and overspend on IT capex



Source: EMCa analysis from data in ATCO, AAI, Table 51.
Note that $1.9m has been added to the ERA's allowance for IT to account for the reclassification of the Telemetry replacement project (see footnote 93 for further detail).

Basis on which ATCO has sought to justify IT capex in AA3

325. ATCO has sought to justify most of its expenditure on IT capex under rule 79(2)(c)(ii) (i.e. maintain the integrity of services), although there are some cases where it has also cited rule 79(2)(c)(i) (i.e. maintain and improve the safety of services) and/or 79(2)(c)(iii) (i.e. compliance with a regulatory obligation). ATCO has also claimed that the expenditure on capex in AA3 satisfies the prudent service provider test in rule 79(1)(a).[134]

5.7.2 EMCa assessment

326. As indicated above, there have been some significant deviations in ATCO's expenditure on IT capex in AA3, with:

- four projects that were expected to cost $7.9m having either been abandoned or deferred to AA4 (e.g. the Network Metering Infrastructure Systems (NMIS) Application upgrade and Strategic Asset Management projects);
- nine additional projects having been carried out in AA3 that were not identified during the AA3 revisions process at a cost of $2.4m; and
- ATCO spending $5.2m more than the approved allowance on a set of projects.

327. We have therefore carefully reviewed these aspects of ATCO's expenditure. The results of our review are set out below.

[134] ATCO, AAI, March 2014, pp. 122-128.

Justification for the expenditure (r. 79(2))

Deferred and cancelled projects

328. Three projects[135] were deferred from AA3 to AA4 and one project was cancelled. The reasons for the deferral of the projects are set out in the IT AMP.[136] The reasons cited by ATCO for the deferral vary. It would appear that the core reasons are:

(i) Reprioritisation – For example, to integrate the requirements of the FSA studies in support of the Safety Case; and

(ii) Assessment of delivery capability – ATCO appears to have assessed its capability to deliver greater scopes of work in some projects (e.g. NDV and NGIS) with the extant scope of other projects (e.g. NMIS, Strategic Asset Management, and Field Mobility) and determined that the business did not have the capacity to deliver all the required work in AA3.

329. One project was cancelled, EDMS upgrade ($0.17m) as it was no longer required. It would appear that the scope has been integrated into one of the other large projects to be implemented in AA4 rather than persist with it as a stand-alone project.

Completed AA3 projects

330. Twelve projects that were identified in the AA3 revisions process submission were completed in the AA3 period (albeit with significant scope variation in some cases). The overall variance between the ERA approved amount and the actual expenditure was $11.8m versus $17.0m, a difference of $5.2m (44%). Three projects account for the majority of the variance. An overview of our assessment of these projects is provided in Table 11.

[135] NMIS application upgrade & archiving ($2.53m), Field Mobility Phase 2 ($1.80m), Strategic Asset Management ($3.4m).

[136] ATCO, IT AMP, sections 6.1.1-6.1.2.

Table 11: Summary of assessment of completed significant IT capex projects

Project	Assessment
Network data visualisation (NDV) **ERA approved: $0.85m** **Actual: $2.6m**	The primary driver of the project was to provide graphical representation of the network's hydraulic performance using near real-time statistics. This is consistent with the direction most infrastructure businesses are taking. The original scope of the NDV Project was for Phase 1. The Phase 2 business case provides a compelling case for continued investment in the NDV project under rule 79(2)(c)(ii)
ESRI upgrade (GIS) **ERA approved: $0.46m** **Actual: $2.80m**	The primary driver of the project was that the current system (ASSETVIEW) is no longer supported by the vendor. The Phase 1 Business case was a scoping and prototyping phase. It identified the need for a Phase 2 (implementation phase). A third phase (GIS enhancements) was also completed in AA3 but under a separate project (with expenditure of $0.65m vs an AA3 allocation of $0.46m). The NGIS is an integral system to ATCO's operations and the case for upgrading the current system is justified, primarily on the basis of maintaining the integrity of services (rule 79(2)(c)(ii)).
GDBDV/GMD[137] replacement **ERA approved: $0.42m** **Actual: $2.5m**	The primary driver of the project was that the current platform (Ingres) for the billing management function was 'at risk of being unsupported'. A business case has not been provided, however the IT AMP makes it clear that the GDBDV and GMD functionality is a critical part of the metering & billing operations and, as such, replacement is justified on the basis of maintaining the integrity of services (rule 79(2)(c)(ii)). ATCO advise that the original scope was delivered, but the cost was $2m higher than allowed for in AA3 and in the original business case.

331. In summary, the three largest IT projects completed in AA3 each went significantly over budget due, in two cases, to extending the scope to continue the work established in the first phase. The GDBDV/GMD project cost over-run appears to be the result of poor cost estimation by the previous owners. In each case, we consider that the project expenditure satisfies rule 79(2)(c)(ii).

Reclassified projects

332. ATCO reclassified two projects from Asset Replacement to IT as discussed in Table 12.

Table 12: Reclassified IT capex projects (from Asset Replacement)

Project[138]	Assessment
Pressure monitoring data visualisation **ERA approved: $1.2m** **Actual: $1.1m**	The primary driver of the project is to '*provide better network information to allow for an improved response to operational and emergency situations*'[139] It involves 'populating the network with PMDs which allow for wider monitoring of the network. Based on the context provided in the IT AMP, this appears to be justified under rules 79(2)(c)(i) and (ii)
Telemetry replacement **ERA approved: $0.7m** **Actual: $1.0m**	The primary driver of the project was that the telemetry equipment has reached EOL. It involves the replacement of flow computers, transducers, data loggers and communications equipment. Based on the information in the IT AMP, this appears to be a prudent investment and is correctly classified as IT. It is primarily justified under rule 79(2)(c)(ii)

137 Gas Distribution Billing Data Verification/Gas Monitoring Data.

138 ATCO, AAI, March 2014, AR budget allocation tables 41 and 51.

139 ATCO, AMP, March 2014, section 4.5.4.2.

333. As this table indicates, we are satisfied that these reclassified projects are justified under rules 79(2)(c)(i) and/or (ii).

New AA3 projects

334. ATCO identified nine new projects totalling $1.25m after the approval of the AA3 submission. The majority of the projects have cost less than $0.06m, and have not been individually assessed. Two 'projects' involved significant expenditure. An overview of our assessment of these projects is provided in Table 13.

Table 13: Significant new AA3 IT capex 'projects' IT capex projects

Project[140]	Assessment
Project management fee **ERA approved: $0.0m** **Actual: $0.3m**	The fee is in accordance with Information Technology Services Agreement (ITSA) Schedule 1 – Reimbursable Costs and Schedule 2 – Section 4.10 Project Delivery Services. ATCO has since modified the invoicing process to ensure that project management fees are included with the specific capex projects that they relate to. On this basis, the project fee appears to be justified under rule 79(2)(c)(iv)
IT PPE **ERA approved: $0.0m** **Actual: $0.8m**	This relates to unspecified IT hardware and software capital items (e.g. desktop & associated peripherals) not originally categorised as an ATCO asset. Assuming this has been correctly accounted for post purchase of the WAGN assets, this expenditure appears to be justified under rule 79(2)(c)(iv)

335. As this table indicates, we are satisfied that these new AA3 projects are justified under either rule 79(2)(c)(ii) or (iv).

Prudent service provider test (r. 79(1)(a))

336. To assess whether the expenditure ATCO incurred in AA3 satisfies the prudent service provider test, we have examined its IT strategies and its ability to deliver projects within budget. We have also undertaken a closer review of a sample of projects. Our findings are set out below.

IT strategies

337. Based on our review of ATCO's strategies, we are of the view that it is following good industry practice by adopting IT strategies to:

- Move from bespoke and/or obsolete/unsupported platform and products to commercial off the shelf, supported mainstream IT systems;
- Support greater real time understanding of the network condition and capacity;
- Support IT-based connection of the filed to the office (and vice versa);
- Reduce technology diversity; and
- Provide a 'single source of truth for network and non-network data.

However, as noted in section 4.3.4, ATCO's we are concerned with other aspects of ATCO's IT strategy and IT AMP.

Actual costs vs project estimates

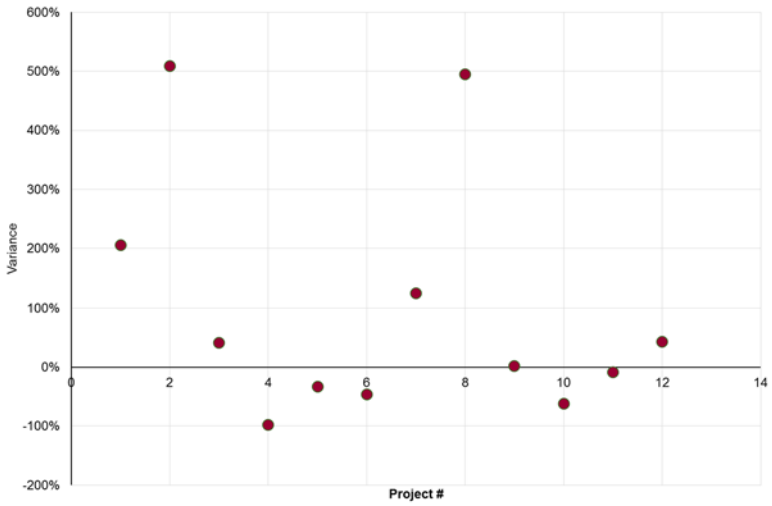
338. Figure 31 shows the variance (%) from the original AA3 project cost estimate to the actual capital expenditure. While it is not unusual for IT-based projects to exhibit significant variation to initial budgets, variances of the magnitude depicted in this figure

[140] ATCO, AAI, March 2014, AR budget allocation tables 41 and 51.

require an explanation. ATCO has sought to explain most of the variances and it would appear from our review of the information provided by ATCO that:

- there has been significant scope change on a number of IT projects;
- the initial estimates were based on preliminary estimates; and
- many of the significant variances were associated with complex projects.

Figure 31: Completed AA3 project cost estimate[141] vs actual variance



Source: EMCa analysis based on information in Table 51 of the ATCO AAI.

Assessment of expenditure efficiency across a sample of projects

339. Assuming that prudent transformation projects are approved, there are several characteristics that we look for when assessing the expenditure efficiency of IT projects:

- Good industry practice project governance – including:
  - A project structure commensurate with the project complexity;
  - A phased approach to project development and implementation, typically characterised by a pilot phase and then separately designed and costed implementation stages; and
  - Benefits realisation, including the identification of tangible benefits and the allocation and progressive realisation of the benefits.
- Effective project management – consistent with one of PMBOK, PRINCE2 or PM03[142], including transparent change control, and
- Competitive tendering for the majority of the work or demonstrated efficient pricing through benchmarking when an alternative delivery model is used.

340. We have examined business cases and close-out reports for a sample of AA3 projects to see if they adhere to these principles and satisfy the prudent service provider test.[143] Our findings are summarised in Table 14. It is worth noting that we have reviewed a

[141] Based on AA3 approved estimate

[142] PMBOK = Project Management Body of Knowledge (Asset Management Institute); PRINCE2 = Projects in Controlled Environments; PMO3 is a portfolio management approach (Asset Management Institute)

[143] The business cases were provided by ATCO in response to Information Request EMCa013.

greater number of projects than are identified in Table 14 and that this table is only intended to highlight the projects where we have identified material issues.

341. Before examining this table, it is worth noting that the quality of business cases has improved significantly under ATCO's ownership. However we observe:

- the inconsistent nature of the information presented in the AAI and the additional information provided by ATCO, and
- the lack of analysis supporting the claimed efficiency arising from the work and the lack of evidence in some cases to support the efficient delivery of the work undertaken.

342. The other general observation we would make is that while most of the business cases we examined refer to productivity/efficiency gains from the proposed investments, there is no evidence that ATCO has quantified these gains or taken the gains into account in the proposed opex for AA4. As the evidence from ATCO is lacking, we are of the opinion that a 10% annual efficiency dividend from the incurred AA3 IT capital expenditure (i.e. $1.93m p.a.) should be applied to ATCO's AA4 opex. We have based this adjustment on the following considerations:

- The benefits identified by ATCO in the Field Mobility phase 2 business case;
- The claims by ATCO that it has already taken into account efficiency benefits in its field and corporate office capital and opex projections (ie. costs would be higher but for the adjustment), and
- Our utility management experience of the benefits that should accrue from investment in IT-based improvement initiatives, noting that operational benefits are not typically expected from end-of-life system and hardware replacements.

Table 14: Prudent service provider test assessment – sample of AA3 IT projects

Project[144]	Assessment
Field Mobility (Phase 1) **AA3 estimate: $4.57m** **Actual: $4.67m** Field Mobility Phase 2 **AA3 estimate: $1.8m** **Actual:$0.0m**	In response to our request for AA3 IT business cases and close-out reports, we were provided with three Field Mobility business cases: Phase 1 = $1.0m approved capex; Phase 2 = $3.722m approved capex budget and benefits of $1.93m pa; Phase 3 = $0.522m approved capex budget[145].It is not possible to reconcile the ERA approved allowances and actual expenditure quoted in the AAI with the business cases provided for Phase 1 and Phase 2 Field Mobility projects.[146] Whilst the rationale for the overall Field Mobility project is sound, the apparent over-expenditure on Phase 1 cannot be classed as efficient without evidence of what was spent, what it was spent on, why it was spent (including compelling justification), what procurement process was followed, and the documented rationale for the apparent variation from the original business case with the appropriate financial approvals. With the information provided we find that only $1.0m can be viewed as satisfying the prudent service provider test.
	Summary: $3.67m does *not* satisfy the prudent service provider test.
ESRI upgrade (GIS) **AA3 estimate: $0.46m** **Actual: $2.8m**	The business case is based on expenditure of $0.63m for Phase 1 of the ESRI/GIS upgrade. No evidence has been provided to confirm that good investment governance has been followed in spending the additional $2.34m on '*additional un-scoped AA3 project items…to ensure data integrity and provision of accurate plans of network pipeline assets'* nor that these works were carried out efficiently. Whilst the rationale for the overall GIS Upgrade project is sound, the apparent over-expenditure on Phase 1 cannot be classed as efficient without evidence of what was spent, what it was spent on, why it was spent (including compelling justification), what procurement process was followed, and the documented rationale for the apparent variation from the original business case with the appropriate financial approvals. We are *not* therefore satisfied that this expenditure satisfies the prudent service provider test. The other concern we have with this project is that in the approved business case, productivity gains are referred to but are not quantified.
	Summary: $2.34m does *not* satisfy the prudent service provider test.
NDV Phase 1 Business Case **AA3 estimate: $0.85m** **Actual: $2.6m**	The Phase 1 business case ($0.75m) was delivered as was phase 2 ($0.66m) and phase 3 ($unknown). The Phase 1 and 2 business cases provide a sound case for the upgrade work. The business cases are comprehensive in most respects. However no attempt has been made to quantify the described tangible benefits (from efficiency improvements). Based on the information in the close out reports for each project, the expenditure has been efficient. However, as no information has been provided to support the additional $1.2m expenditure in AA3, we are of the view that it does not satisfy the prudent service provider test.
	Summary: $1.2m does *not* satisfy the prudent service provider test.
	Summary: $1.4m does satisfy the prudent service provider test

[144] ATCO, AAI, March 2014, AR budget allocation tables 41 and 51.

[145] ATCO response to information request EMCa013; $1.0m in 2010, $3.72m in 2012 and $0.52m in 2014.

[146] Based on ATCO's IT Asset Management Plan it *may* be the case that ATCO extended the scope of the Phase 1 project to include what was intended to be implemented in Phase 2. However, the information in the AAI, the IT AMP, and the responses to information request EMCa013 are inconsistent

Metering & billing enhancements (Market) **AA3 estimate: $0.82m** **Actual: $0.55m**	It would appear from the business case and close-out reports provided that the entire project comprised an upgrade to the webMethods market Gateway. The project driver was end-of-life replacement of hardware & software. This work was prioritised over the original M&B enhancement scope. Two variations to the original budget were required, with the actual cost of $0.57m (2012). The reasons for the cost overrun have been articulated and appear reasonable. No material net operational efficiencies are claimed for this project. Based on our review we are satisfied that this expenditure satisfies the prudent service provider test.
	Summary: $0.55m does satisfy the prudent service provider test.

343. Based on our review of this sample of projects, we are of the view that $7.2m of the expenditure ATCO incurred on the Field Mobility project, the GNIS upgrade project, and the NDV project does not satisfy the prudent service provider test in rule 79(1)(a).

Compliance with the conforming capex criteria

344. On the basis of the assessment set out above, we are of the opinion that:

- the IT projects appear to be justified under one or more of the rules in 79(2)(c); and
- $7.2m of the $19.3m ATCO spent on IT capex in AA3 does not satisfy the prudent service provider test and cannot therefore be considered conforming capex for the purpose of rule 77(2) of the NGR.

345. We would also recommend that a 10% annual efficiency dividend from ATCO's incurred AA3 IT capital expenditure (i.e. $1.93m p.a.) should be applied to ATCO's AA4 opex to account for productivity improvements that are expected to flow from this expenditure.

5.8 Quantified implications

346. Table 15 sets out the effect that the revisions to Structures and equipment and IT capex outlined in sections 5.6.2 and 5.7.2 would have on ATCO's conforming capex estimate for AA3.

Table 15: Proposed revisions to ATCO's AA3 conforming capex estimate

$m, real June 2014

Description	ATCO Expenditure AA3	EMCa Proposed Revisions	Net Adjusted amount
Sustaining capex			
Asset replacement	57.3	0.0	
Performance and safety	23.9	0.0	
Total	**81.2**	**0.0**	**81.2**
Growth capex			
Demand	29.2	0.0	
Customer initiated	107.4	0.0	
Total	**136.6**	**0.0**	**136.6**
Structures and equipment			
Buildings (other than Blue Flame Kitchen)	13.3	0.0	
Blue Flame Kitchen	0.8	-0.8	
Jandakot sewerage extension	0.7	-0.7	
Vehicles	16.1	0.0	
Other structures and equipment	2.5	0.0	
Total	**33.5**	**-1.5**	**32.0**
IT			
IT	19.3	-7.2	
Total	**19.3**	**-7.2**	**12.1**
Total	**270.5**	**-8.7**	**261.9**

Source: EMCa analysis of Tables 24, 32, 35, 39, 40, 44 and 50 of ATCO's AAI.

347. As the final row of Table 15 indicates, the exclusion of $1.5m from Structures and equipment and $7.2m from IT, would result in $8.7m being excluded from the opening value of ATCO's asset base in AA4. To put this revision into perspective, it is worth noting that:

- the revision represents 3% of the capex ATCO reportedly incurred in AA3; and
- the adjusted value is $0.5m (0.2%) higher than the allowance approved by the ERA in 2011.

6 Review of proposed AA4 capex and depreciation

6.1 Introduction

348. This section contains the results of our review of ATCO's proposed capex for AA4, which we have conducted using the assessment framework set out in section 3.2.1 and having regard to the findings in section 4. In a similar manner to our review of AA3 capex, we agreed with the ERA to carry out:

- a more in-depth review of those aspects of ATCO's AA4 capex programme that are expected to involve a material increase in expenditure relative to AA3; and
- a higher level review of the other areas of ATCO's proposed capex programme.

349. The results of our review and our overall assessment of whether this capex can be considered conforming capex (r. 79) for the purposes of rule 78 are set out below, along with our assessment of the asset lives ATCO has proposed for depreciation.

6.2 Overview of findings

350. ATCO is proposing to spend $605.7m[147] on a range of capex projects in AA4. Over a 5.5 year period, this equates to $110.1m p.a., which is 90% *higher* than the AA3 average annual allowance approved by the ERA in 2011.

351. Most of this proposed increase can be attributed to the three-fold increase in expenditure on Sustaining capex and the 37% increase in Growth capex. Some of the more fundamental concerns we have with these aspects of ATCO's proposal are set out below:

- *Sustaining capex* – ATCO is proposing to spend $311.3m on Sustaining capex in AA4. While ATCO has claimed that most of the increased expenditure in AA4 is

[147] ATCO, AAI, March 2014, p160.

being driven by the need to 'comply with the requirements of the Safety Case',[148] when we consider that it is more accurate to characterise this expenditure as being largely driven by the risk thresholds ATCO has adopted when conducting its FSAs. It is important to note that these thresholds are not prescribed in AS/NZS4645 and AS2885, nor are they mandated by Energy*Safety*. They are instead predominantly based on ATCO's own risk appetite. By industry standards, the risk thresholds adopted by ATCO are low and we consider that they are driving potentially inefficient over-investment in the network.

Of even greater concern though is that ATCO has not conducted a cost benefit assessment when applying the ALARP test under the FSAs, as required by AS/NZS4645 and AS2885. In our view, this is a significant shortcoming with ATCO's current approach to the FSAs and has the potential to result in inefficient investment in the network, with ATCO undertaking significant capital works to address risks for which the probability of occurrence is very low and which are manageable with operational controls rather than the proposed investment.

- *Growth capex* – ATCO is proposing to spend $228.5m on a diverse range of greenfield and brownfield growth projects in AA4. While ATCO has sought to demonstrate that on an aggregate basis this expenditure satisfies the incremental revenue test, we have identified a number of shortcomings with the assumptions underlying its analysis and are of the view that little, if any, reliance can be placed on this analysis to substantiate the proposed capex.

  Another more elementary concern we have with this analysis is that ATCO has sought to apply the incremental revenue test on an aggregated basis across a range of unrelated projects. In our view, this aggregated approach is contrary to what is expected under the rules, good industry practice and what is required by ATCO's own governance framework. More importantly though, it has prevented us from conducting the assessment required by rule 79 on a reasonable basis and, as a consequence, there is a significant proportion of ATCO's proposed Growth capex (approximately 70%) for which ATCO has not provided satisfactory evidence to support its claimed justification under rule 79(2)(b).

352. Given these concerns, we have focused our review on ATCO's proposed Sustaining and Growth capex proposals. We have also reviewed ATCO's proposed expenditure on IT capex and Structures and equipment. Based on our review of these aspects of ATCO's AA4 capex proposal, we are of the opinion that:

- $357.9m (59% of ATCO's proposal) complies with the criteria set out in rule 79 of the NGR and can therefore be considered conforming capex for the purposes of rule 78;
- $247.8m (41% of ATCO's proposal) has not been sufficiently justified by ATCO under rule 79 and so should not be rolled into the capital base at this time.

353. Those aspects of ATCO's proposed capex that in our opinion do *not* currently satisfy rule 79 are set out in Table 16.

[148] ATCO, AAI, March 2014, p160.

*Table 16: Proposed capex that does **not** satisfy rule 79*

Capex category		Amount	Why capex does not satisfy rule 79
Sustaining capex	Replacement of unprotected metallic mains	$11m	Does not satisfy the prudent service provider test in rule 79(1)(a) because ATCO has imposed an artificial deadline on the project of the end of the AA4, which results in costs more than doubling by 2019. Rather than accelerating the project at the end of the AA period as proposed, a prudent service provider acting in accordance with rule 79 could be expected to continue the project in AA5.
	Interdependency security of supply project	$47.3m	Not justified under rule 79(2)(c) because: • ATCO has not conducted the cost benefit assessment required by AS/NZS4645 and AS2885 when applying the 'as low as reasonably practicable' test; and • the 25,000 customer threshold applied by ATCO in defining a catastrophic loss of supply is not consistent with good industry practice.
Sustaining and Growth capex	Two Rocks and Peel spur lines	$72.3m	Not justified under either: • Rule 79(2)(c) because: – ATCO has not conducted the cost benefit assessment required by AS/NZS4645 and AS2885 when applying the 'as low as reasonably practicable' test; and – the 25,000 customer threshold applied by ATCO in defining a catastrophic loss of supply is not consistent with good industry practice. • Rule 79(2)(b) because compelling information has not been provided by ATCO to demonstrate that the expected incremental revenues of these spur lines exceed the proposed capex.
Growth capex	Greenfield subdivision customer initiated capex	$85.1m	Not justified under rule 79(2)(b) because ATCO has not provided compelling information sufficient to form a concluded view on whether the expected incremental revenues of each of these projects or growth initiatives exceeds the proposed capex.
	Baldivis spur line	$5.4m	
	Capel to Busselton reinforcement	$5.2m	
	Volume related demand capex and regulating facilities	$2.9m	
	Other reinforcement	$11.6m	While the proposed reinforcements are justified under rule 79(2)(c)(ii), the exclusion of greenfield subdivision developments means that the level of required reinforcement will be reduced.
Structures & equipment	Operational depot and training centre	$1.2m	Not justified under rule 79(2)(c) because with our adjustment to the demand forecast (i.e. lower growth rate): – Busselton depot can be prudently deferred to AA5 – Less fleet, plant & equipment will be required
	Fleet	$0.8	
	Plant & equipment	$0.2	
IT Capex		$4.8m	Some or all of the proposed expenditure on AGA-01 ($2.5m), AGA-02 ($0.35m), AGA-19 ($0.3m), AGA-11 ($0.9m) and IT hardware and equipment ($0.76m) is either not justified under rule 79(2) or does not satisfy the prudent service provider test.
Total		**$247.8m**	

354. Finally, it is worth noting that we have conducted our review (as required by ERA's terms of reference), having regard to ATCO's AA and AAI and supporting documents, augmented by clarification information that we sought from ATCO. If ATCO chooses to respond to the ERA's Draft Decision with an amended AAI containing more compelling supporting evidence for its claims, then we consider it likely that at least some further expenditure will be found to satisfy the necessary rules. We would expect though that any further assessment provided by ATCO would be conducted in accordance with

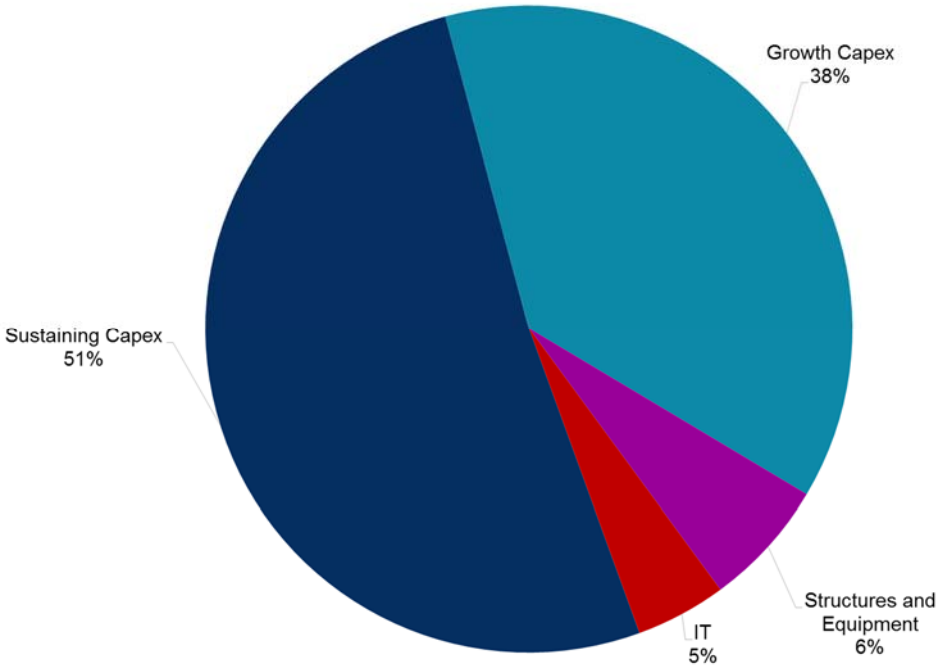
good industry practice, at a sufficient level of granularity and with suitable evidence in support of material assumptions, to enable an assessment of whether each project or related and reasonably inseparable set of projects or programmes of work satisfy the relevant test.

6.3 Overview of AA4 proposed capex

355. Over the next 5.5 years, ATCO proposes to spend $605.7m (~$110.1m p.a.) on a range of capex projects. The breakdown of this expenditure is set out in Figure 32. As this figure indicates:

- Sustaining capex accounts for 51% of the proposed allowance ($311.3m);
- Growth capex accounts for 38% of the proposed allowance ($228.5m);
- Structures and equipment accounts for 6% of the proposed allowance ($38.4m); and
- IT accounts for 5% of the proposed allowance ($27.4m).

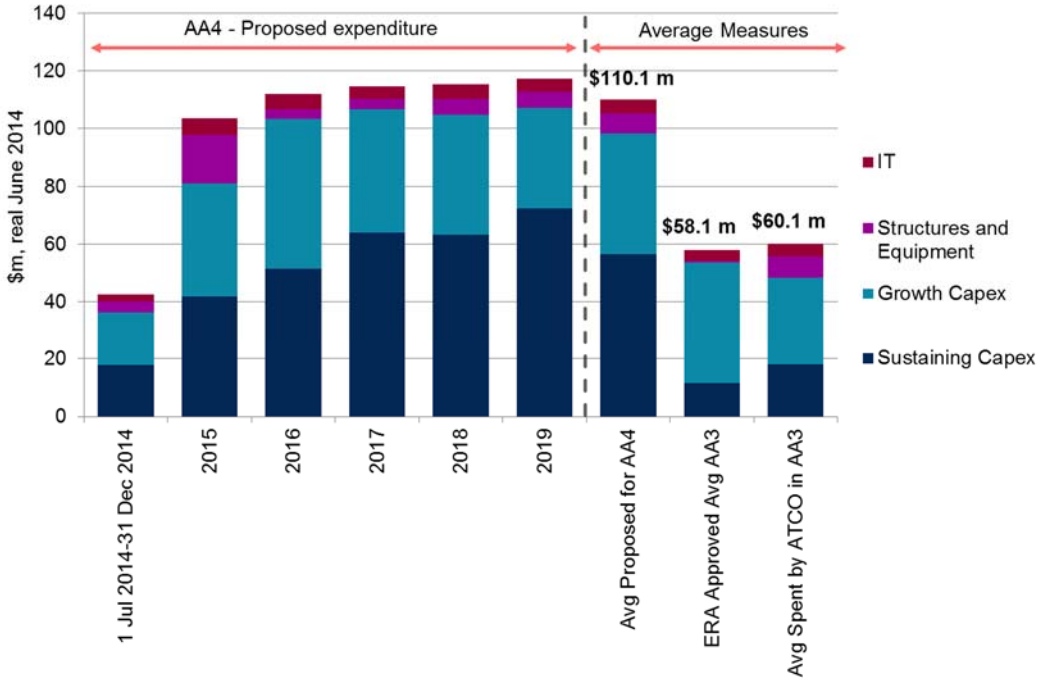
Figure 32: Breakdown of ATCO's proposed AA4 capex



Source: EMCa analysis from data in ATCO, AAI, Table 54.

356. The profile of ATCO's proposed capex in AA4 is illustrated on the left hand side of Figure 33, while the right hand side of the figure compares the annual average allowance proposed by ATCO for AA4, with the average allowance approved by the ERA for AA3 and the average amount spent by ATCO in AA3.

Figure 33: Profile of ATCO's proposed AA4 capex



Source: EMCa analysis from data in ATCO, AAI, Tables 26 and 54.

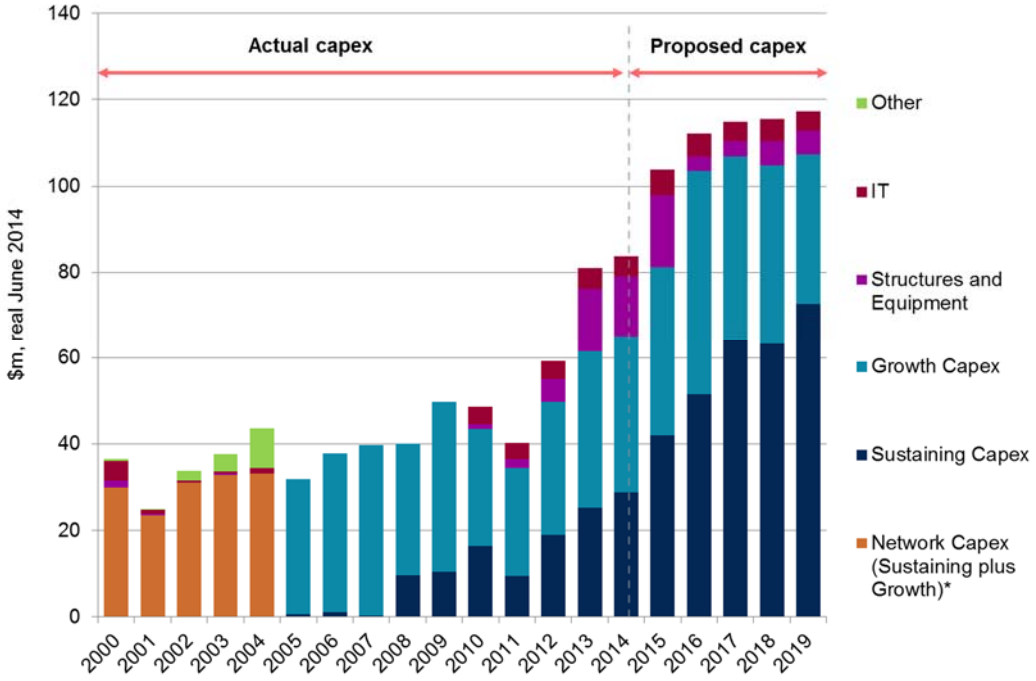
357. As the right hand side of this figure reveals, ATCO's AA4 capex proposal involves a significant step increase from the allowance approved by the ERA for AA3 and the amount actually spent by ATCO in AA3, with the average annual allowance proposed by ATCO ($110.1m p.a.) being:

- 90% *higher* than the average annual allowance approved by the ERA for AA3 ($58.1m p.a.); and
- 83% *higher* than the average amount spent by ATCO in AA3 ($63.2m p.a.).[149]

358. The magnitude of the proposed step increase in capex is even starker in Figure 34, which compares the capex that has actually been spent since 2000 with the amount that ATCO proposes to spend over AA4. As this figure indicates, most of the increase in ATCO's proposed capex can be attributed to the proposed increase in Sustaining capex, which is assumed to increase by 214% in AA4 from the average levels observed in AA3. Expenditure on Growth capex and IT capex is also assumed to increase significantly in AA4, with the average level of expenditure on these two capex categories being 37% and 16% higher, respectively than the average amount spent by ATCO in AA3.

[149] ATCO Confidential Tariff Model, 17 March 2014.

Figure 34: Actual capex vs proposed capex (2000-2019)



Source: EMCa analysis from data in ATCO, Confidential Tariff Model, 17 March 2014.

*Note: * ATCO has not provided a breakdown of Sustaining and Growth capex pre-2005, so it is only possible to report the expenditure on a combined basis in this for these years.*

359. ATCO has sought to rationalise the significant increase in AA4 capex as follows:[150]

The investment is required to:

- Comply with the requirements of the Safety Case, as accepted by Energy*Safety*
- Maintain system integrity as customers numbers and gas throughput increases
- Support economic infill and expansion of the Network
- Support the growing requirements of the Network and deliver on customer expectations in relation to information and service support

6.4 Sustaining capex AA4

6.4.1 ATCO's proposal

360. In AA4 ATCO is proposing to spend $311.3 million on Sustaining capex.[151] Of the $311.3 million, ATCO is proposing to spend:

- $177.7m on a range of Asset replacement projects, including the continuation of a number of projects from AA3 (see section 5.4.1) and a number of new projects, such as the replacement of PVC mains and the Bibra Lake high pressure pipeline; and
- $133.6m on a range of Asset performance and safety projects, including the continuation of a number of projects from AA3 (see section 5.4.1) and a number of

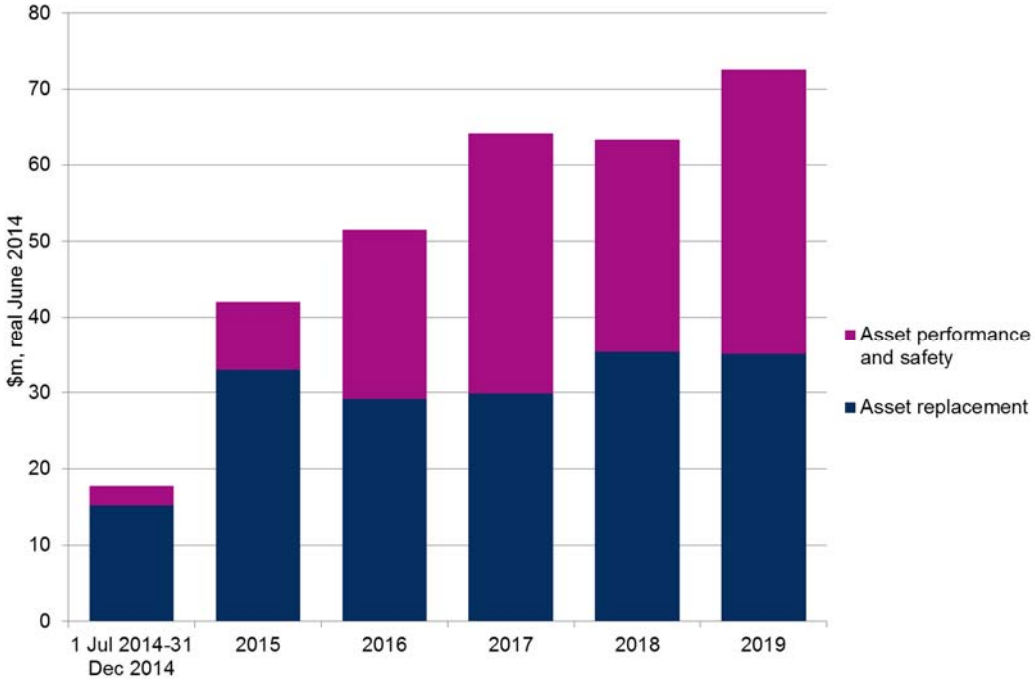
[150] ATCO, AAI, March 2014, p160.

[151] ATCO, AAI, March 2014, table 57.

new security of supply projects, which account for over 80% of the proposed expenditure on this category. [152]

361. An overview of the Asset performance and safety and Asset replacement projects ATCO proposes to undertake in AA4 is provided in Table 17, while Figure 35 shows the profile of ATCO's proposed expenditure on these two capex categories in AA4.

Figure 35: AA4 proposed expenditure on Sustaining capex



Source: EMCa analysis from data in ATCO, AAI, Table 54.

[152] ATCO, AAI, March 2014, pp. 172-181.

Table 17: ATCO's proposed Sustaining capex projects for AA4

Project	Proposed capex	ATCO's Rationale For the Expenditure	Justification Under Rule 79(2)
Asset replacement			
Replacement of end of life unprotected buried metallic mains and odd sized steel pipelines. *Continuation from AA3*	$85.10	The FSA identified that the risk associated with these assets is not as low as reasonably practicable due to the risk of loss of containment and leak tracking into a building.	
Replacement of distribution infrastructure within multi-storey buildings. *Continuation from AA3*	$20.00	The FSA identified the risk of gas leakage and consequences associated with infrastructure as not being as low as reasonably practicable. ATCO engaged with Energy*Safety* to develop a solution to reduce this risk.	
Replacement of M6WA meters with plugs. *Continuation from AA3*	$9.70	The FSA identified the risk of meters with faulty plugs as not being as low as reasonably practicable.	Rules 79(2)(c)(i)-(ii)
PVC mains replacement	$12.00	The FSA recommended that PVC network replacement should be targeted in high density community use areas to reduce leakage and expenditure on reactive maintenance costs.	
Service replacements	$9.30	Replacement of gas services, which based on a condition assessment have reached end of operational life.	
Bibra Lake high pressure pipeline replacement	$3.20	Implemented to reduce the risk of operating this pipeline to As Low as Reasonably Practicable and to meet the current AS 2885 design, construction and operation safety standards.	
Routine meter replacement (domestic meter change)	$31.60	Implemented to meet criteria specified in *Gas Standards (Gas Supply and Safety System) Regulations 2000* and the requirements of AS4944-2006	Rule 79(2)(c)(iii)
Smaller replacement projects (e.g. end of life telemetry equipment, medium and high pressure regulators etc).	$6.70	Replacement of end of life telemetry equipment, medium and high pressure regulators, isolation and service valves and cathodic protection equipment.	Rule 79(2)(c)(i) and/or (c)(ii)
Total Asset replacement	**$177.60**		
Asset performance and safety			
Security of supply - Interdependency (17 pressure reduction facilities and 10 high pressure mains to be constructed	$47.30	Required to reduce the risk of loss to greater than 25,000 customers during a network event on a high pressure pipeline, or existing high pressure regulators to as low as reasonably practicable.	Rules 79(2)(c)(i)-(iii)
Security of supply - HP spur lines (Two Rocks and Peel spur lines and Elizabeth Quay & Perth CBD Risk Reduction Project)	$44.00	Primarily demand-related capital expenditure but also provides security of supply to new and existing customers, so a portion of costs has been allocated to Sustaining capex. (Sustaining capex cost allocation: Peel 78%, Two Rocks and Elizabeth Quay 40%). Peel - risk threshold 29,000 customers. Two Rocks - risk threshold 60,000 customers, Elizabeth Quay - risk threshold CBD	Rule 79(2)(a) and (c)(ii)
Security of supply - Transmission interconnections (6 additional gate station interconnects to the Parmelia Pipeline)	$17.90	Required to ensure security of supply in accordance with AS/NZS4645. Project will enable interconnection with the Parmelia Pipeline, which will, in turn, enable gas from the Mondarra storage facility to be supplied into the network in the event of an outage.	Rule 79(2)(c)(ii)
Inline inspections of high pressure pipelines	$6.80	Carried out in accordance with AS2885.	Rules 79(2)(c)(ii-)(iii)
Transmission gate stations upgrades (5 gate stations to be upgraded)	$1.10	Required to ensure capacity of five gate stations is sufficient to meet a peak or severe winter condition.	Rule 79(2)(c)(ii)
Meters compliance project	$4.60	Required by AS/Zs4645 and ASA/NZS5501 to reduce the risk associated with uncontrolled gas escape or meter failure to as low as reasonably practicable.	Rules 79(2)(c)(i)-(ii)
Facility upgrades - High pressure regulating equipment (31 high pressure regulating sites)	$5.90	Identified 31 high pressure regulating sites where metering and telemetry have not yet been installed. Also involves installation of physical protection above high pressure regulating equipment where there is a risk of third party damage.	Rules 79(2)(c)(i)-(iii)
Facility upgrades - OPSO safety devices *Continuation from AA3*	$2.10	The OPSO devices mitigate the risk of network damages and/or significant release of gas if over pressurisation occurs and is required by AS/NZS 4645 and AS 2885.	
Facility and capacity upgrades - other	$4.00	Includes a range of measures, including isolating network sections for ongoing UAFG investigations, installing signage etc.	
Total Asset safety and performance	**$133.70**		

Source: EMCa analysis from data in ATCO, AAI, March 2014, pp. 171-181 and AMP.

362. On an annualised basis, the amount that ATCO is proposing to spend on Sustaining capex in AA4, is three times *higher* than the amount spent in AA3. ATCO has attributed most of this increase to the 'costs associated with implementing the Safety Case'.[153] Elaborating further on this, ATCO noted that as part of the Safety Case and AMP, it has conducted FSAs for all asset classes and through this process identified the following actions to ALARP:[154, 155]

- the replacement of all cast iron and unprotected metallic mains in the network;
- the upgrade or replacement of distribution infrastructure in multi-storey buildings;
- the upgrade of high pressure pipelines to facilitate in-line inspections;
- the installation of new network to mitigate single point failure (i.e. the interdependency projects); and
- the installation of high pressure pipelines, interconnections and associated pressure reduction infrastructure.

363. The threshold ATCO has adopted for its ALARP assessment is 25,000 customers, as noted in the following extract:[156]

> *Loss of supply to 25,000 customers is considered a catastrophic event in accordance with ATCO Gas Australia's risk matrix.*

364. Finally, it is worth noting that ATCO has stated that the Safety Case is due to be reviewed during 2014 and that this could further affect the capex programme in AA4.[157]

Basis on which ATCO has sought to justify Sustaining capex in AA4

365. With the exception of the Two Rocks and Peel spur lines and the Elizabeth Quay & Perth CBD risk reduction project, ATCO has sought to justify its proposed expenditure on Sustaining capex under one or more of the grounds in rule 79(2)(c) of the NGR (i.e. safety, integrity, compliance and/or maintaining capacity to meet existing levels of demand).[158] In relation to the Two Rocks, Peel and Elizabeth Quay & Perth CBD projects, ATCO has divided the costs of these projects between Growth and Sustaining capex and claimed that the Growth component is justified under rule 79(2)(b)[159] while the Sustaining component is justified under rule 79(2)(c)(ii).

6.4.2 EMCa assessment

366. As noted above, most of ATCO's proposed increase in expenditure on Sustaining capex is being driven by its application of the Safety Case and, in particular, the FSAs that it has conducted under the Safety Case and the risk threshold it has applied to security of supply related projects when carrying out the FSAs. It is therefore worth taking the time to set out our views on how ATCO has conducted the FSAs and the risk matrix it has applied, before setting out the results of our assessment of whether ATCO's proposed

[153] ATCO, AAI, March 2014, p169.

[154] ATCO, AAI, March 2014, pp. 169-170.

[155] This statement is however contradicted by ATCO in its response to information requests EMCa08 and 09

[156] ATCO, AAI, March 2014, p171.

[157] ATCO, AAI, March 2014, p170.

[158] ATCO, AAI, March 2014, pp. 144-149.

[159] ATCO, AAI, March 2014, p162 and ATCO, AMP, Appendix C.

expenditure on security of supply, other asset performance and safety projects and asset replacement satisfies the conforming capex criteria in rule 79.

Safety case, FSAs and the risk threshold adopted by ATCO

367. ATCO's Safety Case was approved by Energy*Safety* in mid-2011. In accordance with *Gas Standards (Gas Supply and System Safety) Regulations 2000,* ATCO is required to comply with the processes described in the Safety Case to provide assurance that the management, development, maintenance and operation of the network is delivering satisfactory safety outcomes.

368. Under the Safety Case, ATCO is required to carry out FSAs. While the FSA process employed by ATCO is underpinned by the risk assessment framework set out in Australian standards AS/NZS4645 and AS2885, it has developed, modified and/or extended the definitions of consequence to account for its *own* risk appetite and wider business risk considerations (see Table 36 and Table 37 in Appendix A).[160] The risk thresholds that ATCO employs when carrying out its FSA are *not* prescribed in AS/NZS4645 and AS2885, nor have they been mandated by Energy*Safety*. They are instead largely based on ATCO's own risk management policy and guidelines.

369. When conducting a FSA, AS/NZS4645 and AS2885 state that when risks are assessed and categorised as 'Intermediate' they must be considered further and only accepted if they satisfy the ALARP test. In accordance with AS/NZS4645 and AS2885 the test of ALARP is as follows:[161]

> *A risk cannot be designated as ALARP until the following has been completed:*
>
> *(a) Analysis of the means of further reducing the risk, including an analysis of various options;*
>
> *(b) Review as to the reasons why these further means have not been adopted, and*
>
> *(c) Substantiation that the cost of further risk reduction measures is grossly disproportionate to the benefit gained from the reduced risk that would result.*

370. Importantly, AS/NZS4645 and AS2885 do *not* envisage risk mitigations at any cost. Rather the ALARP test requires a cost benefit assessment to be undertaken and measures only implemented if the costs are justifiable.

371. Based on our review of the FSAs carried out by ATCO it has not followed the full ALARP requirements of the AS/NZS4645 and AS2885 standards. Specifically, it has *not* provided any evidence (and confirmed in answer to questions during the on-site meetings) that it has conducted a cost benefit assessment for any of the projects that have been identified as being required to reduce risks to ALARP as required by AS/NZS4645 and AS2885.

372. This is a significant shortcoming with ATCO's approach to FSAs and is of particular concern given the level of expenditure it has proposed to carry out in AA4 to reduce the level of risk to ALARP.

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[160] Email from ATCO entitled, ATCO, response to EMCa 48, 17 April 2014.

[161] The relevant provision in AS/NZS4645 is clause 5.2 while the equivalent provision in AS2885 is contained in section F5.2.

373. The second concern we have with ATCO's approach is that the risk threshold it has adopted for catastrophic events appears to be lower than the threshold employed by other gas distribution networks, as highlighted in Table 18. This driving much higher levels of security of supply related expenditure than we would expect to observe, and which are much higher than this business has previously incurred.

Table 18: Risk definitions applied by ATCO vs other regulated gas pipelines

Company	Consequence Category Supply - Catastrophic	Consequence Category Supply - Major
ATCO	Interruption of supply affecting >25,000 customers	Interruption or restriction of supply affecting >5,000 customers
SP Ausnet	>200,000 customers or System Black or loss of supply to entire CBD	>100,000 customers
Multinet	Major disruption of multiple services capacity for greater than 1 month – failure of gas supply	Major disruption of multiple services capacity up 1 month –failure of gas supply
Envestra	Long term loss of supply to mass market >100,000 customer weeks	Short term loss of service to >10,000 customer days
Allgas		

Source: SPAusNet, Gas Safety Case, Formal Safety Assessment, 2011, pp. 5-6, Multinet Gas Network Asset Management Plan 2012/13-2017/18, March 2012, pp. 115-116, Envestra, Victorian and NSW Networks Asset Management Plan, March 2012, p16, APA Group, APT Allgas Energy Pty Ltd Networks Technical Asset Management Plan, 20 September 2010, p13.

374. In our view, for a non-essential service there is no evidence to support, at a policy level, that reinforcement is justified to ensure customers do not suffer loss of gas supply due to a single point failure in the ATCO network at a threshold of 25,000 customers, when the likelihood of such an event attributable to a distribution network failure is extremely low. The continued application of this threshold has the potential therefore to result in inefficient over-investment in the network, particularly if ATCO continues with its current practice of not undertaking the cost benefit assessment required by AS/NZS4645 and AS2885.

375. It follows from the preceding discussion that we are *not* satisfied that the threshold ATCO has employed when assessing the need for security of supply related expenditure is consistent with good industry practice as required by rule 79(1)(a). Nor are we satisfied that ATCO has properly applied the ALARP test given that there is no evidence it has undertaken a cost benefit assessment either when setting its risk threshold or when assessing whether to proceed with the proposed security of supply projects. We have therefore carefully examined those security of supply related projects, which are contingent on this threshold. The results of our assessment are set out in the next sub-section, while Appendix A contains further detail on the Safety Case, the FSA process and ALARP test.

Asset safety and performance – security of supply projects

376. The three groups of security of supply related projects that ATCO proposes to undertake in AA4, which are predicated on the application of the ALARP test, include:

- the interdependency projects ($47.3m), which will involve the installation of a number of pressure reduction facilities and high pressure mains in Armadale, Canning Vale, Hillarys, Kingsley, Lathlain, Fremantle, Melville, Murdoch and Scarborough;
- the high pressure spur line projects ($44m), which includes 40% of the costs of constructing the Two Rocks spur line ($18.1m) and Elizabeth Quay & Perth CBD risk reduction project ($4.9m) and 78% of the cost of constructing the Peel spur line ($20.9m). Note that ATCO has claimed that the remainder of the costs associated

with these projects is justified under rule 78(a). Our assessment of the remaining portion of these costs is contained in section 6.5; and

- the transmission interconnection project ($17.9m), which will involve the construction of six gate stations to interconnect with the Parmelia Pipeline to enable gas from the Mondarra gas storage facility to be supplied into the network when required.

377. Our assessment of whether these groups of projects satisfies rule 79 is set out below.

Justification for the proposed expenditure (r. 79(2))

378. ATCO has sought to rely on its application of the ALARP test to justify its expenditure on the interdependency, high pressure spur line and transmission interconnection projects under rules 79(2)(c)(i), (ii) and/or (iii) (i.e. safety, integrity and/or compliance with a regulatory obligation).

379. For the reasons set out in the preceding section we have significant concerns with the manner in which ATCO has applied the ALARP test, both in terms of the minimum threshold it has assumed for catastrophic security of supply-related events and, more importantly, the fact that it has not undertaken a cost benefit assessment for any of the identified ALARP projects. We have therefore undertaken a closer review of these projects.

380. We consider that if the Elizabeth Quay & Perth CBD risk reduction project was not undertaken and there was a supply interruption, then it could have 'catastrophic' consequences given the potential loss of supply throughout the CBD. Similarly, we would agree that if the Parmelia Pipeline interconnection project was not undertaken and there was a supply interruption similar in nature to the Varanus Island explosion, then it could also have 'catastrophic' consequences, given the potential loss of supply to a significant proportion of ATCO's total customer base. We are therefore satisfied that these projects are justifiable under rule 79(2)(c)(ii) (i.e. to maintain the integrity of services) in that they meet a reasonable industry definition of a catastrophic supply security event.

381. The projects that we are *not* prepared to say are justified under rule 79(2) at this stage in the absence of a cost benefit assessment are:

- the interdependency projects ($47.3m) – According to the information provided by ATCO these projects are only being proposed to satisfy its 25,000 customer at risk threshold, which as noted above is lower than industry standards. In some cases the costs of carrying out individual projects also appear to be disproportionate to the reduced risk that would result;[162]
- the Two Rocks spur line ($18.1m of a total proposed expenditure of $45.3m) – In this case ATCO has assumed a 60,000 customer threshold. While the threshold applied in this case is higher, the costs associated with reducing the risk of a supply interruption to 60,000 customers still appear disproportionate to the reduced risk that would result from building the spur line, with the costs of carrying out the project forecast to be in excess of $300 per customer. Moreover, as we describe in section 6.5, we consider that ATCO has not satisfactorily justified the growth component of this project, and disallowing this allocation of around 60% of the cost places a further burden on the need to justify it on security grounds; and

[162] ATCO, AAI, March 2014, p178.

- the Peel spur line ($20.9m of the total proposed expenditure of $26.9m, excluding the proposed Pinjarra reinforcement) – In this case ATCO has assumed a 29,000 customer threshold. In a similar manner to the other projects, the costs associated with reducing the risk of a supply interruption to 29,000 customers appears disproportionate to that would result from building the spur line, with the costs of carrying out the project forecast to be in excess of $720 per customer.

382. Although we cannot accept that these projects (or the security of supply related portion of these projects), which total $86.3m, are justified under rule 79(2) based on the information that ATCO has provided in its AA, this should not be taken as a finding that these projects could never be justified. We would expect though that any assessment that ATCO may choose to respond in response to the ERA's Draft Decision would be conducted in accordance with good industry practice. This should include:

- distinguishing between events that have a direct safety consequence for employees, customers and/or the wider public and events that primarily have a potential loss of supply impact;
- evidence-based assessment of risk likelihood;
- evidence of consideration of risk mitigation measures; and
- the assessment of proposed projects by reference to consideration of costs and benefits as is required by the aforementioned standards.

Prudent service provider test and reasonableness of forecasts

383. In keeping with the second step of the assessment framework outlined in section 3.2.1 we have considered the extent to which the proposed expenditure on the Elizabeth Quay & Perth CBD project and Transmission interconnections is consistent with the prudent service provider test. While ATCO has not yet developed detailed business cases for these projects, for the reasons set out below, we are satisfied that ATCO's proposed expenditure on these projects is likely to comply with this test:

- The project governance framework employed by ATCO and its policy that all major projects are subject to a competitive tender and that services provided in-house are market tested, is generally sound and in keeping with what we would expect a prudent service provider acting efficiently and in accordance with good industry practice to employ (see section 4.3); and
- ATCO's past performance in delivering projects within the allowance provided by the ERA and within 2.4% of its own budget estimates is indicative of its ability to behave in a prudent and efficient manner, noting that there is a reasonable amount of reprioritisation and scope adjustment within the portfolio of projects (see section 4.4.2).

The ability of the ERA to conduct an *ex post* review of this capex during the AA5 revisions process should also impose some additional discipline on ATCO to behave in a prudent and efficient manner when undertaking these projects.

384. Given evidence of the need for these projects, and for the prudency of the cost estimates, we are satisfied that the forecasts ATCO has provided for these projects are consistent with the best estimate arrived at on a reasonable basis principle in rule 74(2) of the NGR.

Compliance with conforming capex criteria

385. For the reasons set out above, we are of the view that:

- the Parmelia Transmission interconnection and the Elizabeth Quay & Perth CBD projects comply with rule 79 and so can be considered conforming capex; and
- the interdependency projects and the portion of the Two Rocks and Peel spur line projects that ATCO has included in Sustaining capex are *not* justified under rule 79(2) and cannot therefore be considered conforming capex.

Asset safety and performance - Other projects

386. The other projects that ATCO is proposing to undertake to improve the safety and performance of the network are:
    - in line inspections ($6.8m);
    - the upgrade of five transmission gate stations ($1.1m);
    - a meter compliance project ($4.6m); and
    - a number of facility upgrade projects ($12m).

387. Based on our review of these projects, we are satisfied that they are justified under one or more of the grounds in rule 79(2)(c) and are in line with good industry practice. For the reasons set out in paragraph 383, we are also satisfied that the $24.5m that ATCO proposes to spend on these projects is consistent with the prudent service provider test. The approach ATCO has used to forecast these costs also appears to have been arrived at on a reasonable basis. We are therefore of the view that ATCO's expenditure on this group of projects should be considered conforming capex.

Asset replacement

388. The asset replacement projects that ATCO is proposing to carry out in AA4 consist of a mix of new projects and the continuation of a number of projects from AA3 (e.g. the replacement of: EOL cast iron, odd-sized and unprotected metallic mains; distribution infrastructure in multi-storey buildings; and M6WA meters with faulty plugs).

389. For the reasons set out in Table 9 we are satisfied that the replacement projects that are to continue into AA4 are justified under one or more of the following grounds:
    - maintaining and improving the safety of the services (r. 79(2)(c)(i)); or
    - maintaining the integrity of the service (r. 79(2)(c)(ii)); and/or
    - complying with regulatory obligations or requirements (r. 79(2)(c)(iii)).

390. The results of our review of the new projects ATCO has proposed to undertake in AA4 (e.g. the replacement of PVC mains, services, the Bibra Lake high pressure pipeline and domestic meters), are summarised in Table 19. In short, we are satisfied that these projects are justified under one or more of the grounds set out in rule 79(c)(i)-(iii).

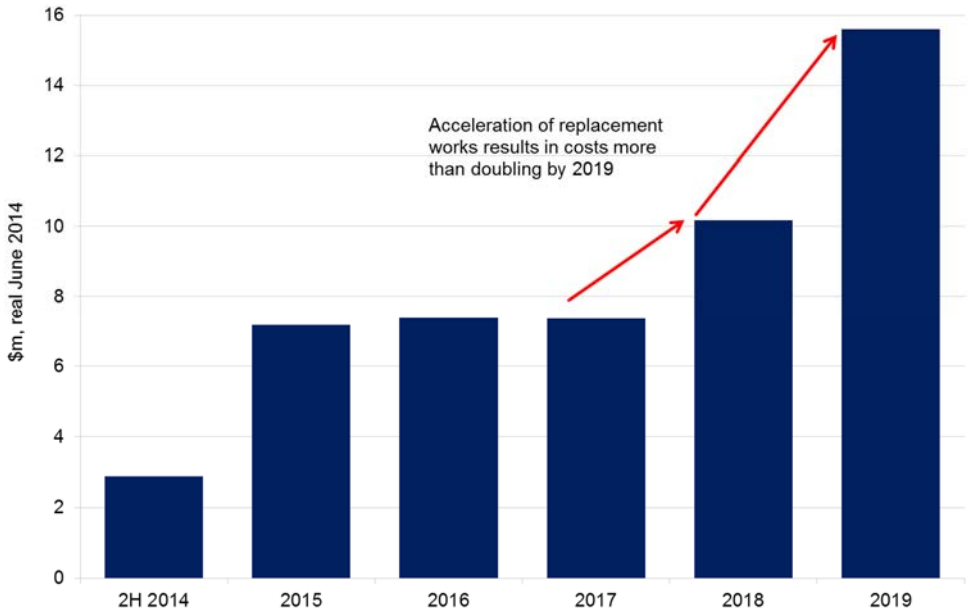
Table 19: Observations on new asset replacement projects proposed by ATCO

Project	Observations
Replacement of PVC mains **Proposed $12m**	Failure of rubber O-rings on mechanical fittings/couplings & pipe brittleness give rise to leaks on PVC systems, particularly when there is ground movement or when disturbed. ATCO have determined the worst performance are in sizes >100mm and have rightly prioritised where gas escapes could track into buildings in locations within high community use areas and is justified on both a safety and system integrity basis. In our view, this project is justified on both a safety and integrity basis (r. 79(2)(c)(i),(ii)).
Service replacements **Proposed $9.3m**	EOL replacement of services (on a condition assessment basis) is prudent as leakage from services has a tendency to track along installation trench routes and the potential migrate into buildings with specific safety implications. These replacements are therefore justified on the basis of maintaining the integrity and the safety of services (r. 79(2)(c)(i),(ii)).
Bibra Lake high pressure pipeline replacement **Proposed $3.2m**	High pressure thin wall steel pipe in high consequence areas is vulnerable to full bore rupture by third party excavation machinery. Renewal versus other mitigations is likely to be the optimal approach to meet AS2885 requirements and is justified on the retrospective review requirements of AS2885 associated with risk mitigation and therefore justified on the basis of maintaining the integrity and the safety of services (r. 79(2)(c)(i),(ii)).
Routine meter replacement **Proposed $31.6m**	Replacement of meters is prescribed on an age basis within the GSSSR. Replacement varies depending upon meter type and is justified on the basis of complying with a regulatory obligation (r. 79(2)(c)(iii)).
Other replacements **Proposed $6.7 m**	The replacements of: Anodes, Isolation valves, TRU, Plastic service valves, HPR, MP pits, Telemetery and monitoring are typical of obsolescence and EOL replacements and are necessary for a prudent service provider to be able to maintain business as usual. This expenditure is primarily justified on the basis of maintaining the integrity and safety of services (r. 79(2)(c)(i),(ii)).

391. Turning now to the question of whether ATCO's proposed expenditure on these projects satisfies the prudent service provider test in rule 79(1)(a). With the exception of the proposed step increase in expenditure on the EOL replacement of unprotected metallic mains in the last two years of the AA, we are of the view that ATCO's proposal satisfies this test for the reasons set out in paragraph 383.

392. In relation to the increased expenditure ATCO has assumed will be incurred in replacing unprotected metallic mains in 2018 and 2019 (see Figure 36), it would appear that ATCO has used the end of the AA4 period as an artificial deadline to complete this work. Apart from the concerns we have about the increased expenditure in the last two years of the AA, we also question whether ATCO will be able to deliver the programme within the shortened period.

Figure 36: ATCO proposed expenditure on replacement of metallic mains



Source: EMCa analysis from data in ATCO, AMP, Appendix C.

393. In our view, a prudent service provider acting in the manner prescribed in rule 79(1)(a), would *not* use the end of the AA period as a drop dead date by which the works should be completed, particularly if the acceleration of that work was to result in costs more than doubling in the last two years and there were questions surrounding its ability to actually deliver within the shorter time period. A prudent service provider would instead, in our view, allow the works to be carried out in the same manner as has been assumed for 2015-2017 in 2018 and 2019 and to extend into the AA5 period, particularly when the risks associated with extending the works into AA5 are relatively low.[163]

394. We are therefore of the opinion that the additional $11m of expenditure that ATCO has assumed will be carried out in 2018 and 2019 relative to 2017 (i.e. $2.8m in 2018 and $8.2m in 2019) does *not* satisfy the prudent service provider test and should be deferred to AA5.

395. Apart from the assumptions ATCO has made about the profile of expenditure on the replacement of EOL metallic mains, we are satisfied that ATCO's forecasts are consistent with the best estimate arrived at on a reasonable basis principle in rule 74(2) of the NGR.

6.5 Growth capex AA4

6.5.1 ATCO's proposal

396. ATCO is proposing to spend $228.5m on Growth capex during AA4 to 'support forecast network growth and approximately 101,000 new connections'.[164] Of the $228.5 million, ATCO is proposing to spend:[165]

- $156.3m on Customer initiated capex, which includes the costs of connecting new customers to the network through the installation of mains, services and meters. This category of capex includes the costs of connecting customers in:
  - established areas of the network (i.e. brownfield infill projects),
  - new greenfield developments; and
  - 'new family units', which according to ATCO covers 'clusters of new connections, typically in existing suburbs'.

  It is worth noting in this context that as a condition of ATCO's licence it 'must offer to connect any service that is on line of gas main with up to 20 metres of service line, and accompanying gas meter incorporated, as the "Service Connection"'.[166]
- $72.2m on Demand capex[167] on a range of projects, including:

[163] In our view the risks of extending the programme into AA5 would be low because ATCO has indicated it would replace the 'leakiest' metallic mains first, which means that by year four or five of the programme, the mains left to be replaced would be those that exhibit lower leakage rates. Extending the programme into AA5 would therefore pose little incremental risk to the safety or integrity of the pipeline.

[164] ATCO, AAI, March 2014, table 56 and p. 181.

[165] ATCO, AAI, March 2014, table 61.

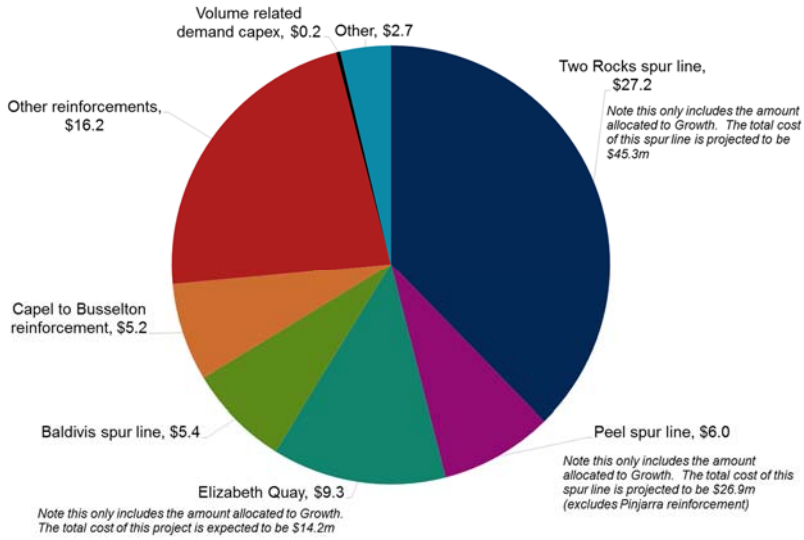
[166] ATCO, AAI, March 2014, p183.

[167] According to ATCO this category includes the costs of reinforcing the network to ensure the network maintains pressure (hydraulic capacity) to meet the growth in connections. It therefore includes the cost of developing high pressure pipelines, upgrades to pressure regulating facilities and pipeline extensions.

- greenfield projects (e.g. the Peel, Two Rocks and Baldivis spur lines);
- variable volume demand related projects;
- reinforcements of existing pipelines to support existing demand and/or projected demand (e.g. the Capel to Busselton, Pinjarra and Innaloo reinforcements); and
- other demand related capex.

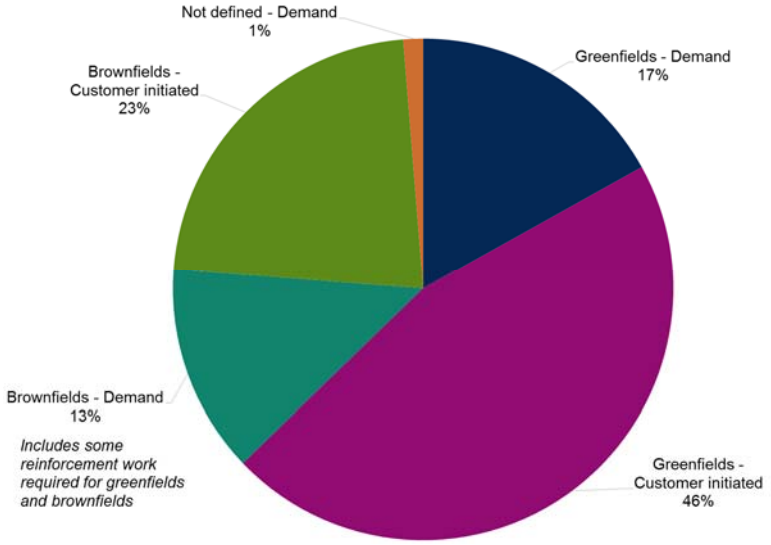
397. Figure 37 provides a breakdown of the Demand related projects ATCO is proposing to undertake in AA4 while Figure 38 breaks down the total Growth capex into greenfield and brownfield projects.

Figure 37: Breakdown of Demand related capex



Source: EMCa analysis from data in ATCO, AMP, Appendix C.

Figure 38: Greenfield vs brownfields capex

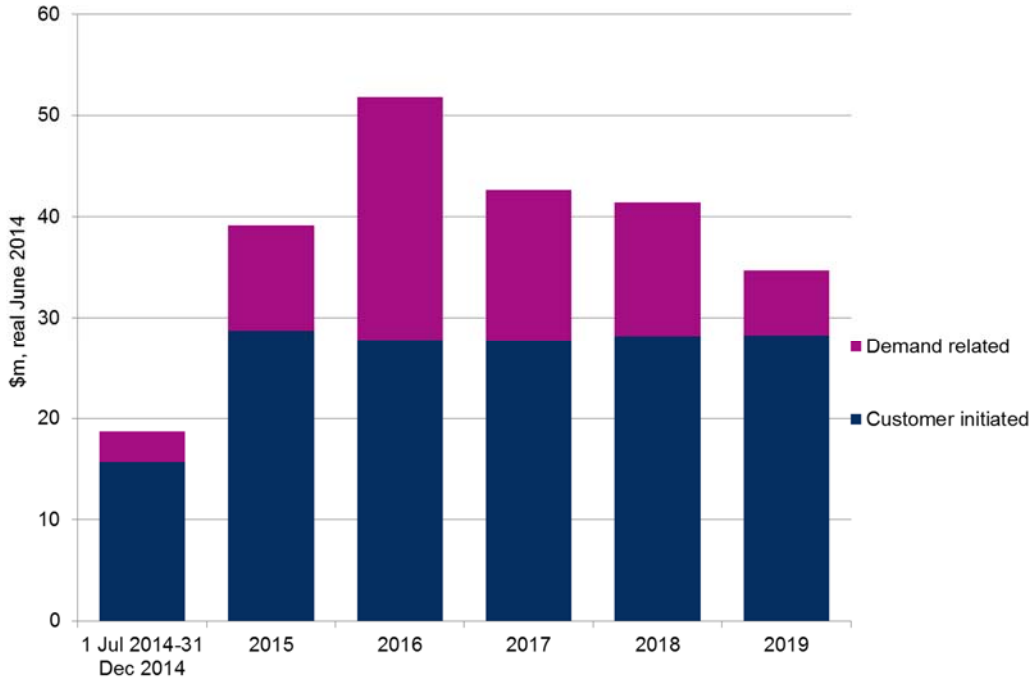


Source: EMCa analysis from data in ATCO, AMP, Appendix C and tables 27-28.
Notes: Greenfields – Demand include the Two Rocks, Peel and Baldivis spur lines while Customer initiated includes new developments service and mains costs (tables 27-28). Brownfield – Demand includes the Elizabeth Quay Perth CBD project and all reinforcements, while Brownfield - Customer initiated includes infill established new services costs and gas mains extension and new family units mains and services (tables 27-28). The remaining Demand initiated capex has been included in 'not defined'.

398. As Figure 38 indicates, 63% of the proposed Growth capex is related to greenfield developments, with Customer initiated connections accounting for 46% ($105m) and the Two Rocks, Peel and Baldivis spur lines accounting for the remaining 17% ($38.6m).

399. The profile of ATCO's proposed expenditure on Demand and Customer initiated capex in AA4 is illustrated in Figure 39. As this figure highlights, ATCO has assumed that Customer-initiated capex will be relatively steady over the period, while a step up in Demand expenditure is expected in 2016, which is when ATCO proposes to commence work on the Two Rocks spur line.

Figure 39: AA4 proposed expenditure on Growth capex



Source: EMCa analysis from data in ATCO, AAI, Table 61.

400. On an annualised basis, the amount that ATCO is proposing to spend on Growth capex in AA4 is 37% *higher* than the amount spent in AA3. The proposed increase has been rationalised by ATCO as follows: [168]

> *Demand related capital expenditure is increasing over the AA4 period to ensure that the opportunities to increase the number of economic new connections are maximised.*
>
> *New housing connections since the global financial crisis (GFC) have been trending lower than previous years. However, in AA4 new housing connections are forecast to recover to pre-GFC levels. This is due to factors such as rising consumer confidence, low interest rates, increasing finance approvals, population migration to Western Australia and increasing lot sales by developers driving the land subdivision activity.*

[168] ATCO, AAI, March 2014, p182.

Basis on which ATCO has sought to justify Growth capex in AA4

401. ATCO has sought to justify its proposed expenditure on Growth capex in AA4 on the following grounds:[169]

- Customer initiated capex – the incremental revenue test (r. 79(2)(b)) for meters and service pipes, and safety and integrity grounds (r. 79(2)(c)(i)-(ii)) for mains; and
- Demand capex:
  - the incremental revenue test (r. 79(2)(b)) for variable volume demand and greenfields projects (e.g. Two Rocks (60% of costs), Peel (22% of costs), Elizabeth Quay and Perth CBD (60% of costs) and Baldivis);[170] and
  - integrity grounds (r. 79(2)(c)(ii)) for reinforcements.

6.5.2 EMCa assessment

402. Based on our review of ATCO's proposal, it would appear that a significant proportion of the proposed expenditure on Customer initiated and Demand capex in AA4 can be attributed to the proposed greenfield developments. We have therefore undertaken a closer review of these projects when assessing whether ATCO's Growth capex proposal complies with rule 79. The results of our review are set out below.

Justification for the expenditure (r. 79(2))

403. As noted above, ATCO has claimed that all of its proposed expenditure on Growth capex is justified on a number of different grounds under rule 79(2) of the NGR. The analysis it has presented in support of its proposed $228.5m expenditure is, however, all based on the incremental revenue test set out in rule 79(2)(b):[171]

$$PV(Expected\ incremental\ revenue\ generated\ as\ a\ result\ of\ expenditure) > PV(Capex)$$

404. The results of ATCO's analysis are reproduced in Figure 40. As this figure indicates, ATCO has estimated that:

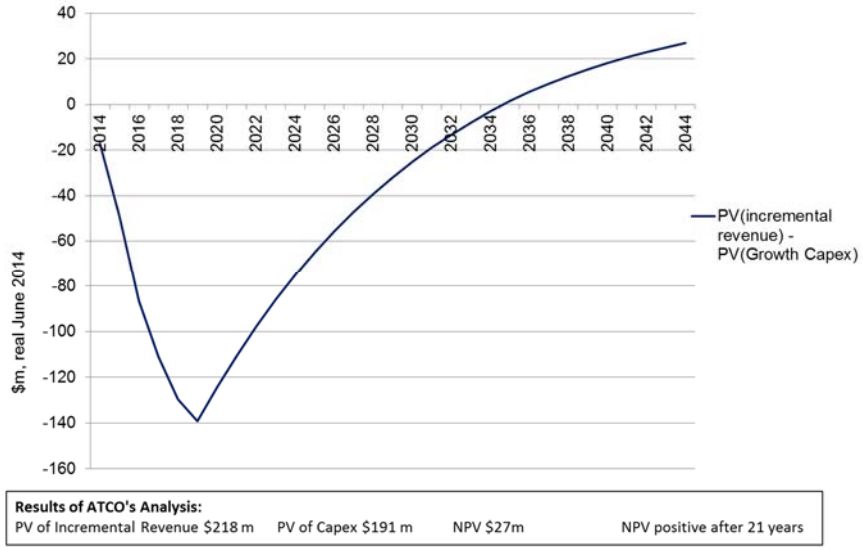
- in PV terms, the incremental revenue associated with AA4 Growth capex exceeds the $228.5m that it proposes to spend on Growth capex in AA4; and
- the expenditure will be NPV positive by 2035.

[169] ATCO, AMP, 14 March 2014, Appendix C and ATCO, AAI, March 2014, p162. It is worth noting that Appendix C of the AMP refers to the economic value test being used rather than the incremental revenue test. This appears, however, to be an error because the analysis ATCO has provided in support of this expenditure is based on rule 79(2)(b). We have therefore proceeded on this basis.

[170] As noted in section 5.4.1, ATCO has allocated 40% of the costs associated with the Two Rocks spur line and Elizabeth Quay project and 78% of the costs of the Peel spur line to Sustaining capex. This section only deals with the residual costs, which ATCO has allocated to Growth capex.

[171] ATCO, AAI, March 2014, p183.

Figure 40: ATCO's NPV Analysis of Growth Capex for AA4



Source: EMCa analysis from data in ATCO, AAI, Figure 65.

405. To determine whether the $228.5m of Growth capex can actually be justified under r. 79(2)(b), we have reviewed the NPV analysis carried out by ATCO and the assumptions underlying this analysis. Our findings are outlined below.

Review of ATCO's NPV analysis

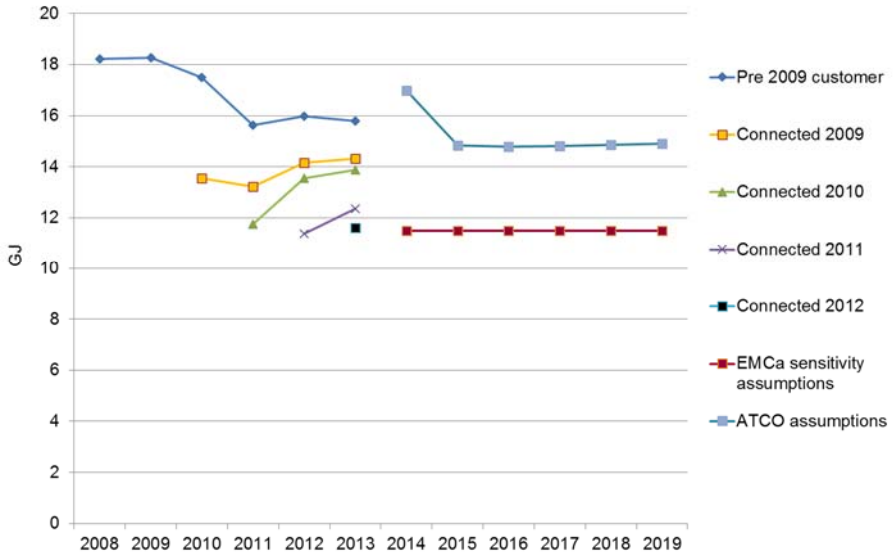
406. Through our review of ATCO's NPV analysis, we identified two assumptions that are inconsistent with rule 74(2) (i.e. best estimate arrived at on a reasonable basis) and which we consider renders ATCO's proposed justification under rule 79(2)(b) invalid.

407. First, ATCO has used the current average annual consumption of its customer base as the starting point for its assessment of future net revenues from new customers (15-17GJ). We sought further information from ATCO to test this assumption and were informed at the on-site meetings that newly-connected customers tend to use less gas than existing customers. Stated reasons for this include:

- New consumers using solar for water heating, with gas use only for "top-up" purposes;
- New consumers using reverse cycle air conditioning for space heating, in place of gas; and
- Better insulated homes, requiring less energy overall.

408. We asked ATCO to provide information on the annual consumption of new customers, as distinct from existing customers. ATCO provided information, which showed a steeply declining level of consumption for each annual tranche of new customers (see Figure 41).

Figure 41: New B3 customer annual consumption levels



Source: EMCa graph from data provided by ATCO in its AA4 growth revenue test model, and in its response to information request EMCa056, together with EMCa sensitivity assumptions[172]

409. ATCO's information for B2 customers shows a similar pattern, in which ATCO's assumed forward usage by newly-connected customers is materially higher than the average annual consumption of newly connected customers in any of the past four years.

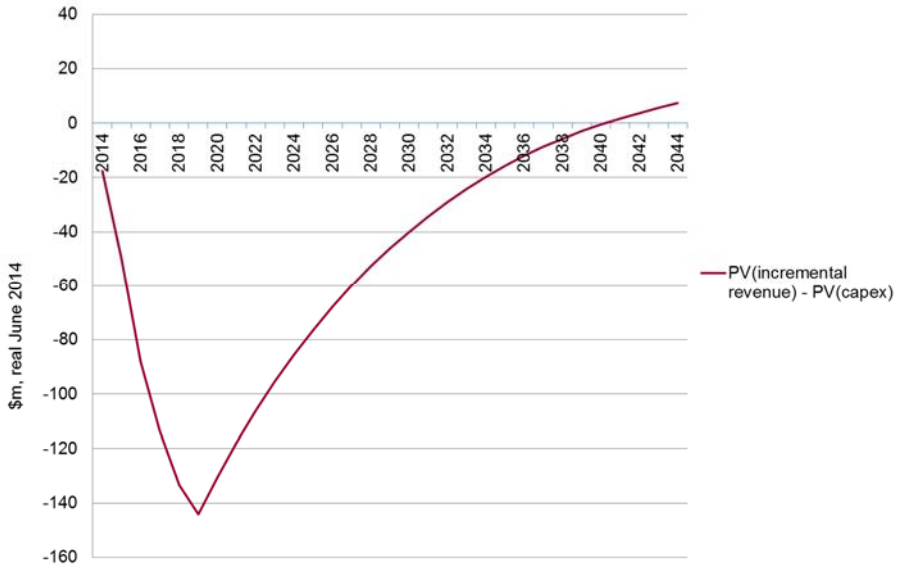
410. In the face of clear evidence that new customers are using considerably less gas than pre-existing customers, it is not, in our view, valid to assume the levels of additional consumption (and by extension additional revenue) that ATCO has used in its NPV analysis (i.e. the consumption estimate contravenes the principles in rule 74(2)).

411. Given our concern with this aspect of ATCO's analysis, we have tested the sensitivity of its results to a change in the annual level of consumption for B3 customers of 11.5 GJ (i.e. 3-5 GJ p.a. lower than ATCO has assumed), which is around the level of annual customers connecting in 2011 and 2012, the most recent years for which ATCO provided data, as can be seen from Figure 41.

412. Adjusting for consumption levels that better reflect the annual consumption of recently-connected new customers, produces a considerably lower NPV outcome. As shown below, if ATCO invests in Growth capex over AA4 at the level it has proposed, and if this is recovered as proposed through reference tariffs, then our analysis suggests that customers will be worse off through higher tariffs for the next 26 years.

[172] In this graph, we have shown usage only from the year after connection. ATCO's data for usage in the year of connection is very low, and most likely reflects that those customers were not connected for full years

Figure 42: Effect of adjusting average annual consumption on NPV analysis



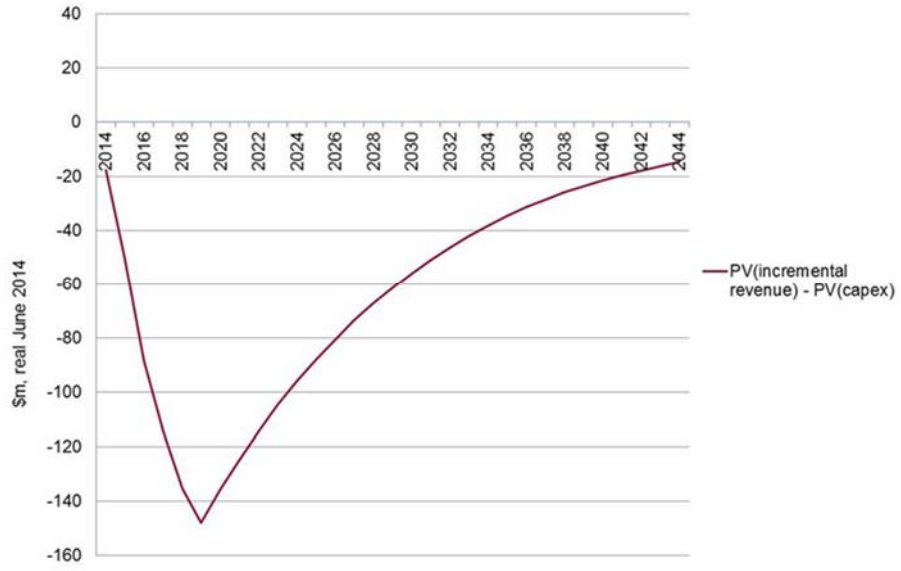
Source: EMCa analysis from ATCO AA4 growth justification model.

413. While the rules do not specify a time-period over which the incremental revenue test should be applied, we consider that a projected small positive NPV after 30 years, given over $140m of net investment as shown above, is not sufficiently robust justification to allow its inclusion in the regulated asset base. Given the time-period, and the rapidly changing (and worsening) economics of gas reticulation that are evident from recent data that ATCO has provided, it may be more appropriate to characterise some of the underlying capex projects included in this aggregate analysis as 'speculative investment' and better suited to commercial decision by the investing entity rather than being funded by the existing customer base.

414. The second aspect of ATCO's analysis that we consider problematic is that it assumes that reference tariffs will rise, in accordance with its proposal. For example, its assumptions about the B3 tariff used in the calculation of incremental revenues, assume increases of the order of 5.6% per year through to 2019, though declining thereafter.

415. We do not consider it valid to assume price rises, which are based on recovery of the higher costs resulting from the proposed high levels of capex, in justifying that capex because there is an inherent element of circularity in this approach. We consider that a more reasonable proposition is to test whether the proposed expenditure can be justified under an assumption that tariffs do not rise in real terms – that is, they keep pace with inflation. When we made this change to ATCO's analysis (in conjunction with the change to new customers' annual consumption as above) we found that the NPV becomes negative (see Figure 43), which means that the aggregated expenditure fails the incremental revenue test.

Figure 43: Effect of assuming no real increase in tariffs



Source: EMCa analysis from ATCO AA4 growth justification model.

416. The NPV outcome would be further worsened if we allowed for:

- Further declines in the annual consumption of newly-connected customers. We have not analysed this possibility in detail but the evidence provided by ATCO would suggest that new customer consumption is likely to decline further, though we would expect this decline to level out at some point.
- Not allocating the amount of $44m of investment in key growth spur lines, to 'sustain"; in other words, contrary to ATCO's proposal, including these spur line costs in total in the incremental revenue justification (consistent with our finding against inclusion of these amounts in Sustain capex).

417. Finally, it is worth noting that as part of its AA, ATCO has proposed to restructure its tariffs with a higher fixed charge and (for the most part) a lower variable usage charge than it currently has, as shown in Table 20. In ATCO's NPV analysis this change leads to considerable increases in average revenues per customer; in other words the assumed restructure does not appear to be revenue-neutral.

Table 20: Percentage increases in revenues per connection assumed by ATCO, based on restructuring tariffs in 2015

Tariff class	Increase (%)
A1	28%
A2	30%
B1	4%
B2	46%
B3	9%

Source: EMCa analysis of information in ATCO's AA4 growth NPV model, comparing revenues per customer in 2015 with those shown for 2014

418. It has not been possible for us to unwind this effect, so the sensitivity analysis we have carried out using ATCO's AA4 NPV model, assumes the increased revenue resulting from the restructured tariffs in 2015 does occur (i.e. consistent with ATCO's assumption), and have modified tariff growth rates only from 2016 on.

Review of the individual projects

419. Because ATCO has undertaken all of its NPV analysis on an aggregated basis (i.e. all Growth capex is included and there is no way to identify the costs or demand associated with individual projects), we have not been provided with justification as to whether individual projects may yield a positive NPV. We have therefore carefully examined the material ATCO has provided in support of each of the projects to determine whether it can be justified under rule 79(2). The results of our review are summarised in Table 21.

420. As the final row of this table reveals, ATCO has not provided sufficient information to demonstrate that $143.4m of the proposed expenditure on Growth capex in AA4 complies with rule 79(2)(b), which equates to 62.8% of the proposed Growth capex.

421. Regardless of whether the aggregate Growth capex satisfies the incremental revenue test under the rules (and we consider it does not in this instance), we consider that a justification of Growth capex should be undertaken at a reasonable level of granularity to enable projects to be properly assessed. It is likely that within an overall growth program, some aspects will have better net outcomes than others. It is also quite likely that, within an aggregate and diverse programme such as ATCO has proposed, some elements of it may be NPV-positive despite an overall negative outcome and conversely that, within an aggregate programme with a positive NPV there may be material elements that have a negative NPV. There is an inter-relationship between some but not all projects, such that some bundling is warranted. However, in our view it needs to be demonstrated that each reasonably separable component of the proposed expenditure is justified under rule 79(2).

422. A clear example of this issue is in relation to greenfield reticulation of residential subdivisions, for which ATCO has proposed $105m, as shown in Table 21. Our position in relation to the actual economics of such expansions is agnostic; however, our terms of reference require that we assess the information that ATCO has provided. ATCO's Access Arrangement submission has provided us with no evidence that allows us to form a view as to whether this large and relatively generic expansion initiative satisfies the incremental revenue test and, without such evidence from ATCO, we must recommend that it is rejected at this time.

423. In adjusting greenfields capex, and as we describe in section 4.6.2, we have assumed that ATCO has some current ability to connect greenfields customers, without requiring AA4 mains extension capex to do so, and that this continues for the remainder of 2014 and at half-rate for 2015. The adjusted greenfields capex therefore assumes this continuation of new greenfields connections for the remainder of 2014 and at a slowing rate in 2015.

424. Finally, it is worth noting that the exclusion of $143.4m of capex will have implications for ATCO's demand projections. These implications are set out in section 4.6.

Table 21: Review of ATCO's proposed Growth capex

Project	Rule proposed by ATCO	Information provided by ATCO	Assessment
Customer initiated capex			
Brownfields (Infill and New Family Units): **$51m**	Primarily 79(2)(b) small amount under 79(2)(c)(i)-(ii)	AAI, AMP	ATCO has *not* provided a cost benefit assessment to justify this proposed expenditure. However, we understand that ATCO is required under the terms of its licence to offer to connect any service that is on line of gas main with up to 20 metres of service line.[173] While it is unclear whether all of the expenditure ATCO has identified as 'Infill/Established' and 'New Family Units' satisfies this criterion, we have taken a conservative position and assumed it all is attributable to this obligation. We are therefore of the view that this expenditure is justified under rule 79(2)(c)(iii) (i.e. the expenditure is necessary to comply with a regulatory obligation).
			Satisfies rule 79(2)(c)(iii)
Greenfield sub-division developments Proposed: **$105m**			As far as we can ascertain the 20 metre line of main obligation does *not* apply to greenfield sub-division developments where it is necessary for ATCO to take the initiative of providing mains reticulation before customer can be connected. Support for this view can be found in the fact that $61m of the $105m provision that ATCO has made for greenfield developments is for *new* mains to be laid in open trenches.[174] In other words, the reticulation system also has to be laid to support the customer connections, which goes beyond the scope of the 20 metre obligation. The inclusion of this expenditure does *not* appear therefore to be justified under rule 79(2)(c)(iii). It follows that the only way this expenditure can be justified is under rule 79(2)(b) (as proposed by ATCO), which requires ATCO to demonstrate that the incremental revenue associated with these developments is greater than the proposed capex. This information has not been provided in the AAI or the AMP. Nor have we been provided with any business cases or feasibility studies that indicate this analysis has been undertaken, or that the proposed expenditure is NPV positive. From the information that ATCO has provided, we are *not* therefore in a position to accept that the proposed expenditure of $105m satisfies rule 79(2)(b), and by extension, that the proposed expenditure constitutes conforming capex. While it is possible that ATCO may be able to provide this analysis in response to the draft decision, we must necessarily form our view on the information provided in its AA submission and related clarifications. Contrary to ATCO's position that demand drives growth capex, we therefore arrive at a position where the lack of justifiable capex will influence demand growth since it implies that there is not a business case for ATCO to supply all potential new customers whose properties are not currently passed by gas mains. We have taken this into account in our assessment of ATCO's demand forecasts (see section 4.6.) and its proposed expenditure on reinforcement projects (see below) We assume that some mains and greenfields sites have already been installed and service connections to those mains will be conforming capex. We estimate this amount to be $19.8m
			Lack of compelling information provided by ATCO for $85.1m for proposed expenditure to be justified under rule 79(2)(b). $19.8m satisfies rule 79(2)(c)(iii)

[173] ATCO, AAI, March 2014, p183.

[174] ATCO, AMP, March 2014, table 28.

Project	Rule proposed by ATCO	Information provided by ATCO	Assessment
Demand capex			
Two Rocks spur line (60% of costs) Proposed: **$27.2m**	79(2)(b) – incremental revenue test	AAI, AMP and a 'high level assessment' carried out by ATCO in mid-2013.	ATCO has *not* provided a cost benefit assessment to justify this proposed expenditure. Nor does the 'high level assessment' contain such an assessment. In the absence of any form of project specific cost benefit analysis, we are not in a position to accept that this project (either in its entirety or the 60% of costs allocated by ATCO) satisfies the incremental revenue test in rule 79 79(2)(b), and by extension, that this proposed expenditure can be considered conforming capex.
			Lack of compelling information provided by ATCO to be justified under rule 79(2)(b).
Baldivis spur line Proposed: **$5.4m**	79(2)(b) – incremental revenue test	AAI, AMP and a Project Feasibility Report (undated).	ATCO has *not* provided a cost benefit assessment to justify this proposed expenditure. While the feasibility report contains some cost information, no assessment has been carried out of the benefits associated with this project, so we are unable to accept that the incremental revenues associated with this project are expected to exceed the capital cost.[175] We are not in a position therefore to determine whether this project satisfies the incremental revenue test in rule 79(2)(b), and by extension, that this proposed expenditure can be considered conforming capex.
			Lack of compelling information provided by ATCO to be justified under rule 79(2)(b).
Peel spur line (22% of costs) Proposed: **$6m**		AAI, AMP and a Project Feasibility Study from 2013.	ATCO has *not* provided a cost benefit assessment to justify this proposed expenditure, but a high level this assessment appears to have been undertaken in the feasibility study. The NPV analysis in the feasibility study indicates a relatively small net benefit ($705,000) for the growth related component of the project, which accounts for just 22% of the proposed project cost[176]. One of the more significant concerns we have with the analysis contained in the feasibility study is that insufficient information has been provided on the underlying assumptions, so we have not been able to test these or determine whether ATCO has applied the same problematic average consumption assumption outlined above. We are not therefore in a position to confirm that the 22% of costs associated with this project satisfies rule 79(2)(b), particularly given the estimated net benefit is relatively small. Another point that is worth noting in this context is that if the remaining 78% of the project costs ($21m attributed to Sustain capex) were included in the NPV analysis (i.e. because they don't satisfy rule 79(2)(c)) – see section 6.4.2), then the NPV would be clearly negative.
			Lack of compelling information provided by ATCO to be justified under rule 79(2)(b).
Elizabeth Quay & Perth CBD risk reduction project (60% of costs) Proposed: **$9.3m**		AAI, AMP and a Project Feasibility Study from 2013.	ATCO has *not* provided a cost benefit assessment to justify this proposed expenditure. It has, however, included an NPV analysis in its project feasibility study. The NPV analysis indicates that the preferred option will yield a positive NPV of $2.4m for <u>both</u> the security of supply and growth components.[177] Because of the different nature of load that this project will support (i.e. non-residential), the concerns we have raised about the average gas residential consumption are not relevant to the NPV analysis. We are therefore prepared to accept that the NPV analysis ATCO has carried out for the Elizabeth Quay & Perth CBD project demonstrates that the PV of incremental revenues exceeds the PV of the costs.
			Satisfies rule 79(2)(b)

[175] ATCO, Baldivis South Spurline Feasibility Report, undated.
[176] ATCO, Peel Spur Line Project Feasibility Study, AST.2013.REP.004, pp. 3-5.
[177] ATCO, Elizabeth Quay & Perth CBD Risk Reduction, AST 2013.REP.003, pp. 5-6.

Project	Rule proposed by ATCO	Information provided by ATCO	Assessment
Capel to Busselton reinforcement Proposed: **$5.2m**	79(2)(c)(ii)	AAI and AMP	While ATCO has sought to justify this project on integrity grounds, the description in the AAI suggests that the project is required to maintain pressure to connect *new* customers rather than existing customers.[178] The project should therefore in our view be assessed using the incremental revenue test (r. 79(2)(b)), rather than on integrity grounds under rule 79(2)(c)(ii). No project specific cost benefit assessment for this project has been provided by ATCO for this project and no feasibility or business case appears to have been conducted. We are not in a position therefore to accept that this project satisfies the incremental revenue test in rule 79 79(2)(b), and by extension, that this proposed expenditure can be considered conforming capex.
			Lack of compelling information provided by ATCO to be justified under rule 79(2)(b).
Other reinforcements (e.g. Innaloo, Pinjarra etc.) Proposed: **$16.2m**		AAI, AMP	While it would appear from the information provided contained in the AAI and AMP that these reinforcements are justified under rule 79(2)(c)(ii), any change to the expected level of demand arising as a result of the exclusion of greenfield developments will obviously have implications for the level of reinforcement required. On the information provided by ATCO it has not been possible to determine which reinforcements are associated with the greenfield sub-division developments. We have therefore applied a simple pro-rata adjustment to the proposed $16.2m allowance for reinforcements. The pro-rata adjustment we have used is based on the ratio of:[179] • the number of assumed greenfield development customers in AA4 (69,366); to • the total number of new connections, i.e. including the number of assumed infill and new family unit customers in AA4 (27,972). This ratio implies that 71% of the costs of the proposed reinforcements should be ***excluded*** on the grounds that they are not required to support the assumed growth in greenfield developments. In other words, $4.7m worth of reinforcement expenditure is required. While we would expect ATCO to provide further information if it chooses to respond to the ERA's draft decision to indicate the reinforcement requirements based on a justified level of greenfields development. .
			$4.7m satisfies rule 79(2)(c)(ii) **$11.6m excluded on the basis it is not required if greenfield development customer initiated capex is not justified.**
Volume related demand capex and regulating facilities Proposed: **$2.9m**	79(2)(b)	AAI, AMP	ATCO has *not* provided a cost benefit assessment to justify this proposed expenditure. We are not in a position therefore to determine whether this project satisfies the incremental revenue test in rule 79 79(2)(b), and by extension, that this proposed expenditure can be considered conforming capex.
			Lack of compelling information provided by ATCO to be justified under rule 79(2)(b).
Total that Does Not Currently Satisfy Rule 79(2)			**$143.4m**

[178] ATCO, AAI, March 2014, p193.

[179] Based on customer numbers appearing in table 27 of the AMP. For 2014 we have assumed that 50% of the customer numbers relate to AA4.

Prudent service provider test and reasonableness of forecasts

425. In keeping with the assessment framework set out in section 3.2.1, we have only examined whether the expenditure that can be justified under rule 79(2) satisfies the prudent service provider test. We have therefore only focused on ATCO's proposed expenditure on:

- the Elizabeth Quay & Perth CBD risk reduction programme ($9.3m for Growth);
- the brownfield customer initiated projects ($51.4m); and
- that portion of the proposed reinforcement projects that satisfies rule 79(2) ($4.7m).

426. While ATCO has not yet developed detailed business cases for these projects, for the reasons set out below, we are satisfied that ATCO's proposed expenditure on these projects is likely to comply with this test:

- The project governance framework employed by ATCO and its policy that all major projects are subject to a competitive tender and that services provided in-house are market tested, is generally sound and in keeping with what we would expect a prudent service provider acting efficiently, in accordance with good industry practice, to achieve the lowest sustainable cost, to employ (see section 4.3); and
- ATCO's past performance in delivering projects within the allowance provided by the ERA and within 2.4% of its own budget estimates (noting that there is a reasonable amount of reprioritisation and scope adjustment within the portfolio of project) is indicative of its ability to behave in a prudent and efficient manner and in accordance with good industry practice (see section 4.4.2).

The ability of the ERA to conduct an *ex post* review of this capex during the AA5 revisions process should also impose some additional discipline on ATCO to behave in a prudent and efficient manner when undertaking these projects.

427. Based on our review of the forecasts ATCO has provided for these projects, we are also satisfied that they have a reasonable basis and comply with the principles in rule 74(2) of the NGR.

Compliance with conforming capex criteria

428. For the reasons set out above, we are of the view that:

- the Elizabeth Quay & Perth CBD project, $4.7 m of the proposed reinforcement projects and the brownfield customer initiated projects comply with rule 79 and so can be considered conforming capex; and
- ATCO has not provided compelling information to form a concluded view on whether the following projects ($143.4m) are justified under rule 79(2) and they cannot therefore at this point in time be considered conforming capex:
  - the greenfield subdivision customer initiated capex;
  - the Two Rocks, Peel and Baldivis spur lines;
  - the Capel to Busselton reinforcement;
  - $11.6m of the assumed cost of other reinforcement projects; and
  - the volume related demand capex and regulating facilities.

6.6 Structures and equipment capex AA4

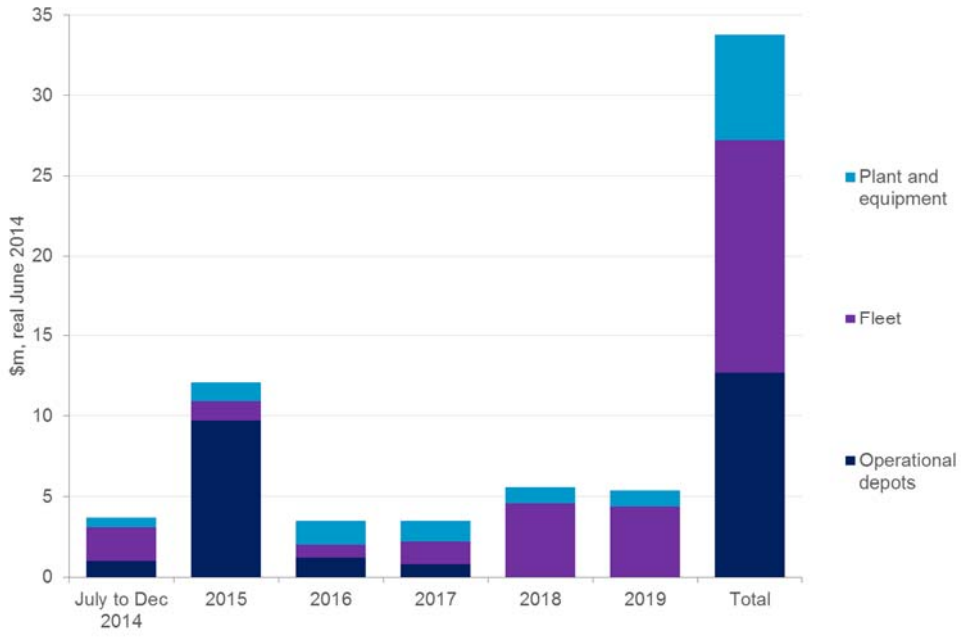
6.6.1 ATCO's proposal

429. ATCO proposes to spend $38.4m on Structures & equipment during AA4 to '*cover the costs associated with owning & operating depots, fleet, plant and equipment.*'[180] Of the $38.4m, ATCO is proposing to spend:

- $17.3m on operational depots and a training centre – ATCO will own and operate six depots (plus the Jandakot operational centre) in Bunbury, Busselton, Joondalup, Geraldton, Osborne Park and Mandurah. The depots are required to ensure ATCO complies with the Safety Case by meeting emergency response time service levels. ATCO currently leases four premises and advises that the move to the own-and-operate model will support provision of services at the lowest sustainable cost.[181]
- The training centre expenditure of $4.6m (included above) is required to expand its existing facility to accommodate increased volume and complexity of training activities.
- $14.5m on its fleet of vehicles, having implemented an own-not-lease strategy in 2013.[182]
- $6.6m to purchase a variety of equipment 'critical to safely undertake planned and reactive operational activities.'[183]

430. Figure 44 shows the actual and proposed expenditure profile over AA3 and AA4 for Structures, fleet, plant & equipment.

Figure 44: Actual and forecast Structures & equipment expenditure



Source: ATCO, AAI, March 2014, table 67.

[180] ATCO AAI, Section 8.6 and Table 67

[181] *Ibid, Section 8.6.1*

[182] *Ibid*

[183] *Ibid, Section 6.7.3*

Basis on which ATCO has sought to justify Structures and equipment capex

431. ATCO has sought to justify its proposed expenditure on Structure & equipment on the following grounds:

- rule 79(2)(a) for the proposed expenditure on fleet; and
- rule 79(2)(c)(i) for the proposed expenditure on depots and training centre because according to ATCO this expenditure is necessary to meet Safety Case obligations.

6.6.2 EMCa assessment

432. Based on our review of ATCO's proposal, it would appear that there are two key drivers of ATCO's proposed expenditure on Structures and equipment in AA4:

- A change from lease to own-and-operate strategy for depots and fleet;[184] and
- Network growth and Safety case requirements (depots and training centre).

433. We have therefore undertaken a closer review of these two aspects when assessing whether ATCO's Structures and equipment capex proposal complies with rule 79. The results of our review are set out below.

Operational depots purchase

434. **Error! Reference source not found.** sets out ATCO's proposed expenditure on the six depots over AA4. As this table shows, the bulk of the expenditure is expected to occur in 2015.

Table 22: Proposed expenditure on operational depot

$ million real 30 June 2014	Jul-Dec 2014	2015	2016	2017	2018	2019	Total
Operational depots	1	9.7	1.2	0.8			12.7

435. ATCO's strategy is to locate people plant & equipment close to major load centres to serve customers more efficiently and effectively. This is common industry practice and should help to achieve the various service level obligations enshrined in the Safety Case. Emergency response to broken mains/services within 1 hour is a key performance target. As to the specific locations of the depots, we agree with ATCO's rationale for trying to locate the depots in forecast demand growth areas and close to arterial roads.

436. ATCO has claimed that establishing purpose-designed depots will provide a more cost-effective long term solution for providing services to customers when owned and operated rather than leased. ATCO has not provided a business case or any form of options and cost-benefit analysis to demonstrate this. However, ATCO does not have a perverse incentive to swap opex for capex without it being a superior solution and its governance process requires a business case and approved Capital Expenditure Approval Request (CEAR) before any such purchase decisions are made.

437. With the exception of the Bunbury and Busselton depots, the primary driver for the relocation or establishment of the depots is not load growth. ATCO advise that the existing Bunbury facility is adequate for current operations, but new premises are required in 2015 at a cost of $1.1m due to projected customer growth. Similarly, the

[184] A strategy that was implemented for fleet in AA3

proposed Busselton depot is required by ATCO in 2016 (at a cost of $1.2m) 'due to forecast growth in the region and emerging limitations such as higher traffic density that limit the ability to service the region'.[185] Elsewhere in this report we have recommended reduced expenditure associated with demand as our view is that ATCO's growth projections are overstated and because compelling evidence of the economic viability of supplying greenfields developments has not been provided. Consistent with this finding we believe that the Bunbury depot will continue to be operationally adequate for several more years (but will still need to be upgraded in the AA4 period) and that the establishment of the Busselton depot can be prudently deferred to the AA5 period.

438. Finally, we note that ATCO has based its AA4 depot establishment costs on the basis of a 50:50 split between buildings and land costs in each case. This indicates that the estimates are very preliminary and we would expect the final costs to be significantly different from the final estimates and actual expenditure.

Training centre expansion

439. ATCO owns and operates a training facility with in-house staff to instruct, train, and assess employees and contractors according to the requirements of the Gas Standards Regulations.

440. ATCO has provided the following information in support of the need to expand the facilities at a cost of $4.6m in 2015:[186]

- Forecast classroom contact hours will exceed current capacity by approximately 60% in 2014, increasing by a further 20% through to 2019;[187] and
- The approach will achieve the lowest sustainable cost by avoiding the expense of third party resources and facilities.

441. It is common practice for utilities, particularly in WA (given the isolation from other states and travel costs), to manage their own field staff training and assessment. What is not clear from the information provided by ATCO though is if the training centre is required to implement the Safety Case, why the step increase in training requirements is expected to occur in 2014 (or why the training centre expansion is being left until 2015), given that the Safety Case was accepted by EnergySafety in July 2011 and 'fully implemented in January 2013.'[188] ATCO has not provided a business case or any other form of cost-benefit analysis to demonstrate that the expansion is more cost effective than alternatives.

442. Nonetheless, despite the recommended reduction in demand growth and associated asset investment we accept the proposed expenditure satisfies rule 79 because:

- ATCO's policy requires that it prepares a detailed business case, and that it will not be approved unless it provides a compelling cost-benefit analysis (among other things), and

[185] ATCO AAI, *Section 8.6.1*

[186] [Table 68 AAI page 316

[187] Due to a step change in requirements from the introduction of the Safety Case.

[188] ATCO AAI, March 2014, Section 1.2.1.

- the project will be subject to an ex-post review within 5 years.

Fleet purchases

443. ATCO's fleet ownership strategy was implemented in 2013 and the majority of the fleet was replaced over the year. As discussed in section 5.6.2, this strategy appears to provide a marginal benefit. As we have assessed that ATCO's demand forecasts are over stated and much of its growth-related expenditure is not required, we believe there will be less demand on ATCO's fleet. We estimate that this will offer $0.75m reduction in projected expenditure. We therefore find that $13.75m is justified under rules 79(2) and satisfies the prudent service provider test in rule 79(1)(a). We accept therefore that the continuation of this strategy in AA4 will also comply with rule 79, noting that the appropriate reduction has been made to ATCO's AA4 opex forecasts to remove the costs of discontinued leases. [189]

Plant & equipment

444. The driver for ATCO's proposed increase in plant and equipment capex in AA4 has not been explained in either the AAI or AMP[190]. However, in response to Information Request EMCa083, ATCO advised that '*[f]orecasts for operational equipment are developed by cost centre managers and reflect the requirement to provide equipment that can service the increase in network growth and sustaining capital works as well as operating activities*' and that 'any purchases for 'operational plant and equipment' are procured in accordance with the Procurement Policy…'. Adjusting for the different time periods, ATCO propose spending $1.0m more over AA4 than in AA3. As we recommend a significant net increase in AA4 network capex compared to AA3, some increase in Plant & Equipment is reasonable. Adjusting for the reduced growth expenditure that we recommend results in all but $0.2m of the $6.6m proposed by ATCO being justified under one or more of the grounds in rule 79(2)(c) with the resultant $6.4m expenditure on Plant & equipment satisfying the prudent service provider test.

Prudent service provider test and reasonableness of forecasts

445. While ATCO has not yet developed detailed business cases for these projects, for the reasons set out below, we are satisfied that ATCO's expenditure is likely to comply with this test:

- The project governance framework employed by ATCO and its policy is that all significant purchase decisions are subject to a rigorous cost-benefit and options analysis and that the corresponding business case and CEAR are approved at the senior management level before funds are released. This approach is generally sound and in keeping with what we would expect a prudent service provider acting efficiently, in accordance with good industry practice, to achieve the lowest sustainable cost, to employ (see section 4.3); and

[189] Response to EMCa075 and EMCa073. While ATCO's response indicates that ongoing lease costs reduce to a minimal level, it also shows a pre-ownership lease cost that is considerably less than ATCO stated in the Business Case used to justify this decision. This is currently being followed up through a further information request.

[190] However, in Table 49 reference is made to the AA3 requirement for additional plant & equipment to 'ensure activities were carried-out in accordance with the Safety Case'. What this means is unclear, as discussed in the relevant section of this report dealing with AA3 capex.

- The ability of the ERA to conduct an *ex post* review of this capex during the AA5 revisions process should also impose some additional discipline on ATCO to behave in a prudent and efficient manner when undertaking these projects.

446. Based on our review of the forecasts ATCO has provided for these projects, we are also satisfied that they have a reasonable basis and comply with the principles in rule 74(2) of the NGR.

Compliance with conforming capex criteria

447. For the reasons set out above, we are of the view that the full $36.3m proposed expenditure on Structures and equipment complies with rule 79 and can therefore be considered conforming capex.

6.7 IT capex AA4

6.7.1 ATCO's proposal

448. In AA4 ATCO is proposing to spend $27.4m on IT capex (see Figure 45)[191] across the following areas:[192]

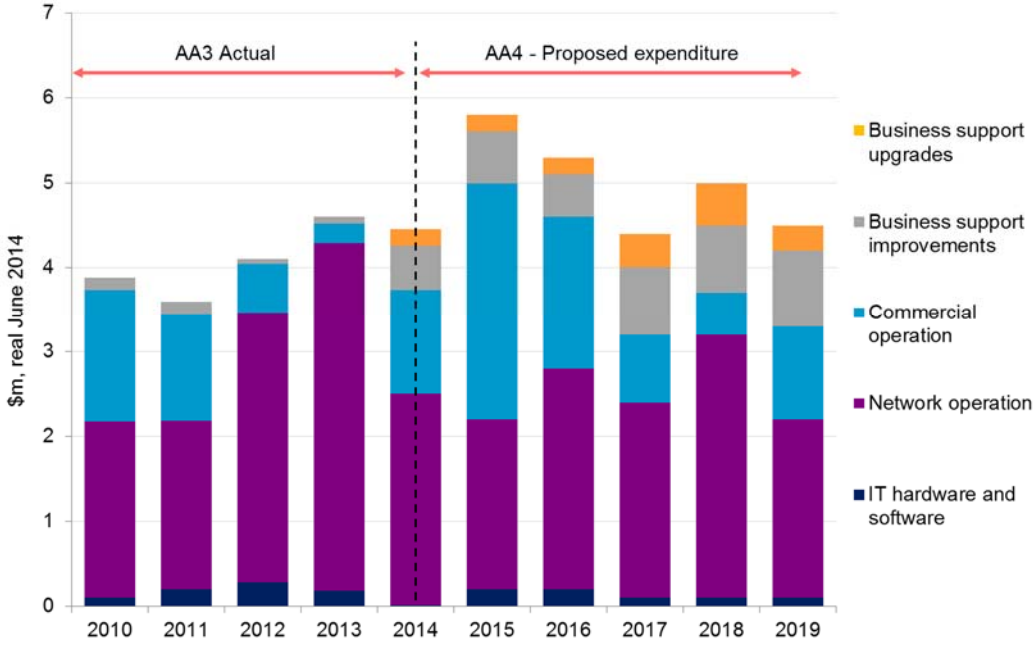
- **Network operations** – the largest expenditure category at $12.6m is for IT business systems dedicated to operations that '[ensure] delivery of gas to consumers is reliable, safe and efficient and in accordance with relevant standards and regulatory requirement [sic]';
- **Commercial operations** – the second largest expenditure category at $8.1m to support 'the delivery of accurate and timely metering data and billing data to Retailer and Market [sic] in-line with commercial and regulatory obligations';
- **Business support improvements** - $4.1m required to 'assure consistent analysis and reporting on company data, compliance to regulatory obligations and standards and ensure data management best practices'; and
- **Business support upgrade and IT Hardware and Software** - $2.6m on hardware and software driven either by end-of-life replacement or growth or to support operational improvements.

449. In aggregate, ATCO is proposing to spend $5m p.a. on an annualised basis across these areas in AA4, which is 16% higher than the $4.3m p.a. spent in AA3.

[191] ATCO, AAI, March 2014, table 72. Note: this amount does not include expenditure on telemetry (per table 55)

[192] ATCO, AAI, March 2014, section 8.7.

Figure 45: Historical and forecast expenditure on IT capex projects



Source: EMCa analysis from data in ATCO AAI, Table 72 AAI and response to EMCa070 (historical).

450. As noted in section 5.7.1, ATCO receives IT services from a related entity, I-Tek, under the ITSA, which was originally entered into by I-Tek and WAGN. This contract expires on 31 January 2015, but we understand that ATCO has assumed the contract with I-Tek will be renewed.[193]

451. According to information provided by ATCO, its Technology Strategy and the projected IT capex is linked to the business objectives and challenges of the ATCO Group of companies. ATCO's IT Asset Management Plan 2014-2019 is consistent with this strategy document and identifies projects for each business driver to be undertaken in the AA4 period. Among other things, it '*identifies additional business processes that can be provided more efficiently through the use of new IT systems*'[194]

Basis on which ATCO has sought to justify IT capex in AA4

452. ATCO has sought to justify its proposed expenditure on IT capex under one or more of the grounds in rule 79(2)(c) (i.e. safety, integrity, compliance with a regulatory obligation or maintaining service capacity).[195]

6.7.2 EMCa assessment

453. ATCO is proposing a 16% increase in IT capex in AA4. We have therefore carefully reviewed this aspect of its capex proposal. Because no business cases have been provided for the AA4 projects, we have carried out our assessment of the compliance of this proposed expenditure with the conforming capex criteria having regard to:

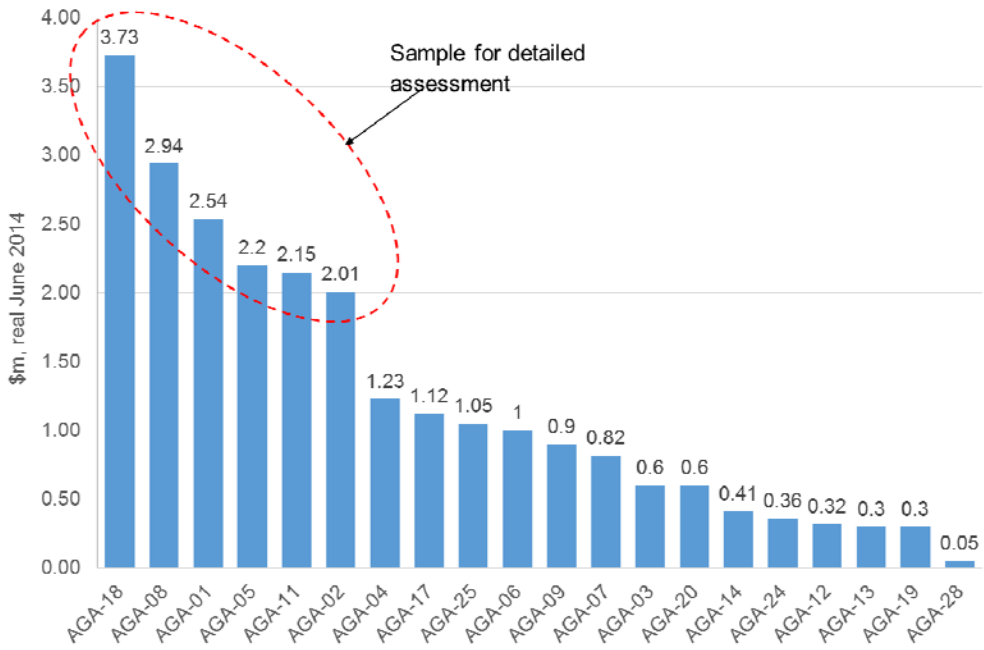
[193] Ibid, section 8.7.1.

[194] ibid.

[195] ATCO, IT Asset Management Plan, 2014, p65.

- the overall expenditure trend and a sample of projects, for which ATCO provided feasibility study documents (see Figure 46). The project sample consists of projects with forecast expenditure in excess of $2.0m (of which there are six).
- ATCO's governance process and application, the IT Strategy and the IT Asset Management Plan; and
- a portfolio-level assessment of ATCO's capability to deliver the proposed work program.

Figure 46: Proposed expenditure on AA4 IT capex projects

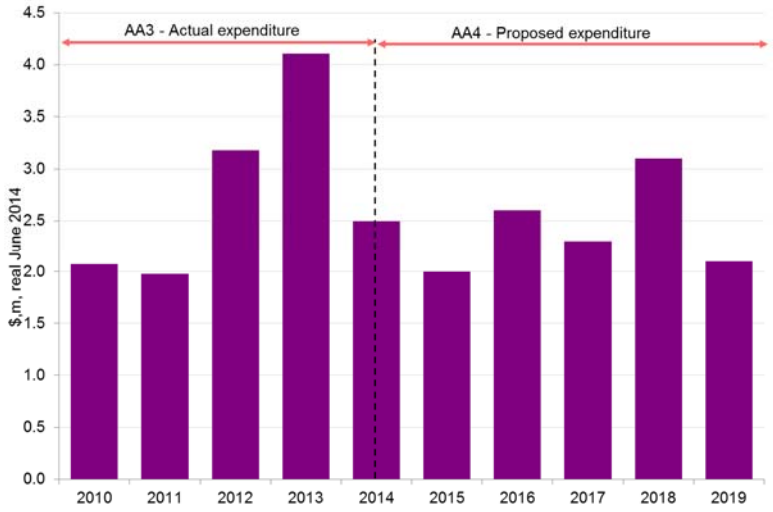


Source: EMCa analysis from data in ATCO, IT AMP, figure 10.

Network Operations

454. Figure 47 illustrates the profile of ATCO's proposed expenditure on networks operations IT. On an annualised basis, ATCO is proposing to spend $2.4m p.a. on this type of capex in AA4, which is $0.4m *lower* than what was spent in AA3. There are nine projects in this category. Table 23 provides an overview of our assessment of the three highest cost projects in this category.

Figure 47: Network operations IT capex



Source: EMCa analysis from data in ATCO, AAI, March 2014, and response to EMCa070 (historical..

Table 23: Assessment of AA4 IT capex projects (>$2.0m)

Project[196]	Assessment
AGA-18 Strategic Asset Management Feasibility **Proposed: $3.7m**	*Justified for the expenditure (r. 79(2))* This project was deferred from AA3 '*due to phasing of Safety case implementations and development of a new International Standard for asset management ISO 55000'.* According to ATCO, it engaged a consultant (TAMS) to study its SAP landscape and to recommend a SAP roadmap. The proposed functionality '*will enable a reporting structure for predictive maintenance analysis, maintenance cost budgeting and capital replacement programming within the SAP environment to provide full transparency and traceability for optimised lifecycle asset management within a single source of truth.'*[197] On this basis the proposed scope of work it would appear that this project is justified under rules 79(2)(c)(i), (ii) and/or (iii). *Prudent service provider test (r. 79(1)(a))* ATCO has provided a preliminary estimate based on a relatively detailed work breakdown across the five years, which is based on the work carried out by TAMS. The direction ATCO is taking with this project is aligned with good industry practice and should result in more effective asset management decisions and the capability for ATCO to be more transparent in meeting its technical and economic regulatory obligations with respect to asset management. The strategy of aligning its core systems with the requirements of ISO 55000 and leveraging its investment in its ERP (SAP) is also indicative of good industry practice and the use of an independent consultant provides added confidence of the rigour of the analysis. On the basis of our review of the proposed expenditure, we are satisfied that it complies with the prudent service provider test. The forecasts also appear to comply with the principle set out in rule 74(2)).
AGA-05 Field Mobility Continuous Improvement **Proposed $2.2m**	*Justified for the expenditure (r. 79(2))* The enhancements scheduled for AA4 are, according to ATCO, designed to leverage its existing Field Mobility infrastructure/systems to further streamline business processes. This requires integration with other ATCO core systems. Three forms of benefits have been identified in ATCO's project summary: – *'Further identify and eliminate manual time-consuming paperwork for work dispatch* – *Reduce risk of potential financial penalties resulting from failure to comply with audit, compliance, safety and regulatory requirements*

196 ibid, figure 10.

197 ATCO, AGA-18 Project Summary.

	– *Utilise [ATCO] systems for optional performance processing.'* On the basis of the proposed scope of work it would appear that this project is justified under rule 79(2)(c)(i) and/or (ii). *Prudent service provider test (r. 79(1)(a))* ATCO has provided a preliminary estimate of the costs of this project, which are based on a high level assessment beyond year one. However, in our experience the assumptions appear reasonable based on the information available. The strategic direction ATCO is taking with this project is, in our view, aligned with good industry practice and it leverages ATCO's existing investment. On the basis of our review of the proposed expenditure, we are satisfied that it complies with the prudent service provider test. The forecasts also appear to comply with the principle set out in rule 74(2)).
AGA-002 GIS continuous improvement **Proposed $2.01m**	*Justified for the expenditure (r. 79(2))* ATCO has proposed this project to:[198] – Remain fully vendor supported by ensuring patches and functional enhancement packages are applied. – Remain closely aligned to the GIS technology roadmap leveraging from AGA's existing investment to our GIS solutions. – Support regulatory requirements as identified in the Company's Safety Case or Asset Management Plan (e.g. Leak Survey, Bridges and Crossing Maintenance, Multi-storey project) – Assist re-engineering projects to achieve a strategic asset management system to promote improvements to the effective and efficient management of ATCO's assets by adopting ISO 55001 standards. Based on the approach outlined in the project summary, we are of the view that this project is justified under rule 79(2)(c)(i) and/or (ii). *Prudent service provider test (r. 79(1)(a))* ATCO has provided a preliminary estimate based on a relatively detailed work breakdown across the five years. With the exception of the allowance of $0.35m for unspecified future regulatory requirements, the expenditure appears reasonable and the forecasts appear to comply with the principle set out in rule 74(2)). . The strategic direction ATCO is taking with this project is also, in our view, aligned with good industry practice. The project will help ATCO provide accurate information to external parties at the lowest sustainable cost. On the basis of our review of the proposed expenditure, we are satisfied that $1.6m of the proposed expenditure complies with the prudent service provider test but $0.35m does not as it is based on a speculative future requirement and does not satisfy r. 74(2)

455. The remaining networks operations projects are projected to cost $3.7m. Based on our review, the drivers for each of these projects seem reasonable.[199] However, it is worth noting that no detail has been provided about the scope and the basis for the cost estimate. Notwithstanding this informational limitation, we understand that in accordance with the governance practice described in the IT AMP,[200] a business case must be written for each project and, together with the CEAR, will be reviewed by the COO, Financial Director and President before committing capital. When coupled with the fact that AA4 capex will be subject to an *ex post* review as part of the AA5 revisions process, we are of the view that the proposed expenditure is likely to comply with rule 79.

198 ATCO, AGA-02 Project Summary provided in response to EMCa072.

199 ATCO, IT AMP, figure 13 per AGA-03, 04, 06, 07, 28.

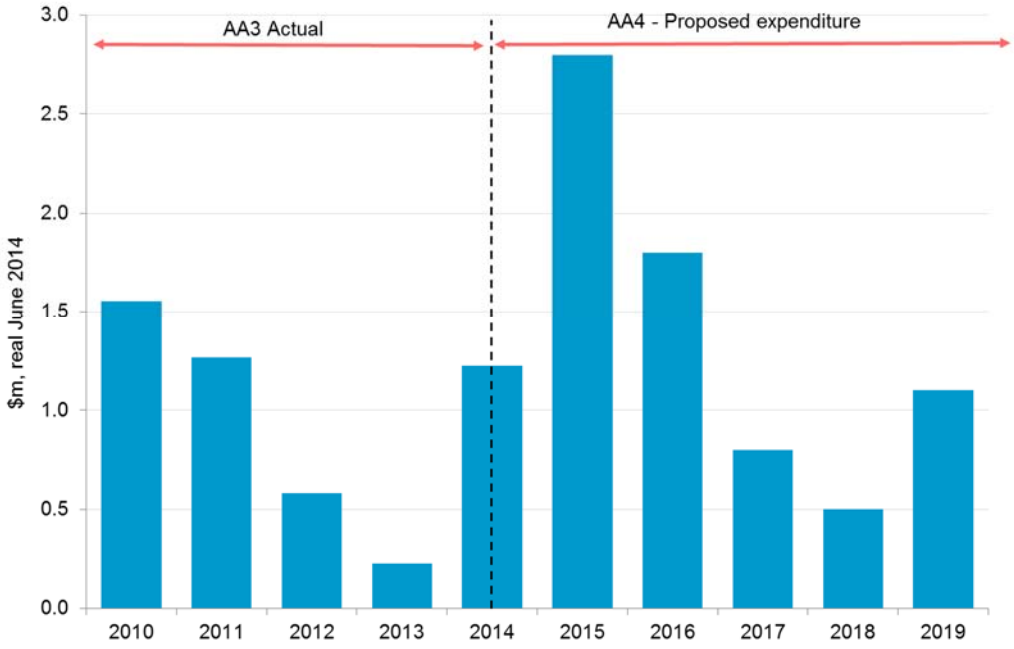
200 ibid, section 8.1

Commercial operations

456. Figure 48 shows the profile of ATCO's proposed expenditure on commercial operations IT. On an annualised basis, ATCO is proposing to spend $1.4m p.a. on this category, which is $0.4m p.a. higher than the amount spent in AA3. Some care should be taken with this comparison though, as this type of expenditure tends to be 'lumpy', because it is dependent on project timing and size.

457. There are five projects in this category, with two exceeding $2m. Table 24 provides an overview of our assessment of these projects.

Figure 48: Commercial operations IT capex



Source: EMCa analysis from data in ATCO, AAI, March 2014, table 72 and response to EMCa070 (historical).

Table 24: Assessment of commercial operations IT capex projects (>$2.0m)

Project[201]	Assessment
AGA-08 NMIS Application upgrade **Proposed $2.94m**	*Justified for the expenditure (r. 79(2))* We understand from the information provided by ATCO that the NMIS platform was commissioned in 2004 and an upgrade was completed in 2009 to bring the systems/databases in-line with operating vendor supported systems and applications. In WAGN's AA3 submission a replacement of hardware and upgrade of software for the NMIS platform to align with the hardware lifecycle of 4 years was proposed and approved. However, the project was deferred to AA4.[202] Based on our understanding this project is required to minimise operational and market compliance risk and appears to be justified under rule 79(2)(c)(ii) and/or (iii). *Prudent service provider test (r. 79(1)(a))* ATCO has claimed that '*upgrading the NMIS application will minimise the costs involved in the support and maintenance of an out-dated software and hardware installation and that the current Oracle database in place is out of support…Associated issues will therefore take longer to resolve, leading to an increase of resource costs.*' Based on the information provided by ATCO, we are satisfied that the proposed expenditure complies with the prudent service provider test. We are also satisfied that the forecasts are consistent with the principles in rule 74(2).
AGA-01 Commercial services continuous improvements **Proposed $2.5m**	*Justified for the expenditure (r. 79(2))* ATCO spent considerable funds on the commercial operations-related IT projects in AA3 and it is seeking to spend more on this area in AA4[203] to *further* refine its systems and processes with the entrance of a new gas retailer in the WA market (i.e. to meet the requirements of the REMCo) by ensuring all volumes of transactions can continue to be processed in a timely and accurate manner. We understand that the new retailer is already operating in the market and the information provided does not draw a compelling link to any new requirements from REMCo. This project cannot therefore in our view be justified under rule 79(2)(c)(iii). We are also of the view that it is speculative to assume there will be sufficient new retailers in the market in the AA4 period to warrant the capex proposed. On this basis, our view is that the forecast $2.54m is speculative and is not justified under any of the grounds set out in rule 79(2) or rule 74(2).

458. The other three commercial operations-related projects are projected to cost $2.0m. Based on our high level review of these projects, the drivers appear reasonable,[204] although it is worth noting that no detail was provided by ATCO about the scope and the basis for its cost estimate. Notwithstanding this informational limitation, for the reasons set out in paragraph 455 we are of the view that the expenditure is likely to comply with rule 79.

Business support improvements

459. Figure 49 shows the profile of ATCO's proposed expenditure on business support capex. On an annualised basis, ATCO is proposing to spend $0.7m p.a. on this category, which is $0.5m p.a. more than it spent in AA3. The increase in expenditure is quite dramatic, but the proposed total expenditure in this category is 'only' $3.6m.

460. There are four projects in this category, with just one exceeding $2m. Table 25 provides an overview of our assessment of this project.

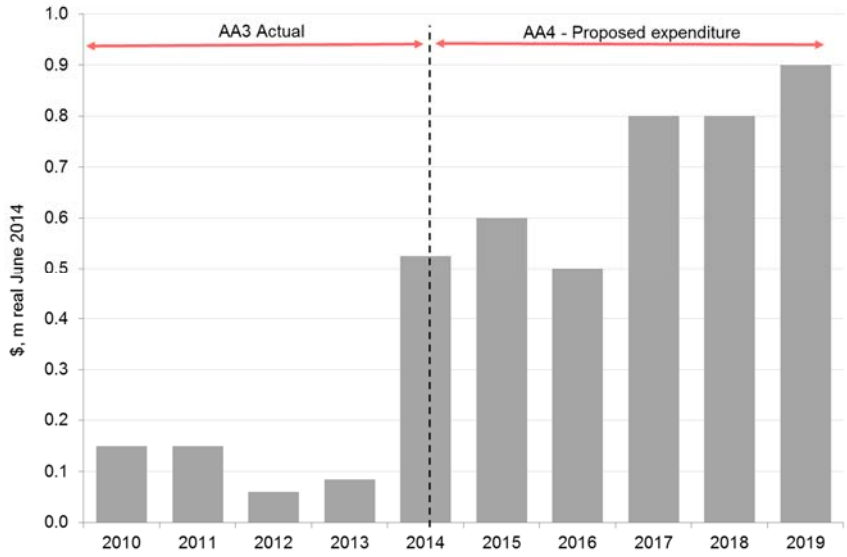
[201] ibid, figure 10.

[202] ATCO, AGA-08 Project Summary.

[203] ATCO, AGA-01 Project Summary.

[204] ibid, figure 13 per AGA-24, 25, 20

Figure 49: Business support improvements IT capex



Source: EMCa analysis from data in ATCO, AAI, March 2014, table and response to EMCa070 (historical).

Table 25: Assessment of business support IT capex projects (>$2.0m)

Project[205]	Assessment
AGA-11 Business process standardisation: **Proposed $2.15m**	<u>*Justified for the expenditure (r. 79(2))*</u> The project summary[206] that ATCO provided for this project explains that the driver of the project is compliance with ISO 5500X. The project is to '*develop a new integrated Business Management System (iBMS) [which] will integrate the core management system components, such as policy management, risk assessment, training and competence, communication, document control, audit programme and management review processes (along with several others), into the existing integrated management system…*' Based on information provided it would appear this project is justified under r. 79(2)(c)(ii). <u>*Prudent service provider test (r. 79(1)(a))*</u> The one concern we have with this project is that it is unclear that ATCO will be able to implement AGA-11 and AGA-18 in parallel and the prudency in doing so given that the specific business process improvements to be embedded in the IBMS are driven in the main by the work from IGA-18. Based on our review of AA3 IT capex performance, it would appear that ATCO has a history of deferring IT projects. We are also concerned with the potential duplication across the many 'continuous improvement' projects (AGA-01, 02, 04, 05, 09 and 11) and other potential overlapping projects (e.g. AGA-14) given the interdependencies and scant scope information provided[207]. We are therefore of the view that a prudent service provider acting in the manner prescribed in rule 79(1)(a) would not commence AGA-11 in 2015 (i.e. completely overlapping AGA-18). It would instead defer the expenditure until 2017, which would result in $0.9m being deferred to AA5. We are therefore of the view that only $1.3m would satisfy the prudent service test in AA4. The other concern we have with this proposed project is that no attempt has been made by ATCO to quantify the proposed benefits of this project.

461. Across the remaining commercial operations-related projects ($1.6m), the drivers for each project seem reasonable.[208] However, in a similar manner to other areas of ATCO's proposed IT capex, no detail has been provided about the scope and the basis for the cost estimate. Notwithstanding this informational limitation, for the reasons set

[205] ATCO, IT AMP, figure 10.

[206] ATCO, AGA-11 Project Summary.

[207] Which is due in part to the project business case not being written/approved, which in turn is understandable given the stages of project lifecycle the various projects are at

[208] ibid, figure 13 per AGA-09, 12, 14.

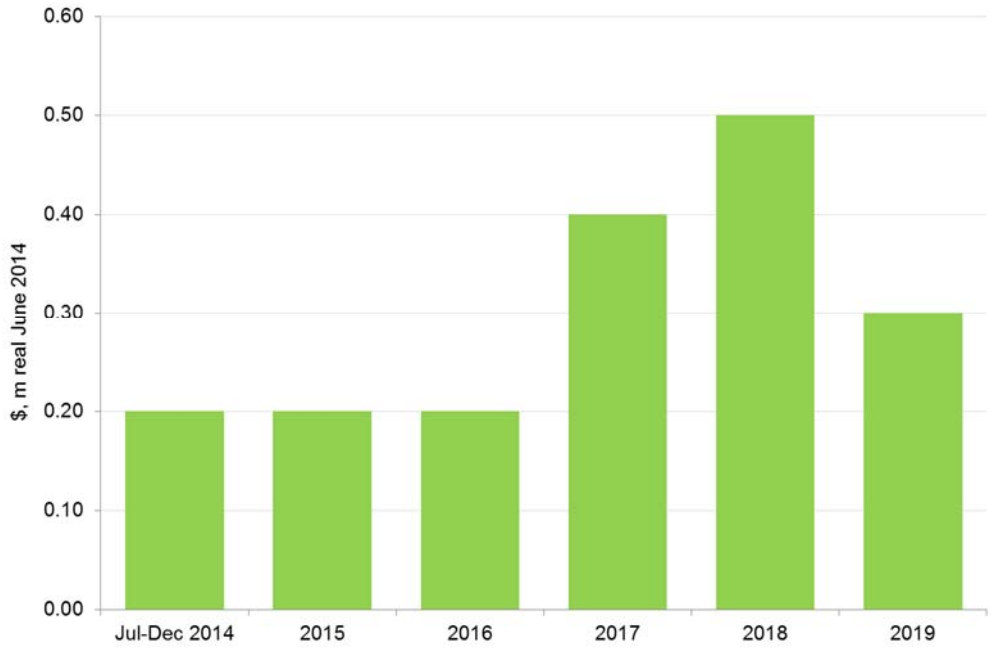
out in paragraph 455 we are of the view that the expenditure is likely to comply with rule 79.

Business support upgrades

462. Figure 50 shows the profile of ATCO's proposed expenditure on business support in AA4, which totals $1.6m over the period.

463. There are 3 projects in this category (AGA-13, 17 and 19), with the largest being AGA-17 IT equipment refresh at $1.1m. The project is predicated on replacing all IT user-based equipment (desktops, phones, etc.) at the end of the individual item's assumed four year end-of-life.

Figure 50: Business support upgrades IT capex



Source: EMCa analysis from data in ATCO, AAI, March 2014, table 72.

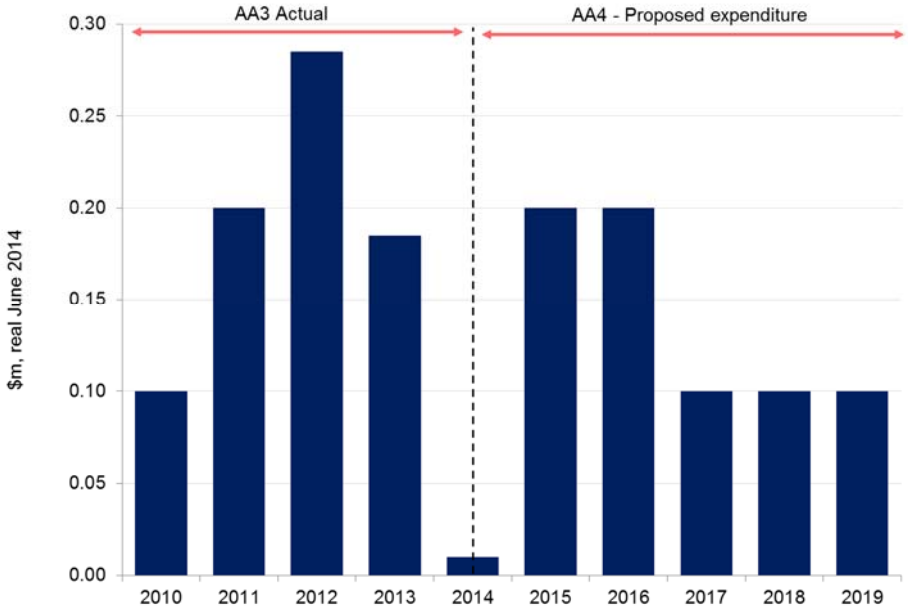
464. We consider that the drivers for projects for AGA-13 and 17 are reasonable. Like other areas of ATCO's IT capex proposal, no detail has been provided about the scope and the basis for the cost estimates for these two projects. Notwithstanding this informational limitation, for the reasons set out in paragraph 455 we are of the view that the expenditure is likely to comply with rule 79.

465. In relation to AGA-19 ($0.3m), ATCO has provided no supporting information at all for this project. We are unable therefore to conclude that it is justified under rule 79(2).

IT Hardware and software

466. Figure 51 shows the profile of ATCO's proposed expenditure on IT hardware and equipment. ATCO has provided no information to support this expenditure ($0.76m) and it is not clear to us what the drivers are for it or how it can be justified under rule 79(2). In the absence of any supporting information, we are of the view that this expenditure does not comply with rule 79(2) and, by extension, cannot be considered conforming capex.

Figure 51: IT hardware and equipment



Source: EMCa analysis from data in ATCO, AAI, March 2014, table 72 and response to EMCa070 (historical).

Capacity to deliver the proposed IT program

467. ATCO, like many other organisations with bespoke, complex and integrated IT systems, appears to have struggled to deliver the proposed 'transformational' and 'replacement' programmes of work. No evidence has been provided to show that the ATCO Board has considered the challenges with delivering the IT portfolio of work proposed by AA4 and whether or not it has moderated the programme according to its experience in AA3[209].

468. Mitigating our concerns about ATCO's capacity to deliver are:

- our recommended deferral of AGA-11 by two years; and
- the improved planning and governance that is apparent since ATCO has taken over operations.

469. The latter of these matters should, in our view, help with portfolio delivery (of the highest priority projects) if applied to early planning at the portfolio level and if the 'phased' approach to project development and delivery is followed. On this basis, our view is that ATCO is capable of delivering the revised programme outlined in the following section.

470. However, as discussed in Section 7.7 when the substantive $20.1m proposed program of Shared IT capital projects is taken into account, we do have concerns about the capacity of ATCO's internal capability to support the development and implementation of the combined program of work

Compliance with conforming capex criteria

471. We have considered the link between the proposed IT capex and our recommended reductions in growth-related asset expenditure. We find that there is only a weak

[209] Where there was enormous churn in delivering diverse projects at a cost of $19.3m with $7.9m worth of (prudent) deferrals compared to the proposed AA3 programme comprising multiple projects with a total expenditure of $27m.

correlation between the AA4 IT capex program as proposed by ATCO and therefore do not recommend any IT capex reduction on these grounds.

472. For the reasons set out above, we are satisfied that ATCO's $22.6m of the proposed IT capex of $27.4m is justified under one or more of the grounds in rule 79(2)(c) and also satisfies the prudent service provider test and can therefore be considered conforming capex. The projects (or portions of expenditure) that in our view cannot be considered conforming capex ($4.8m) are:

- AGA-02: $0.35m;
- AGA-01: $2.54m;
- AGA-11: $0.86m;
- AGA-19: $0.3m; and
- IT hardware & equipment: $0.76m.

473. Finally, it is worth noting that as with AA3 IT capex, we would expect the efficiencies associated with the IT projects outlined above to be factored into ATCO's opex forecasts for AA5 and for ATCO to start explicitly thinking about this when developing business cases for these projects.

6.8 Depreciation – asset lives

6.8.1 ATCO's proposal

474. Table 26 sets out the asset lives that ATCO has used when calculating depreciation in AA4. Apart from high pressure mains, ATCO has adopted the same asset lives that were approved by the ERA in AA3. In the case of high pressure mains, ATCO has proposed revising the life of high pressure steel and plastic mains down from 120 years to 80 years and 60 years, respectively to bring the life of these assets into line with those assumed by other distribution networks.[210]

Table 26: Asset lives proposed by ATCO

Asset class	Life used to calculate depreciation AA3	Proposed life used to calculate depreciation AA4
High Pressure mains - steel	120	80
High Pressure mains - plastic	120	60
Medium pressure mains	60	60
Medium/low pressure mains	60	60
Low pressure mains	60	60
Regulators	40	40
Secondary gate stations	40	40
Buildings	40	40
Meters and service pipes	25	25
Equipment and vehicles	10	10
Vehicles	5	5
Information technology	5	5
Full retail contestability	5	5

Source: ATCO, AAI, March 2014, Table 78.

[210] ATCO, AAI, March 2014, p221.

6.8.2 EMCa assessment

475. Based on our review of the asset lives used by other regulated distribution pipelines (see Table 27), it would appear that with the exception of the high pressure mains, the asset lives that were adopted in AA3 are in keeping with those adopted by other pipelines.[211]

476. In relation to high pressure mains, our review of the lives adopted by other distribution businesses revealed that a 120 year life is far higher than the lives assumed by any distribution pipeline owner for both steel (50-80 years) and plastic (50-80 years) high pressure mains (see Table 27). ATCO's proposal to revise the life of these assets down to 80 years and 60 years, respectively, appears to be in line with industry practice and is, in our view, reasonable.

Table 27: Asset lives used by regulated distribution pipelines in other jurisdictions

	ACT	NSW	SA	Qld	Victoria
Plastic (Polyethylene) High Pressure Mains	50	50	60	75-80	60
Steel High Pressure Mains	80	80	60	50-75	50-80

Sources: QCA, Proposed AA for Gas Distribution Networks: Allgas and Envestra, October 2001, p138, ActewAGL, AAI, June 2009, p141, JGN, AAI, August 2009, p156, Envestra, SA AAI, 1 October 2010, p124, Envestra, Queensland AAI, 1 October 2010, p113, Allgas, AAI, September 2010, p19, MultiNet AAI, March 2012, p140, SP AusNet, AAI, 30 March 2012, p168, Envestra, Victoria AAI, March 2012, p143,

6.9 Implications

6.9.1 Cost Implications

477. Table 28 sets out the effect that the revisions outlined in sections 6.4.2, 6.5.2, 6.6.2, and 6.7.2 would have on ATCO's AA4 capex proposal.

478. As the final row of this table indicates, the downward revisions to Sustaining capex, Growth capex and IT capex that we have identified would result in a regulatory capex allowance that is $247.8m (41%) less than ATCO has proposed.

479. If these exclusions are made, then over a 5.5 year period the average capex allowance would be $69.1m p.a., rather than the $110.1m p.a. proposed by ATCO. This is 12% higher (in real terms) than the allowance approved by the ERA in AA3 ($58.1m p.a.) and 8% higher than the amount that ATCO spent in AA3 ($60.1m p.a.). As this comparison highlights, we consider that an increase in capex from the levels observed in AA3 is appropriate given the continuing implementation of the Safety Case. However we are *not* satisfied that all of ATCO's proposed increase is required and, more importantly, we are not satisfied that all of the proposed expenditure complies with the conforming capex criteria in rule 79 and the principles in rule 74(2).

[211] See for example, JGN, AAI, August 2009, p156, Envestra, SA AAI, 1 October 2010, p124, Envestra, Queensland AAI, 1 October 2010, p113, Allgas, AAI, September 2010, p19, MultiNet AAI, March 2012, p140, SP AusNet, AAI, 30 March 2012, p168, Envestra, Victoria AAI, March 2012, p143,

Table 28: Proposed revisions to ATCO's AA4 conforming capex forecast

$m, real June 2014

Description	ATCO Expenditure AA4	EMCa Proposed Revisions	Net Adjusted amount
Sustaining capex			
Asset replacement			
Unprotected metallic mains	50.6	-11.0	
Others	127.1	0.0	
Total asset replacement	**177.7**	-11.0	
Performance and safety			
Two Rocks	18.1	-18.1	
Peel	20.9	-20.9	
Interdependency	47.3	-47.3	
Others	47.3	0.0	
Total performance and safety	**133.6**	-86.3	
Total Sustaining capex	**311.3**	**-97.4**	**213.9**
Growth capex			
Demand			
Two Rocks spur line	27.2	-27.2	
Peel spur line	6.0	-6.0	
Elizabeth Quay	9.3	0.0	
Baldivis spur line	5.4	-5.4	
Capel to Busselton reinforcement	5.2	-5.2	
Other reinforcements	16.2	-11.5	
Other	2.9	-2.9	
Total Demand capex	**72.2**	-58.3	
Customer initiated			
Greenfield subdivision developments	104.9	-85.1	
Brownfield developments	51.4	0.0	
Total Customer initiated capex	156.3	-85.1	
Total Growth capex	**228.5**	**-143.4**	**85.1**
Structures and equipment			
Operational depots and training centre	17.3	-1.2	
Fleet	14.5	-0.8	
Plant and equipment	6.6	-0.2	
Total Structures and equipment	**38.4**	**-2.2**	**36.3**
IT			
IT	27.4	-4.8	
Total IT	**27.4**	**-4.8**	**22.6**
Total	**605.7**	**-247.8**	**357.9**

Source: EMCa analysis of Tables 24, 32, 39 and 49 of ATCO's AAI.

6.9.2 Performance implications

481. Over AA3, ATCO's performance data does not show a material deterioration in performance outcomes. For example as shown in section 4.5, all of ATCO's proposed asset performance KPIs were well above ATCO's proposed targets and either improved or sustained high levels of performance. ATCO has not provided evidence to support any assertion that its performance level during AA3 has been unsatisfactory. Further, ATCO has not forecast any material improvement in performance outcomes that would result from the increase in expenditure that it has proposed as being required.

482. Since the adjusted AA4 capex exceeds ATCO's actual AA3 capex on an annualised basis, the evidence above can be taken to imply that ATCO's performance outcomes will not be impaired if ATCO incurs the adjusted level of capex in AA4, and provided ATCO continues to prioritise and undertake its work in a prudent manner in accordance with its Safety Case processes.

7 Review of proposed AA4 opex

7.1 Introduction

483. This section contains the results of our review of ATCO's proposed opex for AA4, which has been carried out using the assessment framework set out in section 3.2.2 and having regard to the findings in section 4. In a similar manner to our capex review, we have conducted a more detailed review of those aspects of ATCO's proposal that involve a material increase in expenditure and a higher level review of the other aspects of its proposal.

484. The results of our review and our overall assessment of whether ATCO's proposed opex complies with rule 91(1) of the NGR are set out below.

7.2 Overview of findings

485. ATCO is proposing to spend $453.8m on opex in AA4.[212] Over a 5.5 year period this equates to an average opex allowance of $82.5m p.a., which is 17% *higher* than allowance approved by the ERA for AA3 and 30.5% *higher* than the amount actually spent by ATCO in AA3, on an annualised basis. Most of the proposed increase can be attributed to a proposed increase in corporate support costs, business development (BD) and marketing, and IT opex.

486. Based on our review of ATCO's proposal, we are of the opinion that:

- $383.2m[213] (84% of ATCO's proposal) complies with the prudent service provider test in rule 91(1) of the NGR. Note that this amount includes the $1.93m p.a. ($10.6m over AA4) of IT related efficiency gains outlined in section 5.7.2; and

[212] ATCO, AAI, March 2014, p59, including the proposed Ancillary service related opex ($3.8m)

[213] Including the proposed Ancillary service related opex

- $60.1m (13% of ATCO's proposal) does *not* comply with the prudent service provider test and should be excluded from AA4 reference tariffs (see Table 29).

*Table 29: Proposed opex that does **not** satisfy rule 91(1)*

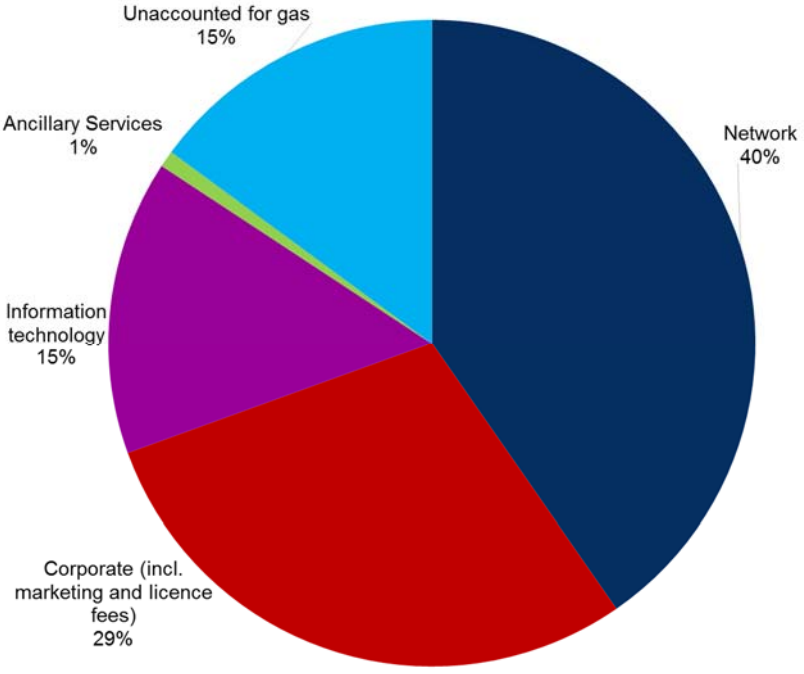
Category	Amount	Why opex does not satisfy rule 91(1)
Network opex	$12.7 m	The proposed allowance for baseline and incremental recurring costs does not satisfy rule 91(1) or the principles in rule 74(2) because: • the proposal is based on a bottom up activity based cost build in which ATCO has provided insufficient evidence of: – the cost efficiencies that may be associated with carrying out new and existing activities in an optimised and integrated manner (e.g. economies of scale and other efficiencies derived from carrying out works in an integrated manner); nor – whether all of the proposed activities will actually be required in AA4 given the extensive Sustaining capex programme ATCO has been undertaking. • the risk thresholds ATCO has applied when identifying ALARP related recurring opex are low by industry standards and contrary to AS/NZS4645 or AS2885 no cost benefit assessment of this work has been undertaken. We consider that ATCO's allowance for recurring network opex should be based on ATCO's proposed level in 2014 and 2015, and which allows for some increase based on an enhanced maintenance program that in turn derives from the Safety Case, but is capped at the 2015 level of $30.70m thereafter.
Corporate support costs	$21.2m	With the exception of regulatory costs for AA5, ATCO has not demonstrated that a prudent service provider acting in the manner prescribed in rule 91(1) would incur the substantial increase in internal support costs and intercompany charges that is projected to occur in AA4 from the 2013 levels. Moreover for inter-company charges no evidence has been presented of services provided that would justify the significant level of charges being imposed. We consider that the allowance for corporate costs should be based on the costs actually incurred by ATCO in 2013 ($12.3m p.a.), because by this time ATCO had two years to 'right size' the business. An additional allowance of $2.1m for the costs of preparing for AA5 (split over 2018-2019) is also appropriate and consistent with rule 91(1).
BD and marketing	$15.7m	ATCO has not demonstrated to a sufficient level of confidence that the proposed increased expenditure on BD and marketing from the level observed in 2013 will lead to lower sustainable costs. Nor has it demonstrated that the proposed increase is consistent with the costs that a prudent service provider, acting efficiently and in accordance with good industry practice would incur. We consider that the proposed increase in BD and marketing from 2013 levels ($1.6m p.a.) should be excluded from ATCO's proposed allowance.
IT opex	$7.3 m	The proposed allowance for the IT Usage and Services fees do not satisfy rule 91(1) for the following reasons: • Usage Fee - ATCO has not demonstrated that the projected costs of the projects involving I-Tek are consistent with the costs that would be incurred by a prudent service acting efficiently. Nor has it demonstrated that I-Tek has the capacity to deliver all of the proposed Shared and Direct IT projects in AA4. We consider that this fee should be capped at $3 m p.a. • Services Fee – The proposed increase in the IT Service Fee from the 2013 level is not consistent with the requirements of rule 91(1) because the link between the new systems and the requirement for continually rising IT service fees is not compelling. We consider that the fee should capped at the costs incurred by ATCO in 2013 ($5.4m p.a.)
Unaccounted for gas (UAFG)	$3.2 m	ATCO has not demonstrated why the UAFG rate will rise in 2014 from its 2013 level, before falling again. Further, ATCO has proposed (and we have accepted) a number of capex projects that will reduce UAFG. We have undertaken a modified assessment of the UAFG rate trend which leads to a $3.2m adjustment.
Total	**$60.1m**	

7.3 Overview of AA4 proposed opex

487. Over the next 5.5 years, ATCO proposes to spend $453.8m (average $82.5m p.a.) on opex. The breakdown of this expenditure is set out in Figure 52. As this figure indicates:

- Network operating costs account for 40% of the proposed allowance ($183.1m);
- Corporate costs, which includes corporate support costs, licence fees and business development (BD) and marketing costs account for 29% of the proposed allowance ($132.2m in total of which $21.6m is allocated to BD and marketing);
- IT opex accounts for 15% of the proposed allowance ($67.1m);
- Unaccounted for gas (UAFG) accounts for 15% of the proposed allowance ($67.7m); and
- Ancillary service related costs account for 1% of the proposed allowance ($3.8m).

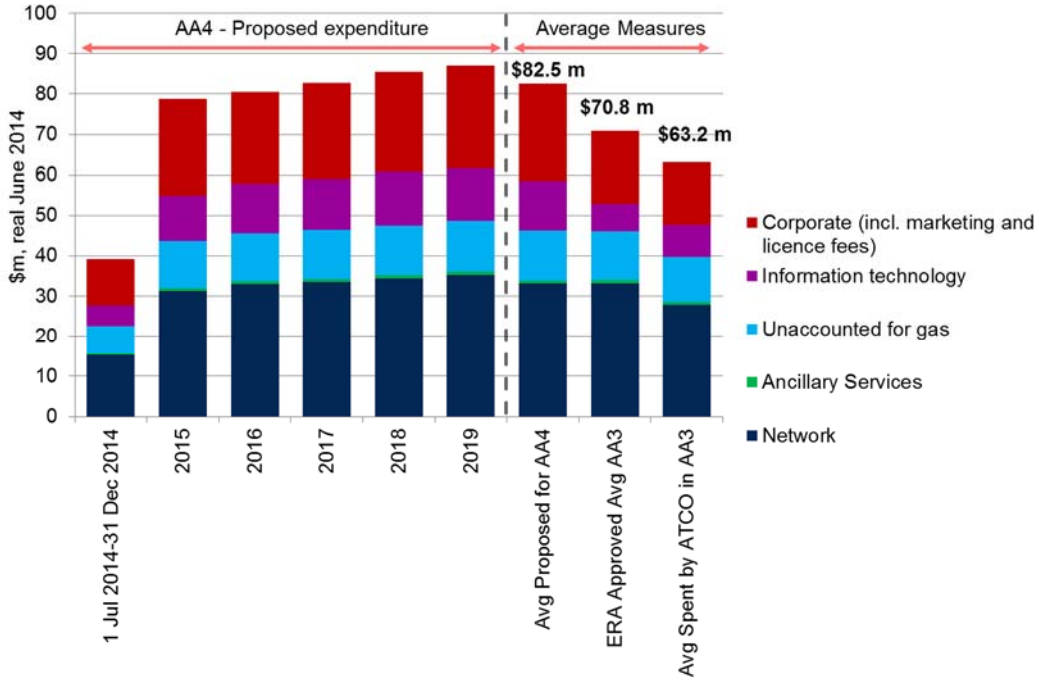
Figure 52: Breakdown of ATCO's proposed AA4 opex



Source: EMCa analysis from data in ATCO, AAI, Table 10 and footnote 44.

488. The profile of ATCO's proposed opex in AA4 is illustrated on the left hand side of Figure 53, while the right hand side of the figure compares the annual average allowance proposed by ATCO for AA4, with the average allowance approved by the ERA for AA3 and the average amount spent by ATCO in AA3.

Figure 53: Profile of ATCO's proposed AA4 opex



Source: EMCa analysis from data in ATCO, Confidential tariff model, 17 March 2014.

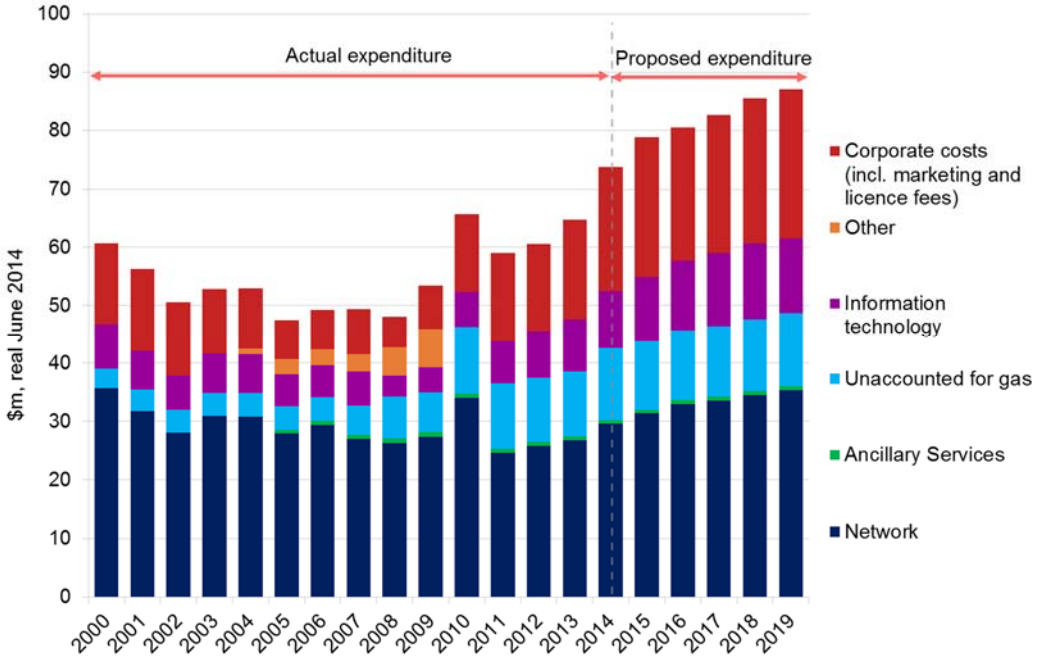
489. As the right hand side of this figure reveals, ATCO's AA4 opex proposal involves a significant step increase from the allowance approved by the ERA for AA3 and the amount actually spent by ATCO in AA3, with the average annual allowance proposed by ATCO ($82.5m p.a.) being:

- 17% *higher* than the average annual allowance approved by the ERA for AA3 ($70.8m p.a.); and
- 30% *higher* than the average amount spent by ATCO in AA3 ($63.2m p.a.).[214]

490. The magnitude of the proposed step increase in opex is even more obvious in Figure 54, which compares the opex that has actually been spent since 2000 with the amount that ATCO proposes to spend over AA4. As this figure indicates, most of the increase in ATCO's proposed opex can be attributed to the proposed increase in IT opex and corporate costs, which are assumed by ATCO to increase by 56% and 54%, respectively, in AA4 from the average levels observed in AA3. Network operating costs are also assumed to increase substantially in AA4, with the average level of these costs in AA4 being 19% higher than the average amount spent by ATCO in AA3.

[214] ATCO, Confidential tariff model, 17 March 2014.

Figure 54: Actual opex vs proposed opex (2000-2019)



Source: EMCa analysis from data in ATCO, Confidential tariff model, 17 March 2014.

491. ATCO has sought to rationalise the significant increase in opex as follows:[215]

> *The cost increase is driven by:*
>
> - *Requirements of the Safety Case, leading to an increase in programmes associated with mitigating safety risks to consumers, the workforce and the public*
> - *An increase in workforce and support to maintain existing services and deliver additional activities, including those arising from growth in the network and customer connections and support for ongoing operational efficiencies*
>
> *…*
>
> *Since ATCO acquired the Network in 2011, the operating costs have increased due to the implementation of the Safety Case and the accelerated extension of the network to new areas. The increases reflect the need to increase expenditure to meet Safety Case requirements and thereby reduce the risks associated with the growing Network to as low as reasonably practicable. ATCO Gas Australia considers it will achieve a sustainable level of operating costs in 2015 and would expect operating costs per customer to stabilise in subsequent years as more customers join the Network.*

[215] ATCO, AAI, March 2014, pp. 60-61.

7.4 Network opex AA4

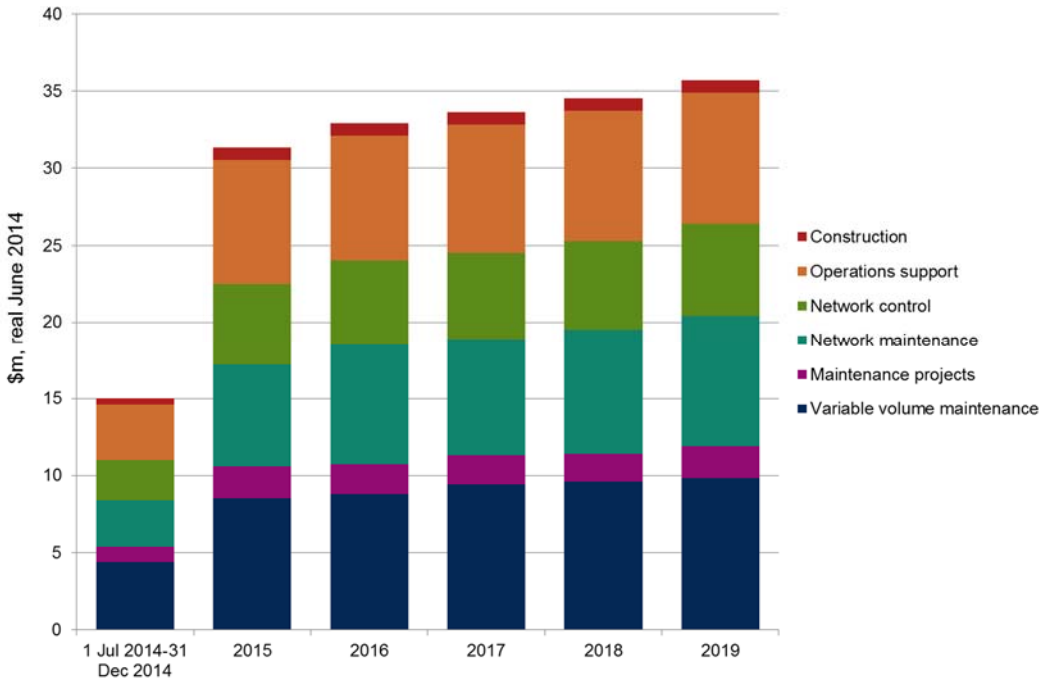
7.4.1 ATCO's proposal

492. In AA4 ATCO is proposing to spend $183.1m on Network opex.[216] Of the $183.1m, ATCO is proposing to spend:[217]

- $50.5m on variable volume network maintenance, which includes the costs of planned and unplanned maintenance to operate, inspect and maintain the network;
- $10.9m on network maintenance projects, which includes the costs of specific maintenance projects like in-line inspections and vegetation management;
- $41.6m on network maintenance, which includes the costs of management, supervision and unallocated costs associated with a range of network functions;
- $30.8m on network control, which includes the costs of operating the control room, call centre and market service function;
- $44.8m on network operations support, which includes the cost of asset management, engineering and technical compliance functions; and
- $4.4m on network construction, which includes the costs of management, supervision and unallocated costs associated with maintenance projects and other field maintenance activities.

493. The profile of ATCO's proposed expenditure on these Network opex categories over AA4 is illustrated in Figure 55.

Figure 55: AA4 proposed expenditure on Network opex



Source: EMCa analysis from data in ATCO, AAI, Table 17.

[216] ATCO, AAI, March 2014, table 17 and pp. 87-91.

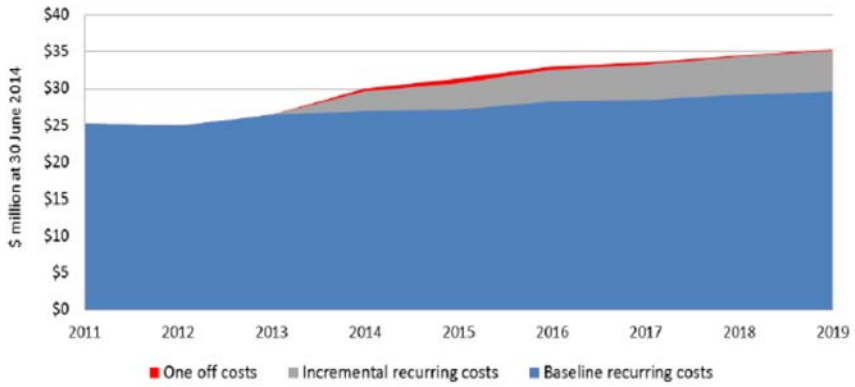
[217] ibid.

494. When developing its Network opex forecast, ATCO has reportedly had regard to those costs that can be considered:[218]

- Baseline recurring costs (i.e. the costs 'required to operate and maintain the growing customer base and footprint of the Network');
- Incremental recurring costs (i.e. the costs associated with 'new requirements or activities predominantly required to comply with the Safety Case in AA4 but are expected to continue'); and
- One-off costs (i.e. the costs associated with 'new requirements or activities predominantly required to comply with the Safety Case, in AA4 but are not expected to continue').

495. In AA4 baseline recurring costs are expected to account for 85% ($156m) of Network opex, while incremental recurring costs are expected to account for 14% ($24.9m) and one-off costs 1% ($1.8m). The profile of these costs is illustrated in Figure 56.

Figure 56: Baseline, incremental and one-off Network opex



Source: ATCO, AAI, March 2014, Figure 42.

496. On an annualised basis, the amount that ATCO is proposing to spend on Network opex in AA4 is 19% *higher* than the average amount spent in AA3 ($33.3m versus $$27.9m). On a per customer basis, Network opex is also expected to be 19% higher than the level observed in AA3 (~$47.50 in 2019 vs $40 in 2013).[219]

497. ATCO has attributed most of the proposed increase to the 'finalisation and implementation of the Safety Case'.[220] Elaborating further on this, ATCO noted that:[221]

> *Baseline recurring network operating costs per customer are expected to decline during the AA4 period. Increases in network operating costs per customer are the result of new requirements or regulations that result in incremental recurring costs or additional one off costs.*
>
> *The key drivers for the forecast increase in incremental recurring and one off costs in network operational expenditure are as follows:*
>
> - The implementation of the Safety Case

[218] ATCO, AAI, March 2014, p91.

[219] ATCO, AAI, March 2014, figure 43.

[220] ATCO, AAI, March 2014, p85.

[221] ATCO, AAI, March 2014, pp. 92-93.

- New and amended obligations, legislation, rules, regulations and functions
- Business improvements and support through the utilisation of IT
- Growth in gas connections and network augmentation

Incorporating these new recurrent and one off costs results in the overall network operating costs per customer increasing until 2016 and then remaining constant for the remainder of AA4.

7.4.2 EMCa assessment

498. Based on our review of ATCO's proposed expenditure on Network opex, it would appear that baseline recurring costs are not expected to be materially different from the costs incurred in AA3 (~$28.4m p.a.) and one-off costs are immaterial (~$0.3m p.a.). The expected increase in Network opex appears therefore to be largely driven by the inclusion of incremental recurring costs (~$4.5m p.a.) (See Figure 56).

499. We have therefore examined the incremental recurring costs and their interrelationship with the baseline recurring costs, when assessing the consistency of ATCO's proposed expenditure on Network opex with rule 91(1). The results of our examination are set out below, along with our assessment of the proposed expenditure on one-off activities.

Recurring costs

500. ATCO is proposing to spend $156.3m on baseline recurring costs and $25m on incremental recurring costs in AA4.[222] According to ATCO, the incremental recurring costs are largely being driven by the Safety Case and the need to reduce risk to ALARP.[223] The activities that have been included in the recurring cost category include leak surveys, cathodic protection, commercial meter changes, systems monitoring, gas filters inspections, proving gas mains locations, technical compliance inspectors, asset services, the dial before you dig campaign and market services.[224]

501. The concerns that we have with this aspect of ATCO's Network opex proposal primarily relate to:

- the approach that ATCO has employed when forecasting incremental and baseline recurring costs; and
- the manner in which ATCO has applied the ALARP test when conducting its FSAs, which in part flows directly through to its proposed expenditure on incremental recurring costs.

The specific concerns we have with each of these issues are outlined below.

Forecasting approach

502. One of the more significant concerns we have with ATCO's proposed allowance for recurring Network opex (baseline and incremental) is that the forecasts for each of the underlying activities have been developed by relevant managers manually forecasting future maintenance levels at an activity level. From ATCO's description of this process,

[222] ATCO, AAI, March 2014, table 20.

[223] ATCO, AAI, March 2014, p59.

[224] Market services include the services required to facilitate customer transfers between retailers following the emergence of competition in the retail gas market. See ATCO, AAI, March 2014, p102.

we consider that there has been insufficient governance of and challenge to this aspect of the forecasting process and the assumptions made. ATCO has not provided evidence of objective consideration of a number of factors that we would expect to have been explicitly accounted for in such a forecasting process. These include:

(i) The relationship between monitoring and maintenance activities. For example, an increase in expenditure on monitoring should be offset by a decrease in reactive maintenance.[225] However, there is no evidence that ATCO has taken this into account when developing its forecasts. The forecasts for monitoring, planned and reactive maintenance are instead all increasing over the period.

(ii) The effect of the extensive Sustaining capex programme ATCO has been undertaking, and which has involved both the replacement of assets and asset performance and safety capex. We would expect these to have an effect on the need to carry out maintenance and/or monitoring. For example:

- the replacement of EOL assets (e.g. the replacement of cast iron, unprotected and odd-sized steel mains and gas meters) should result in a reduction in unplanned maintenance; and
- the replacement of EOL mains with polyethylene pipelines should also result in a reduction in reactive leak repairs and smell of gas responses, because new polyethylene has a lower incidence of leaks. The replacement of EOL meters should have a similar effect.
- expenditure on telemetry and monitoring will provide ATCO with the ability to remotely monitor and in some cases control the network. While this ability will not eliminate the need for physical on site monitoring, it will provide for a more targeted monitoring programme and reduce the frequency of on-site attendance, particularly if it is configured to detect what might be otherwise hidden failure of designed redundancy within the network.

(iii) The potential for efficiency gains to be derived by optimising baseline and incremental maintenance and inspection activities and carrying them out in an integrated manner, rather than in an incremental manner. For example:

- The effect of efficiencies that are realised by consolidating planned (time bound) activities to avoid unnecessary travel etc and to achieve the efficient delivery of services, compared to a pure aggregation of separate activities; and
- with the exception of high risk locations (e.g. schools, hospitals and public gathering places), the frequency of carrying out leak detection surveys could be substantially reduced in those areas that are scheduled for mains replacement, because as the work progresses the need to conduct a high frequency leak detection survey should diminish and a return to the nominated five year cycle as set out in AS/NZS4645 may be optimal. The frequency of carrying out surveys in other parts of the network may also diminish after a survey and any remedial repair work is undertaken, because as new data becomes available, the cost and benefits of carrying out the surveys can be assessed and the optimal period between leak detection surveys is likely to be extended.

While efficiency gains tend to be introduced incrementally, there is no evidence that ATCO has considered the potential for these efficiencies when deriving its recurring

[225] The only time this may not be the case is if the network is deteriorating at a faster rate than the replacement programme, but as outlined in sections 5.4 and 6.4, ATCO is in the process of undertaking a significant EOL asset replacement programme.

cost forecasts. The incremental and baseline activities and associated forecast costs appear instead to be additive.

503. These observations are consistent with the findings of our review of ATCO's variable volume opex model. Briefly stated, the forecasting process embodied in this model shows that each of the activity levels and unit cost assumptions underlying the variable volume opex forecast have been developed independently and added, with no evidence for consideration of the factors described above or of a top down assessment, challenge or adjustment to the resulting aggregate forecast. The overall variable volume opex forecast is instead just calculated as the sum of each of the underlying activities (i.e. all costs are just additive).

504. A weakness with this forecasting approach is that it can result in a significant overstatement of the projected costs, because it does *not* take into account:

- the cost efficiencies that may come from carrying out works in an optimised and integrated manner (e.g. economies of scale and other efficiencies that may be derived from not carrying out works in an incremental manner); and
- whether all of the activities will actually be required in AA4, because of a lack of regard for the interrelationship between Network opex and the Sustaining capex programme, or the relationship between monitoring and maintenance activities.

505. We are not therefore satisfied that ATCO's proposed allowance for baseline and incremental recurring opex is consistent with the principles in rule 74(2) (i.e. the forecast does not represent the best estimate arrived at on a reasonable basis). Nor are we satisfied that the proposed expenditure satisfies the prudent service provider test in rule 91(1), because in our view a prudent service provider acting in the manner prescribed in this rule would:

- consider the baseline and incremental recurring activities in an integrated manner, rather than just accepting the baseline activities and costs as a given and adding on the costs associated with the incremental activities;
- explicitly take into account the factors listed in paragraphs (i)-(iii) above, when working out its work plan and projected costs; and
- continuously seek out ways to optimise its monitoring and maintenance activities (or at a minimum conduct an annual review as part of an asset management review process), with a view to trying to achieve the lowest sustainable cost of service delivery.

506. The implications of our findings on this aspect of ATCO's proposal are considered in further detail below.

ALARP assessment

507. The second concern we have with ATCO's proposed allowance for incremental recurring costs is that while ATCO has claimed most of the increased expenditure on Network opex is being driven by the need to 'comply with the requirements of the Safety Case',[226] it is largely being driven by the risk thresholds it has applied when conducting FSAs.

[226] ATCO, AAI, March 2014, p59.

508. As noted in section 6.4.2, the risk thresholds that ATCO has adopted are not prescribed in either AS/NZS4645 or AS2885, nor are they mandated by Energy*Safety*. They are predominantly based on ATCO's own 'risk appetite'. By industry standards, the thresholds ATCO has adopted are low and are potentially giving rise to inefficiently high levels of Network opex. Furthermore, ATCO has not justified these thresholds in the manner required by the relevant standards AS/NZS4645 and AS2885.

509. The other concern we have with this aspect of the recurring cost forecast, is that ATCO does not appear to have considered the potential for some of the new ALARP related activities to either render some of the existing baseline activities obsolete, or for greater efficiencies to be achieved if they are carried out in an integrated, rather than an incremental, manner. In other words there is a lack of evidence that ATCO has considered offsets to the incremental activities.

510. We are not therefore satisfied that *all* of the recurring opex that ATCO has attributed to the Safety Case satisfies the prudent service provider test in rule 91(1).

Conclusion on recurring costs

511. For the reasons set out above, we are not satisfied that all of ATCO's proposed expenditure on baseline and incremental recurring network opex ($181.3m in total or average $33m p.a.) satisfies rule 91(1) or rule 74(2) of the NGR.

512. We consider that a revealed cost approach provides a reasonable means of determining a prudent and efficient forecast, given that ATCO's forecasting method does not incorporate assumptions that can be modified because at the base level it involves manual forecasts at the activity level. While ATCO has not been subject to an incentive regime in AA3, it has had an incentive to reduce opex during the period because it can capture 100% of the cost savings. On the other hand, the network was not owned by ATCO in the early years of AA3 and arguably some time was required after the purchase and as the Safety Case was implemented, to establish a prudent and efficient level of network maintenance activity. We therefore consider that the actual costs incurred by ATCO in the penultimate year of AA3 (i.e. 2013) form a reasonable basis for forecasting ATCO's recurring cost requirements.

513. Using ATCO's actual expenditure in 2013 as the starting point, we then considered whether there was any basis for increasing or decreasing this expenditure level to reflect:

- *the costs of complying with new regulatory obligations in AA4* – in our view a step increase from the 2013 level is required to reflect some of the Safety Case driven work, which would not have formed part of the opex incurred in AA3;
- *changes in the projected demand in AA4* – in our view some increase above the 2013 level is required to reflect the projected growth in demand. However, given our finding that a significant proportion of ATCO's proposed expenditure on Growth capex has not been justified under rule 79 (see section 6.5.2); the effect will not be as significant as ATCO may otherwise have assumed. It is worth noting in this context that ATCO has not separately identified the opex associated with the Two Rocks, Peel and Baldivis spur lines, and the greenfield subdivision developments, so we have not been able to determine what proportion of ATCO's proposed allowance should be deducted to reflect the exclusion of these projects. The majority of this proposed capex is supposed to occur though post 2015 and

experience is that new pipeline networks require considerably less maintenance than older parts of the network;

- *productivity improvements in AA4* – for the reasons set out in paragraph 502(iii) we are of the opinion that efficiencies associated with the new recurring activities should be taken into account, although with some lag; and/or
- *unit costs* – ATCO provided information on the unit costs that it applied at the activity level for the starting year of its forecast (i.e. 2014). We analysed this information and found that, while some costs were up and some down, in aggregate these had an effect of increasing the cost forecast by around 5%. ATCO has also incorporated an assumed real labour unit cost increase of 2% p.a. (4.5% nominal), though it has not allowed for a materials cost increase. We consider that not allowing for a materials cost increase is valid, and we accept the validity of the assumed labour unit cost increase. We do not accept the 2014 increase in weighted average unit costs. In aggregate we consider that these unit cost effects are likely to broadly cancel out: that is, not allowing the initial 5% increase but allowing for real labour cost escalation is likely, within the bounds of materiality, to have a neutral impact on the overall forecast.

514. Taking each of these factors into account, we are of the view that ATCO's allowance for recurring opex should be based on ATCO's proposed level in 2014 and 2015 but capped at the 2015 level of $30.7m thereafter for the following reasons:

- We accept that there are some incremental activities that ATCO has to carry out in AA4 to comply with the Safety Case and that a step increase from the 2013 level is appropriate up to the 2015 level;
- By 2015 ATCO should be in a position to start to realise the types of efficiencies outlined in paragraph 502 (i) - (iii) (i.e. from optimising and integrating its maintenance and monitoring activities across baseline and incremental activities), which will result in cost reductions that, in our view, should more than offset:
  - labour cost increases and the initial net effect of unit cost increases that ATCO has applied; and
  - the cost of any additional incremental activities ATCO has assumed will need to be undertaken as part of the Safety Case between 2016 and 2019; and
- The majority of the proposed investment in the Two Rocks, Peel and Baldivis spur lines and the greenfield subdivision developments is expected to occur post 2015, so there is little need to make a downward revision from the 2015 level to reflect our findings in section 6.5.2.

515. Over the 5.5 year AA4 period, the adjustments that we recommend would equate to an allowance of $168.6m, which is $12.7m (~7%) *lower* than ATCO's proposal. An allowance of $168.6m for recurring Network opex is consistent both with the principles in rule 74(2) and with the amount that a prudent service provider acting in the manner set out in rule 91(1) would expect to incur, once due regard had been given to the matters set out in paragraph 501.

One-off costs

516. ATCO is proposing to spend $1.8m ($0.3m p.a.) on one-off activities in AA4, such as in line inspections, PVC studies and pressure vessel inspections at pressure regulating stations.[227] ATCO's proposal to undertake these activities is consistent with both the

[227] ATCO, AAI, March 2014, pp. 102-104.

Safety Case and good industry practice. Its proposed expenditure on these activities also appears to be in keeping with the costs that would be incurred by a prudent service acting efficiently and the principles set out in rule 74(2). We are therefore of the opinion that the proposed expenditure on one-off activities satisfies rule 91(1).

Compliance with rule 91(1)

517. On the basis of the assessment set out above, we are of the opinion that of the $183.1m that ATCO proposes to spend on Network opex in AA4:

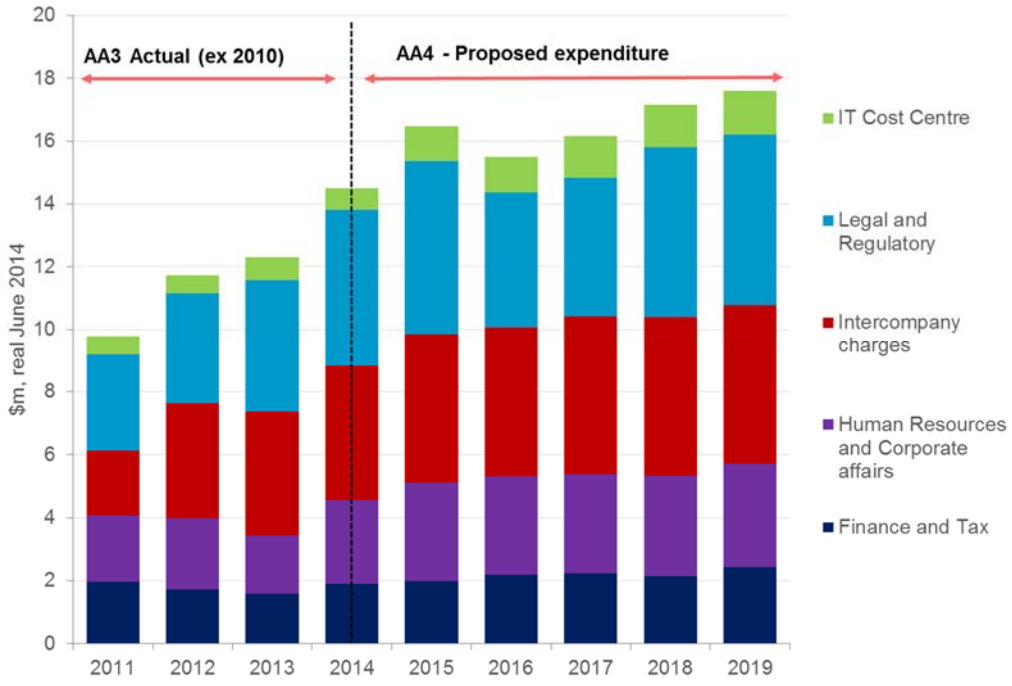
- $170.4m satisfies the prudent service provider test in rule 91(1) and should be included in the derivation of ATCO's revenue requirement or reference tariffs; and
- $12.7m does *not* satisfy the prudent service provider test and so should *not* be included in the derivation of ATCO's revenue requirement or reference tariffs.

7.5 Corporate support opex AA4

7.5.1 ATCO's proposal

518. ATCO is proposing to spend $90.9m in AA4 on Corporate support costs (excluding expenditure on business development (BD) and marketing – see section 7.6), with the apportionment of expenditure across five categories as shown in Figure 57.

Figure 57: Corporate support costs



Source: EMCa analysis from response to EMCa040

519. On an annualised basis, ATCO is proposing to spend an additional $4.7m p.a. (40%) on corporate support costs than it did in AA3. ATCO has attributed this increase to both Access Arrangement costs and intercompany support costs:[228]

[228] ATCO, AAI, March 2014, section 6.7.1.

- *Access Arrangement costs* – these costs are assumed by ATCO to increase in 2014 and 2015 and then reduce for two years before increasing again in 2018 and 2019 in the lead up to AA5; and
- *Intercompany support costs* – ATCO has presented these charges as being for resources provided by the ATCO Group to 'support the portfolio of assets owned by the ATCO Group (i.e. including ATCO) and 'provide the benefit of access to in-house expertise and economies of scale in accessing the skills and information from those resources.'

520. ATCO has tried to draw a link between the increased support workforce numbers to delivering additional services and activities, including those arising from the growth in the network and customer connections. At our on-site meeting, ATCO also advised that the increase in 'internal' corporate costs was also due to 'right-sizing' the business to ensure that the requisite capacity and capability exist in-house to ensure that the business is capable of meeting its regulatory and statutory obligations as the business has grown.

521. The AAI also explains that there are two types of corporate support cost:

- *Direct costs*, which are those costs incurred by the ATCO Group directly on behalf of ATCO and are allocated directly to ATCO; and
- *General and public costs*, which are those costs that benefit all entities within the ATCO Group and are allocated according to the 'Massachusetts' method, which is 'based on a simple average of each company's total assets, percentage of revenue and total labour cost'.

522. The application of the Massachusetts method is a change from the intercompany support cost methodology approved in AA3. ATCO has allocated intercompany corporate support costs based on the Massachusetts method from January 2013.

7.5.2 EMCa assessment

523. Corporate support costs, which include both internal support costs and intercompany charges, are forecast to increase from $9.8m in 2011 to $17.6m in 2019. This represents an 80% increase in these types of costs since ATCO became the owner of the network.

524. To assess whether this proposed expenditure is consistent with rule 91(1) and 74(2) of the NGR, we have undertaken a review of both the internal support costs and intercompany charges. The results of our review are set out below.

Sources of corporate support costs

525. ATCO has identified two sources of corporate support, which it claims are required to ensure that it's regulated business objectives are achieved:

- *Internal support costs,* which covers expenditure associated with the provision of legal, company secretariat, human resources, regulatory & risk, finance & tax, IT and insurance, and corporate communications. These are all typical corporate support areas in an organisation[229] and a service provider of the size and complexity of ATCO requires each of these functions; and

[229] Our assessment of ATCO's proposed expenditure on BD and Marketing and licensing is assessed elsewhere in this section.

- *Intercompany charges,* which ATCO has described as providing a cost-effective source of executive support (additional expertise for ATCO to draw on) and governance. The ATCO Group is an international group of companies with 'approximately $16b in assets, operating in utilities, structures, logistics, energy and technology'.

Increase in FTEs

526. Table 30 shows the increase in the four internal corporate support cost centres. The overall increase in FTEs of 72% (21 people) from 2011 to 2014 compared with 80% increase in the cost of support services indicates that the real increase in the average remuneration of corporate support staff is a second order issue.

Table 30: Historical and forecast Corporate support costs

	Actual					Forecast							
	2010	2011	2012	2013	31 Mar 2014	2014	2015	2016	2017	2018	2019	%inc. 2011-2019	FTE inc. 2011-2019
Finance and Tax	9	8	8	7	8	8	9	10	10	10	10	25%	2
HR and Corporate affairs	9	8	7	11	11	11	14	14	14	14	14	75%	6
Legal and Regulatory	8	10	12	15	15	17	17	17	18	18	18	80%	8
IT Cost Centre	3	3	3	4	4	5	7	7	8	8	8	167%	5
Total	**29**	**29**	**30**	**37**	**38**	**41**	**47**	**48**	**50**	**50**	**50**	**72%**	**21**

Source: ATCO, response to EMCa063

527. As discussed above, ATCO has advised that the growth in FTEs was required to, among other things, cope with the growth in the network and in network connections (i.e. the increased scale of the business). In our view, it is reasonable to allow for some increase in corporate support costs in line with network growth. However, our experience is that there are strong scale economies that mean that the growth in corporate support costs should increase at a much lower rate than the growth rate of the business.[230]

528. From the time the ATCO Group took ownership of the business, the size of ATCO, as measured by growth in the Network, is projected (by ATCO) to increase by 78% through to 2019.[231] Network growth is projected to be 37% from 2011 to 2014.[232] When measured in terms of new connections, ATCO predicts connection growth of 2.1% p.a. Connections have grown by 5.7% from 2011 to June 2014 and the number of connections is projected to grow by 17.5% from 2011 to 2019.

529. Therefore, the 80% forecast growth in corporate support costs from 2011 – 2019 is of the same order as network growth and also takes account of real remuneration growth, but takes no account of scale economies.

[230] Also, we are of the view that ATCO's growth projections are over-stated

[231] EMCa analysis from figure 12 AAI and ATCO inputs on tariffs models.

[232] EMCa analysis from figure 12 AAI and ATCO inputs on tariffs models.

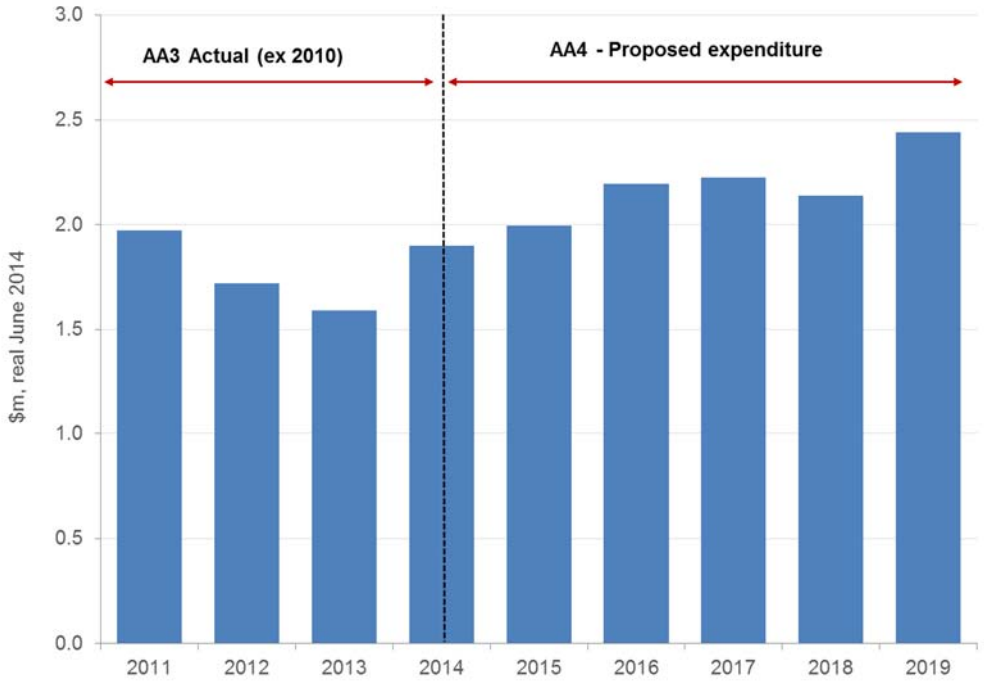
Observations on Internal support costs

Finance & tax opex

530. The finance and tax opex category includes the costs required to manage the transactional requirements, ongoing legislative, regulatory and standards and are forecast to increase by 24% from 2011 - 2019.

531. Figure 58 compares ATCO's proposed expenditure on this corporate cost category with the costs actually incurred in AA3. As this figure highlights, average annual expenditure over AA4 is $0.4m above the AA3 average of $1.8m from a net headcount increase of two. ATCO has not sought to explain the 25% headcount increase since 2011.

Figure 58: Finance & tax expenditure



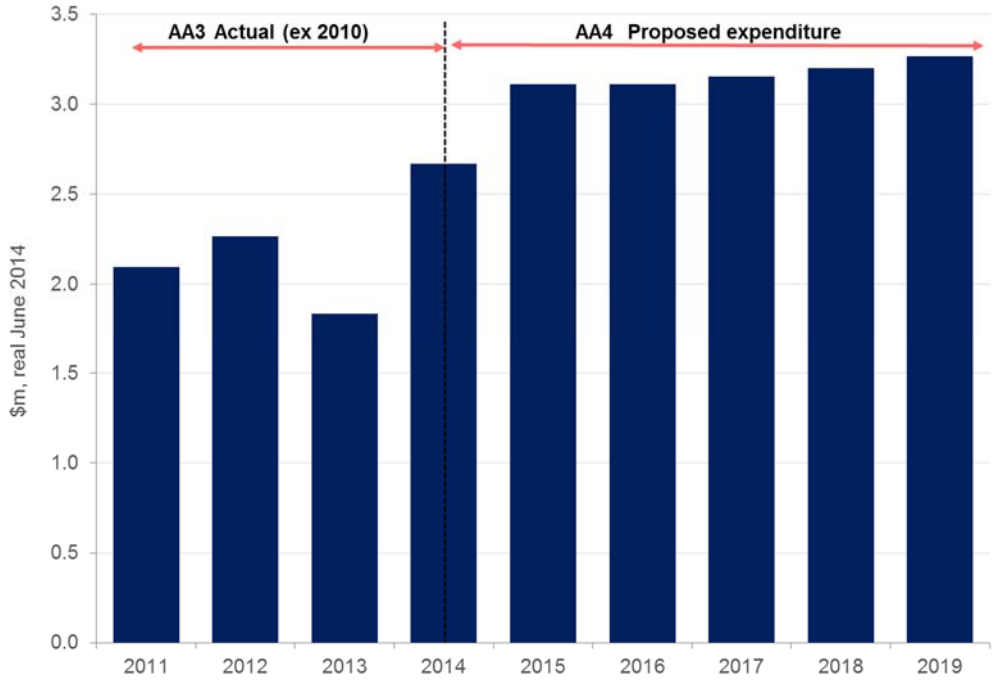
Source: ATCO, Response to EMCa040.

HR and corporate affairs opex

532. Over AA4, ATCO has projected that human resources (HR) and corporate affairs opex will increase by 56%. This has been attributed to growing HR and corporate affairs teams, which ATCO has noted will be at their planned level by 2015, with modest real increases forecast for the balance of AA4 due to real remuneration increase.

533. Figure 59 compares ATCO's proposed expenditure on this category of corporate support costs with the actual expenditure incurred in AA4. As this figure highlights, average annual expenditure over AA4 is expected to be $1m higher than the AA3 average of $2.2m. ATCO has offered no specific explanation of the 75% increase in headcount since 2011.

Figure 59: HR and corporate affairs opex



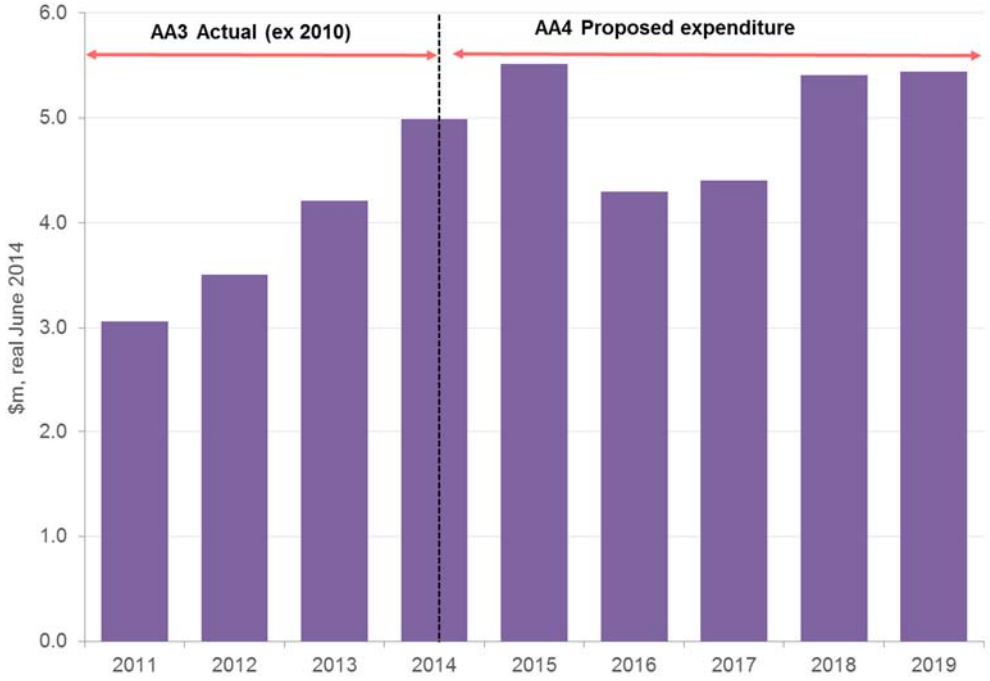
Source: ATCO, Response to EMCa040

Legal & regulatory opex

534. Legal and regulatory opex is forecast to be 78% higher in 2019 than it was in 2011. This increase is largely driven by an additional eight staff and 'extra' AA4 and AA5 preparations costs. We estimate that ATCO has or will spend approximately $2.1m 'extra'[233] on its AA4 proposal through to finalisation. As shown in the figure below, ATCO forecasts spending approximately $2.4m 'extra' on AA preparation and revision for AA5 in 2018-2019. ATCO has not provided justification for the growth in expenditure from 2013 above the estimated 'AA preparation' amount. We believe that only $2.1m expenditure (for AA5 preparation) above the base year is prudent and justified.

[233] Ie. estimated expenditure on consultants and contractors compared to the 2013 base year

Figure 60: Legal and regulatory opex



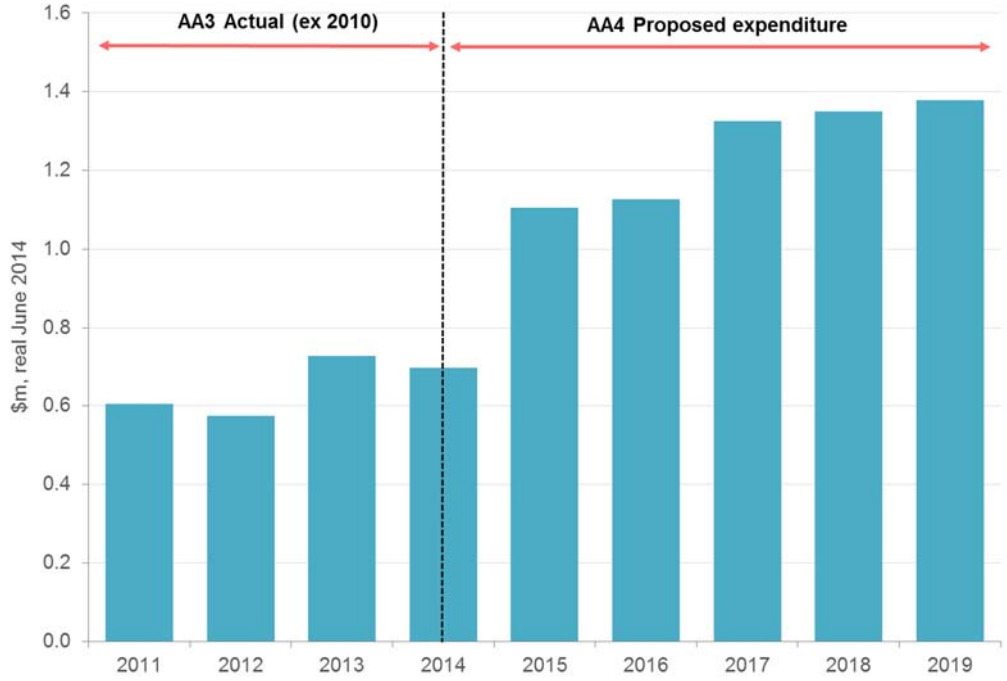
Source: ATCO, Response to EMCa040

IT cost centre opex

535. IT cost centre opex is forecast to increase by 128% between 2011 and 2019, as illustrated in Figure 61. The head count for this cost centre is forecast to increase by five, with further increases expected through to 2017.

536. ATCO has stated that the need arises from its proposed significant investment in IT replacement and transformational projects during the AA3 and AA4 period. As discussed elsewhere, ATCO has a related party relationship with I-Tek which provides exclusive IT services to ATCO. Thus the additional five IT personnel are on top of a proposed 60% increase in IT opex for services to be provided by ATCO I-Tek over the AA4 period.

Figure 61: IT cost centre opex



Source: ATCO, Response to EMCa040.

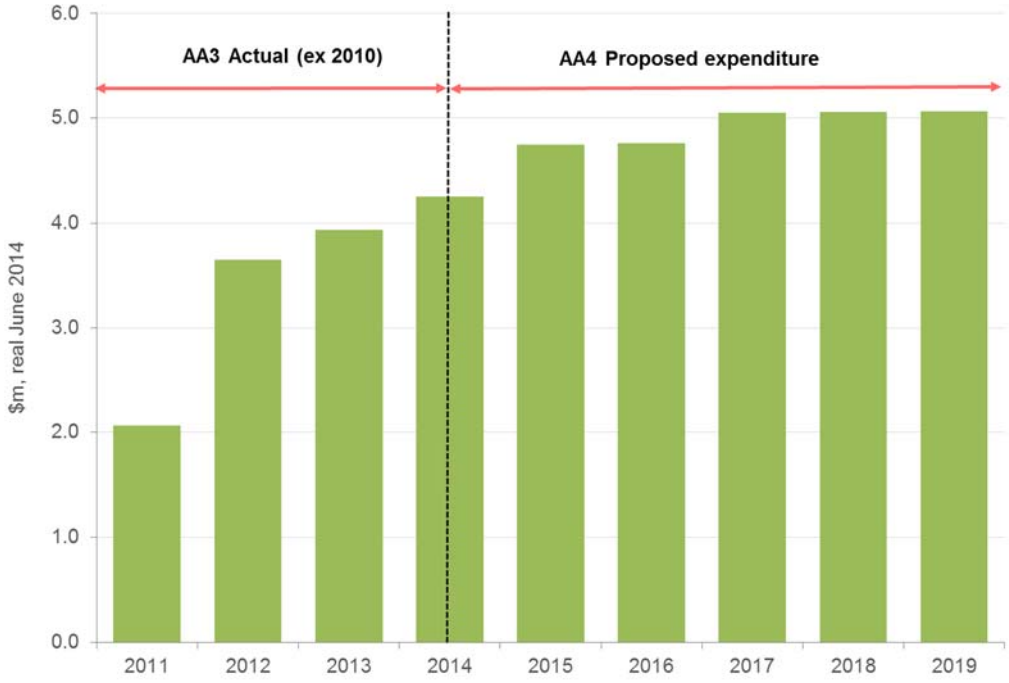
Observations on intercompany charges

537. As shown in Figure 62 intercompany charges increased dramatically between 2011 and 2013 when ATCO's new intercompany charging approach was progressively modified and introduced.

538. ATCO has not provided information to indicate that there has been an increase in actual services received by ATCO from the ATCO Group, commensurate with the increase in charges. The charges are just described as resulting from method for allocating head company costs and the increase in such charges is described as resulting from a change (to the Massachusetts methodology) and the increase in the size of ATCO's business.

539. Given the nature of the intercompany charges and the fact that ATCO carries out a large number of corporate functions itself, it is in our view incumbent upon ATCO to demonstrate that the intercompany charges of $24.7m (~$4.9m p.a.) are required in *addition* to the internal full time employees (FTEs) within ATCO, particularly in the context of the significant increase in internal staff in support areas (see Table 30). ATCO should also be able to demonstrate that the increases in the other components of the corporate support charge need to increase to such an extent *at the same time* that intercompany charges have increased and are continuing to increase dramatically.

Figure 62: Intercompany charges



Source: ATCO, Response to EMCa040.

The Massachusetts method

540. The Massachusetts method is used to allocate intercompany support charges to ATCO (and other utility businesses in the ATCO Group). The method replaces the method approved in the AA3 determination and ATCO states that it has been approved by the Alberta Utilities Commission, though this clearly has no jurisdictional authority in regards to ATCO Gas Australia.[234] ATCO has provided no evidence to indicate that any services received are necessary, nor that it has assessed this charge to be prudent or efficient In order to justify this charge, we would expect ATCO to first be able to show that it has some degree of governance over the services and support it can access from HO and evidence of properly justified decisions as to how they can be obtained in a prudent and efficient manner.

541. There is an implicit assumption in the Massachusetts method that the larger the utility, the more it will draw on the Group support services. It would appear from the forecast increase in both internal corporate support costs (62%) ***and*** intercompany charges (146%) since 2011, that ATCO is struggling to make full use of the corporate support – otherwise the internal support cost increase would be much less.

Compliance with rule 91(1)

542. Whilst the provision of corporate support services of the nature provided by the cost centres described above are a necessary function of prudent operation of a large business, ATCO has not, in our view, justified the need for the significant increases in expenditure in the non-intercompany charges, nor the value received from the forecast $24.7m intercompany charges. We are not satisfied therefore that the proposed expenditure is consistent with what a prudent service provider acting efficiently, in

[234] ATCO, AAI, March 2014, section 6.7.1.

accordance with good industry practice, to achieve the lowest sustainable cost, would incur.

543. We consider that the Corporate support opex allowance should be based on the expenditure ATCO actually incurred in 2013 (i.e. $12.3m), with an additional allowance of $2.1m for the preparation of AA5 revisions divided between 2018-2019, for the following reasons:

- By 2013 ATCO would have had two years to 'right size the business (following their purchase and due diligence during the purchase process);
- With the exception of regulatory costs, ATCO has not demonstrated that it has been prudent or efficient to spend more on internal services in addition to the proposed increase in intercompany support costs since 2013 and has also not provided adequate support for the increase in intercompany support costs to the 2013 level;
- The costs of preparing for the AA5 revisions process will require local (i.e. not intercompany) support via consultants and contractors and we estimate that ATCO has incurred or has allowed for approximately $2.1m above its base costs (2013-214) related to the temporary step change in costs required to prepare and finalise its Access Arrangement 4 submission. Our view is that an equivalent amount will be required in AA4 for the preparation and finalisation of its AA5 submission;
- While ATCO has not been subject to an incentive regime in AA3, it has had an incentive to reduce opex during the period because it can capture 100% of the cost savings, so its revealed costs in 2013 should form a reasonable basis for determining the allowance required for Corporate Support costs, though this reasoning arguably does not apply to intercompany charges; and
- While we have accepted ATCO's proposed rate of labour escalation, on balance we consider that an increase in the aggregate Corporate support allowance is not justified because of the lack of justification provided for the components referred to above and which are considerably greater in magnitude.

544. Making these changes would result in a $69.80m allowance for Corporate support costs for AA4, which is $21.2m (23%) *lower* than the $90.9m proposed by ATCO. In our opinion, an allowance of this amount is more in keeping with the expenditure that a prudent and efficient service provider would incur and is also consistent with rule 74(2).

7.6 Business development & marketing opex AA4

7.6.1 ATCO's proposal

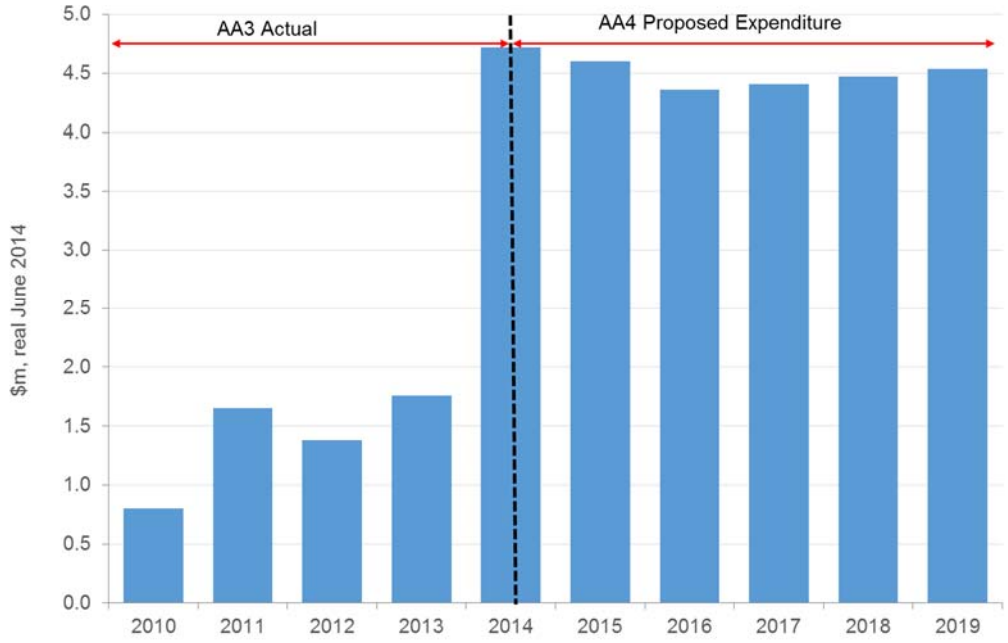
545. ATCO proposes to spend $24.6m[235] on business development (BD) and marketing initiatives in AA4 across the following areas:

- Development and execution initiatives to grow connection and throughput;
- Commercial management;
- Business case development and evaluation; and
- Stakeholder relationship development and management with retailers, builders, commercial, residential land developers and customers.

[235] Per updated information from ATCO in response to IR EMCa086. The AAI showed a figure of $25.3m. In its response ATCO corrected this figure by removing $0.8m allocated to non-reference services

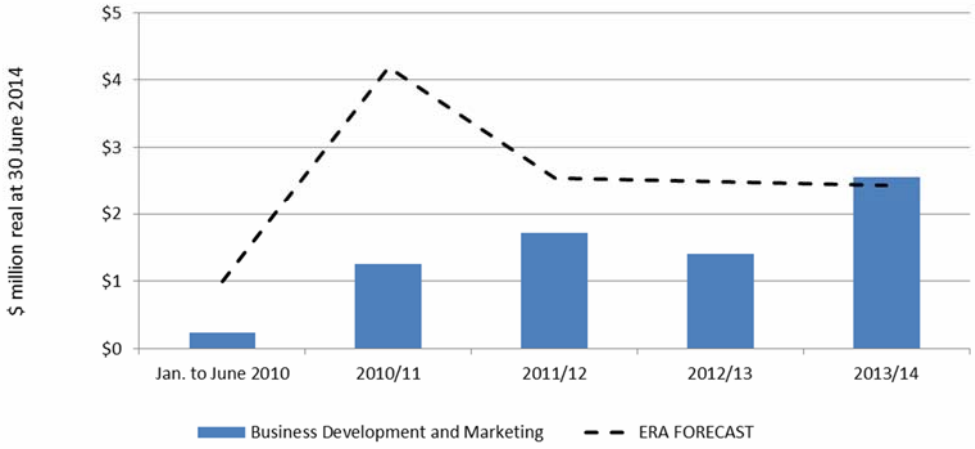
546. Figure 63 shows the amount that ATCO spent in AA3 on BD and marketing and the amount it is proposing to spend in AA4, while Figure 64 compares the allowance approved by the ERA for AA3 with the amount actually spent by ATCO.

Figure 63: BD and marketing costs



Source: EMCa analysis based on ATCO, Response to EMCa079.

Figure 64: Approved allowance versus actual expenditure in AA3



Source: ATCO, AAI, March 2014, figure 37.

547. As Figure 64 indicates, ATCO spent approximately $8.1m of the $13.5m the ERA approved for BD and marketing in AA3. ATCO has sought to attribute the $5.4m underspend on a review of the marketing direction, which was undertaken following two corporate restructures (i.e. the 'internalisation of the Network business from its organisational structure under prior ownership' in 2010 and 'the acquisition of the Network business by ATCO [Group] in July 2011'). This review was completed in 2013.

548. According to ATCO, its marketing plan seeks to address two corporate challenges: (i) declining consumption, and (ii) marginal growth rates in new connections. The reasons for the declining residential consumption that were cited by ATCO include:

- Substitutes – electricity driven appliances such as reverse cycle air conditioners (with grid power offset by roof top PV), solar water heating;
- Energy efficient housing design – reducing space heating and cooling needs and reducing take-up of gas bayonets; and
- Electricity price subsidies.

549. ATCO also noted the difficulty in trying to increase connections and consumption in WA compared to other Australian gas distribution networks because of WA's mild to hot climate. Collectively, these are said to constitute a serious threat to ATCO's business and to end-use residential gas customers (via long-term tariff increases). ATCO has also claimed that the C&I segment average gas consumption is also declining due to a difficult connection process and customers choosing appliances that rely on alternative fuel sources.[236]

550. ATCO's current marketing strategy is to grow the use of the network through five initiatives at a cost of $20.8m[237] over AA4:

(i) Advertising & promotions ($8.8m);

(ii) Incentives ($4.6m);

(iii) Appliance demonstration & education ($5.0m);

(iv) Strategy & innovation ($1.8m); and

(v) Website and social media ($0.6m).

ATCO apparently started implementing these recommendations in 2013.

551. Some of the initiatives that ATCO is proposing to undertake are as follows:[238]

- Land developers:
  - no cost gas reticulation to all new developments within the ATCO service boundary; and
  - low or no cost spur line expansion coupled by the requirement for gas included within Developer Guidelines.
- New and established homes:
  - provide incentives for low or no cost service connections
  - influence builders to include gas appliances in builders standard range
  - promote key gas appliances (HWS, cooking and clothes drying)
- C&I - New connection process and gas powered air conditioning;
- Lobby groups - Gas powered air conditioning; and

[236] ATCO, Marketing Plan 2013, p3.

[237] This is an adjusted figure to the $21.8m in Table 15 of the AAI based on advice from ATCO in response to information request EMCa071

[238] ATCO, Marketing Plan, p4.

- New technology research - Distributed generation (Tri-gen, Co-gen, fuel cells, NG vehicles.

552. In ATCO's words, it is trying to position itself as an 'overall gas-based energy solutions provider.'

7.6.2 EMCa assessment

553. Based on our review it would appear that ATCO deliberately underspent its AA3 allowance whilst it reviewed its marketing strategy. Despite a forecast increase in expenditure in 2013/14, it 'saved' $5.4M over AA3 by deferring the opex.

554. ATCO's strategy review has resulted in a marketing objective to increase the number of connections and increase the volume of gas flowing through the network. The strategies to deliver this objective are to:

- Raise awareness of the value of natural gas use;
- Promote gas connections (existing and new builds);
- Promote gas appliances, and
- Engage market enablers and influencers to promote natural gas.

555. In principle, this would be a sensible position for ATCO to take to respond to the challenge of declining consumption, provided there is a sound business case to do so. However, the proposed expenditure must satisfy rule 91(1).

556. In support of its proposed expenditure, ATCO has pointed to a benchmark study[239] which shows that its proposed expenditure of $5.37/customer is commensurate with a select peer group. However, ATCO has not been able to demonstrate that the investment by other regulated gas businesses is effective (and therefore efficient if a similar mix and cost/customer is adopted by ATCO), because each programme is reportedly in its infancy. We therefore do not find the benchmarking information as compelling evidence that ATCO would be acting efficiently and in accordance with good industry practice in undertaking its proposed program.

557. The remainder of this section sets out the results of our review of the NPV analysis that ATCO has sought to rely upon to support its claim that the proposed expenditure is prudent and will achieve the lowest sustainable cost of delivery.

Assessment of ATCO's NPV analysis

558. To test ATCO's claim that the proposed expenditure on BD and marketing is prudent and will deliver the lower sustainable costs to consumers, we carefully reviewed the NPV model it provided and the underlying assumptions. Based on this review, we have two significant concerns with ATCO's assessment:

- As is the case with ATCO's NPV analysis for AA3 and AA4 Growth capex, the average consumption it has assumed for new customers (as opposed to existing customers) seems high relative to actual consumption data that ATCO has provided us in response to our information request (see Figure 41).
- While ATCO has not justified the individual initiatives within its overall program, from the more granular information that is in its model it would appear that the benefits

[239] ATCO, AAI, March 2014, table 14.

flow disproportionately to expenditure. This suggests that some elements of the programme may have a net benefit, while some elements do not. In particular it appears that the significant focus of expenditure on residential customers may not be justified in relation to the benefits.

559. The majority of the new connections that ATCO is targeting are B3 and B2 tariff categories. As shown in Table 31, ATCO's assumed annual consumption for each additional new B3 and B2 connection is higher than the revealed consumption of such new connections. Compared with ATCO's model assumption of 16.2GJ/year for each B3 customer, the average consumption for all new connections made since 2009 in 2013 was 13GJ, while the average consumption of the most recently-connected customers is 11.62GJ.

Table 31: ATCO assumed demand per new connection versus actual

GJ/year

Tariff class	ATCO model assumption (2014)	Actual consumption in 2013		
		Existing customers connected before 2009	New customers connected since 2009	New customers connected in 2012
A2	10,000	18,368	19,799	6,698
B1	1,000	1,242	1,209	1,390
B2	85.0	157.3	73.6	55.07
B3	16.2	15.8	13.0	11.62

Source: EMCa analysis from ATCO marketing NPV model and information from response to EMCa056

560. A similar pattern applies to B2 customers. For A2 and A3 customers, ATCO's assumptions appear to be conservative, with the exception of the actual consumption of 2012-connected A2 customers in 2013. However, for both tariff classes, the numbers of new connections are very small and we do not consider that this data has statistical significance, while noting that ATCO's assumptions appear to be conservatively low.

561. Later in this section we show the results of our analysis of the sensitivity of ATCO's analysis to these volume assumptions.

562. The table below shows ATCO's assumptions for the components of additional haulage revenue.

Table 32: ATCO assessment of additional haulage revenue, by components

$m2014

Components of additional haulage revenue in	2014	2019	% (in 2019)
Additional connections			
A2 Connections	116,244	697,465	*19%*
B1 Connections	54,621	324,486	*9%*
B2 Connections	26,043	155,037	*4%*
B3 Connections	303,313	1,534,489	*41%*
Subtotal additional connections	**500,222**	**2,711,476**	*72%*
B3 additional marketing volumes	**175,163**	**1,050,977**	*28%*
Total Additional haulage revenue	**675,385**	**3,762,453**	*100%*

Source: EMCa analysis from ATCO marketing NPV model

563. As this table indicates, 28% of the additional revenues that ATCO assumes will arise from the proposed expenditure are assumed to arise from a 0.05GJ p.a. increase in annual consumption across *all* consumers. We have been unable to find credible justification for this assumption. It is worth noting in this context that in ATCO's model, the row in which this revenue is presented is labelled as providing for a 0.01GJ increase; however the assumption which is hard-coded into ATCO's formula is for a 0.05GJ increase.

564. While this lift in general volumes may appear small, we observe from sensitivity analysis presented below, that without this the entire plan appears to have a significant negative NPV.

565. Secondly we note the significant contributions to the business case from assumed new A2 and B1 connections, totalling over $1m per year or 27% of the assumed increase in haulage revenue. Closer examination of ATCO's model shows that it has assumed that its efforts will lead to an additional *three* A2 and *ten* B1 connections per year. It is difficult to see how these outcomes (i.e. gaining just three A2 and ten B1 connections per year) can realistically be attributed to the marketing programme that ATCO has proposed, given almost all of the proposed expenditure is for general advertising, websites and social media, appliance demonstrations primarily to households and subsidising the costs of new connections, of which the overwhelming majority are households.

566. We would expect that obtaining an additional 13 large customer connections per year would be best achieved by focused marketing and sales efforts from existing staff, rather than mass market campaigns and subsidies. That being the case, the benefit correctly attributable to the proposed expenditure will primarily arise from additional B3 connections and (to the extent that it is valid) any uplift in annual usage from the existing customer base.

ATCO's NPV analysis

567. According to ATCO's NPV analysis, the proposed expenditure of $20.8m[240] over AA4 on BD and marketing will yield a positive $1.05m net benefit in PV terms, and a payback on the proposed expenditure of 10 years.

568. We have sought to test the sensitivity of this result to the assumptions that ATCO has made about:

- the average volume of gas that new B3 and B2 customers will consume, which as noted above is higher than the volume consumed by new customers;
- A2 and B1 customers also being targeted through the campaign; and
- *all* customers (new and existing) increasing their consumption by 0.05 GJ p.a. in response to the marketing programme.

569. The results of this analysis are set out in Table 33. In short, the results of our analysis indicate that:

- If the average volume of gas consumed by B3 and B2 customers is based on actual volumes for recent newly-connected customers, then the NPV becomes negative;
- If A2 and B1 customers are excluded from the analysis, then the NPV becomes negative; and
- If the assumed uplift in consumption across all customers is excluded from the analysis, then the NPV is again negative.

570. In other words, under each of these scenarios (which we believe are credible), there is a net cost, which means that customers would be worse off if the BD and marketing programme was undertaken. Interestingly, ATCO's model also contains a worst case scenario analysis, which also yields a negative NPV.

[240] This is an adjusted figure based on advice from ATCO in response to information request EMCa071

Table 33: Marketing NPV model sensitivity analysis

$ (real 2014)

	ATCO assumption (first year)	EMCa sesnitivity assumption	NPV
ATCO base case			**1,054,184**
Sensitivity to:			
1. Volume assumptions for additional customers			
1a: Lower B2 volumes	85.0	75.0	989,414
1b: Lower B3 volumes (averaged)	16.2	13.0	-288,230
1c: Combined volume adjustments			-353,000
1d): Lower B3 volumes (current)	16.2	11.5	**-977,530**
2. Focus of marketing effort - Sensitivity to no additional revenue attributable from:			
Additional A2 customers			-900,210
Additional B1 customer			-632,235
Additional B2 customers			419,051
All of above			**-3,221,763**
3. No volume lift on existing customer base			**-5,864,632**
4.Combination of 1b, 2 and 3 above			-10,140,579

Source: EMCa analysis, undertaken by changing input assumptions in ATCO marketing NPV model[241]

Compliance with rule 91(1)

571. ATCO's proposed expenditure of $20.8m on BD and marketing initiatives[242] is a significant driver of the proposed tariff increases for AA4. In our view, and consistent with the NGO, this should only be accepted if the long term benefits to consumers are clear and sustainable.

572. If the marketing programme is effective (i.e. it meets the marketing objective), then over time it should achieve a lower cost for gas customers given the scale economies present in natural gas distribution. It is possible though that through customer churn, today's gas customers may never see the payback in the form of lower tariffs particularly given ATCO's analysis shows that the proposed expenditure does not become positive for 10 years. Current customers are therefore effectively subsidising future gas customers now and in the future (through the connection incentive scheme and other marketing initiatives). We have therefore carefully considered this aspect when assessing ATCO's NPV analysis.

[241] The NPV values in this table should be compared with the 'base' NPV value; they are not the 'change in NPV'. Results for each scenario have been calculated using ATCO's model. Results for 'combination' scenarios are determined from this model and do not sum to the values for each scenario taken individually (nor would we expect them to)

[242] Adjusted from the $21.6m shown in Table 15 of the AAI based on advice from ATCO in response to information request EMCa071

573. From our assessment of the ATCO's NPV analysis, we consider that ATCO has *not* demonstrated to a sufficient level of confidence that the proposed expenditure will lead to lower sustainable costs for consumers. Nor has it demonstrated that the proposed expenditure is consistent with rule 91(1) of the NGR. Therefore we consider that the proposed *increase* in BD and marketing from ATCO's expenditure in AA3 should be rejected.

574. We accept that a base level of business development and marketing effort is justifiable. However, the benefits of undertaking these activities should yield a positive economic benefit, and given the nature of the expenditure should be in the long term interests of consumers. In our view, the actual expenditure that ATCO has chosen to spend in the recent past (i.e. from 2011 to 2013) can be considered a reasonable and efficient level, based on ATCO's commercial incentives to incur opex at an efficient level and to try and increase demand. In a similar manner to Corporate support costs, we think the amount ATCO spent in the penultimate year of AA3 (i.e. 2013) provides a reasonable basis for the allowance required in AA4. The amount spent by ATCO in 2013 was $1.76m p.a..[243] Over a 5.5 year period, this equates to $9.7m.

575. Finally, we consider that the commercial incentives on ATCO are such that it has an incentive to incur additional opex where it considers this to be justified according to its own business case. For example by investing in a focused and beneficial manner, ATCO may achieve higher sales (and therefore higher revenue) within a regulatory period. Moreover, value-adding growth in sales can help to restrain gas network tariffs, thereby helping to maintain the competitiveness of gas. The net benefits would appear to be particularly strong from any expenditure that ATCO may choose to make in order to lift volumes of existing customers, since this will in effect lead to additional revenue that, unlike new connections, does not occur incrementally and (at the scales that ATCO is considering) would not require additional network expenditure.

7.7 IT opex AA4

7.7.1 ATCO's proposal

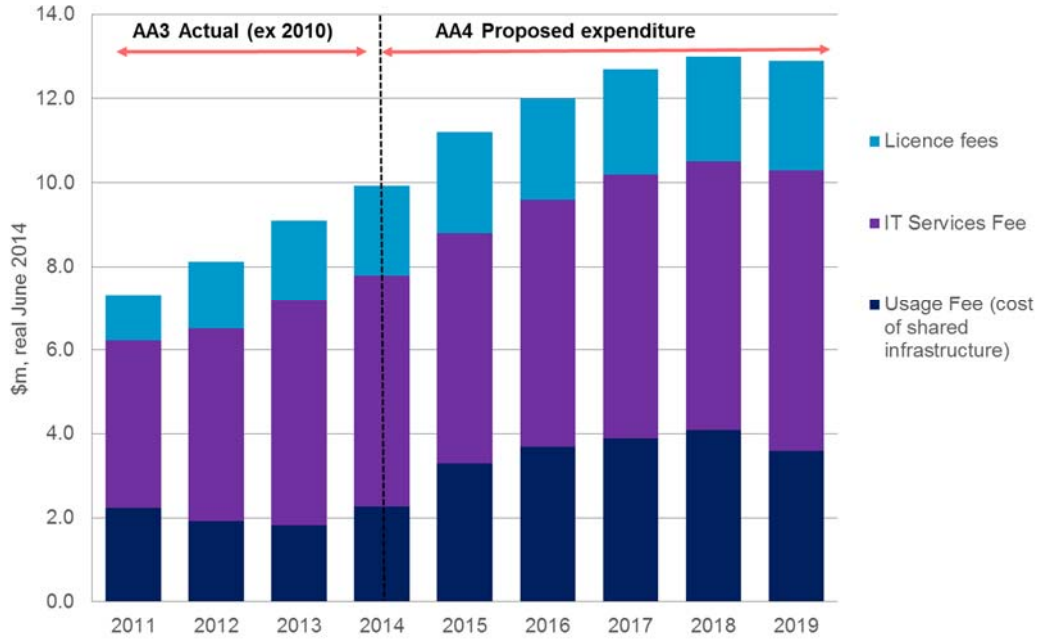
576. In AA4 ATCO is proposing to spend $67.0m ($12.2m p.a.) across the following IT opex cost categories:

- Usage fee – this fee covers the shared IT hardware and software infrastructure on which all ATCO IT systems reside and operate
- IT services fee – this fee covers IT support for telephony, telecoms, desktop support, etc.; and
- IT licence fees – this fee covers all vendor provided software used by ATCO.

577. Figure 65 compares the IT opex ATCO is proposing to spend in AA4 with what it incurred in AA3. As this figure highlights ATCO's expenditure on IT opex increased by 62% in AA3 and is forecast to increase by a further 60% by the end of AA4.

[243] Based on the response to Information Request EMCa079

Figure 65: AA4 IT opex by category



Source: ATCO, AAI, March 2014, figure 54.

578. ATCO has claimed that the increase in expenditure in AA3, relative to the allowance approved by the ERA, occurred for the following reasons:[244]

- the change in ownership led to change in apportionment of services fees and license fees to ATCO;
- new and replacement IT systems deployed in ATCO resulted in higher IT services fees; and
- increased system use by ATCO to meet regulatory and reporting requirements, such as the Safety Case, led to higher license fees.

579. The main reasons cited by ATCO for the propose increase in AA4 are:[245]

- The Safety case requirements to document and retain records to demonstrate regulatory and safety case compliance;
- Wholesale infrastructure replacement as it has reached end-of-life;
- Entry of a new retailer which has increased volume of churn and transactions in the billing system; and
- Prior owners' reduced IT expenditure in AA3 (so as not to commit potential purchasers to a specific IT approach).

7.7.2 EMCa assessment

580. To assess the consistency of ATCO's proposed IT opex with rules 91(1) and 74(2), we have examined the nature of its outsourcing arrangement with ATCO I-Tek Australia (I-

[244] ATCO, IT AMP, section 6.1.2

[245] ibid, section 6.2.2

Tek) and the assumptions that have been made about the Usage Fee, the Services Fee and the Licence Fee. The results of our examination are set out below.

Outsourcing arrangement

581. ATCO receives IT services from a related third party, I-Tek under a contractual agreement.[246] The ITSA was agreed between WNG and WAGN in 2010 and expires in January 2015. This agreement defines asset and service classifications and the fees for use of defined IT assets and provision of those services into two categories:[247]

- Direct capital projects – capital investment relating to IT assets directly owned by and used by ATCO and funded by ATCO (assessed under the AA4 IT capex category, with conforming capex forming part of the ATCO's RAB); and
- [redacted]

582. [redacted] As ATCO has based its shared usage fee and IT services fee on continuation of the I-Tek contract (i.e. beyond January 2015), it is important to examine the competitiveness and risk allocation of the current arrangement. ATCO advises that it will '*review its options in respect of the replacement of the existing ITSA, its post ITSA IT service delivery model, and selection of an IT service provide… by 30 June 2014. ATCO will then assess, select and appoint an IT service provider.*'[249]

Competitiveness of charges

583. In support of its outsourcing arrangement with I-Tek, ATCO has provided a summary of a benchmarking study of the I-Tek services by ITNewcom, which was commissioned by ATCO in 2013.[250]

584. This report purportedly compares a subset of I-Tek's services with a selected peer group of 17 drawn from the energy, industrial, government and financial sectors.[251] The benchmarked services include:

- *Applications services* – This service category include 24/7 support of ATCO's business and enterprises systems including management, support and software, and licence maintenance fees. On the basis of its benchmarking, ITNewcom concluded that the costs of I-Tek's applications services were, on average, 6.7% less than the peer group.[252]

246 ITSA – Information technology Services Agreement.

247 ATCO, IT AMP, section 4

248 ibid, section 6.2.2.2.

249 ibid, section 4.

250 ATCO Gas Australia – 2013 Benchmarking Assessment, 30 January 2014 in IT AMP, section 5

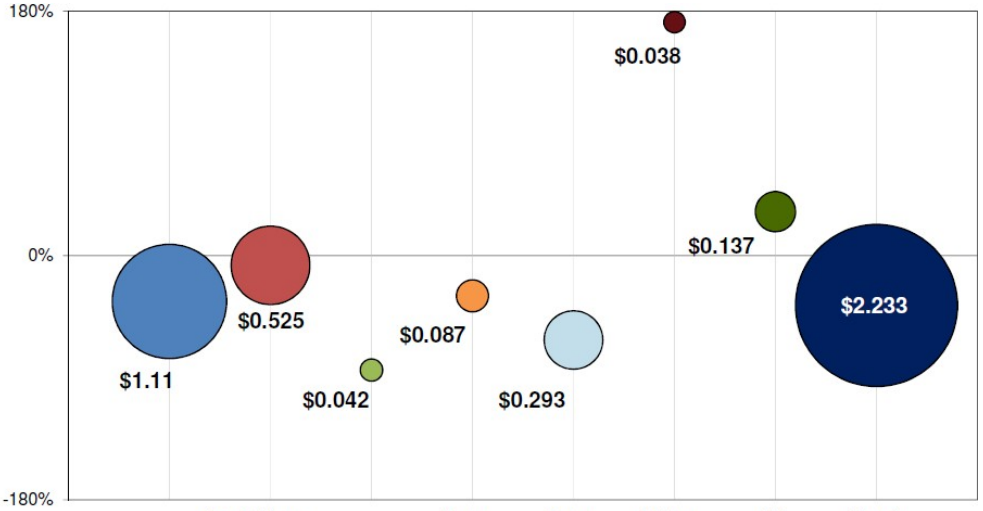
251 Each metric was comparable to at least 6 other entities; the names of the entities are not provided in the summary.

252 Based on $/supported FTE.

- *Telecommunications* – This service category includes all telecoms costs, including carriage costs, voice network, and data links. On the basis of its benchmarking, ITNewcom concluded that I-Tek's carriage charges were, on average, 17% less than the peer group.
- *Labour costs* – This service category covers all the labour charges for I-Tek roles. According to ITNewcom, the I-Tek rate is less than the average peer group rate, typically by 20-50%. The summary report does not provide advice as to how I-Tek achieves such relatively low rates. The forecast for the AA4 submission assumes that these rates will increase with the Cost of Living Adjustment, and the rates are therefore assumed to maintain their competitiveness throughout the period.
- *Infrastructure* – This service category comprises servers, storage, and data network and data service charges. According to ITNewcom's analysis, the average I-Tek charge for these services is significantly less than the average of the peer group.
- *Service desk and end-user computing* – According to ITNewcom's analysis, I-Tek's service desk costs are 32% higher than the peer group. ATCO has attributed this difference to service desk personnel, who it claims are also contributing to desktop support and other related end user computing services (for which ATCO claim average charges are 7% less than the peer group).

585. Figure 66 is reproduced from the IT Asset Management Plan and is designed to illustrate that overall I-Tek's services for infrastructure, voice and the IT service desk are 37% below the peer group.

Figure 66: ITNewcom benchmarking results for I-Tek infrastructure, voice network & IT service desk charges



		Servers	End User Comp	Storage	Data Network	Data Centre	Voice Network	IT Service	Total Deal
Avg ($M / yr)		$1.681	$0.565	$0.270	$0.123	$0.775	$0.014	$0.103	$3.532
Relative to Avg	$M	-$0.568	-$0.041	-$0.228	-$0.036	-$0.483	$0.024	$0.033	-$1.299
	%	-34%	-7%	-84%	-30%	-62%	172%	32%	-37%

Source: ATCO, IT AMP, March 2014.

586. In this context the ITNewcom benchmark study excluded non-IT related costs in the following areas:

- non IT costs;
- third party costs (i.e. external vendors); and
- project costs, including the IT Usage Fee.

587. In relation to the latter of these exclusions, ATCO argued that it should be excluded because of the difficulty associated with peer assessment, given the varying scope, timeline, and complexity of each project. As discussed above, ITNewcom did compare labour cost inputs as this is a more directly comparable component of projects. This is helpful but not conclusive. Whilst the labour costs are shown to be competitive (see below), ATCO has not provided any evidence showing that projects are competitively scoped and priced. This is of particular concern for Shared IT Projects. If the projects were scoped by ATCO and delivered through competitive tender, ATCO has both the regulatory incentive and the means to ensure the projects are delivered efficiently. However, unless ATCO undertakes an equivalent level of due diligence over the scope and cost of projects developed with I-Tek, then, in our view, there is insufficient assurance that the projects will be delivered efficiently.

Contractual terms

588. The ITSA is a comprehensive commercial document and provides the Customer (now ATCO) with typical rights and obligations. Under this agreement, ATCO pays I-Tek Reimbursable Costs and a Usage Fee, which are defined in the contract as follows:

- *Reimbursable costs* are paid by ATCO to I-Tek on a monthly basis without any margin. ATCO pays 100% of costs attributable to Dedicated (or direct) Assets and resources and a proportion of costs attributable to Shared Assets. [redacted] In effect, this aspect of the contract price provides for the pass-through of costs plus an allowance for overheads.
- *Usage fee* – Under the terms of the agreement, ATCO shares certain I-Tek held IT assets and pays I-Tek a Usage Fee to fund its share of the assets. ATCO pays its share over the life of the assets (subject to termination of the ITSA) based on the proportion of individuals using the Shared assets. The Usage Fee comprises two elements: asset depreciation and a cost of capital charge. [redacted]

The main risk that ATCO bears under this contract is that it effectively underwrites the I-Tek business, because it is required to pay an increase in Usage Charges if I-Tek loses one or more customers (as occurred in 2011). In EMCa's opinion, an operator acting in accordance with rule 79(1)(a)[253] would seek to limit its exposure to this potential cost increase risk. An example of how ATCO can limit its risk exposure from I-Tek losing a customer(s) by excluding it as a cost increase mechanism. ATCO should at least secure a cap on possible cost increases in return for cost reduction if I-Tek secures additional customer to allow ATCO to benefit from the economies of scale I-Tek would achieve from winning additional customers.

Conclusion on outsourcing arrangements

589. Based on the information provided by ATCO, the related party arrangement between ATCO and I-Tek appears to be structured under sound commercial terms and has, to date, provided ATCO with a competitive service (with the possible exception of non-project work) [redacted].

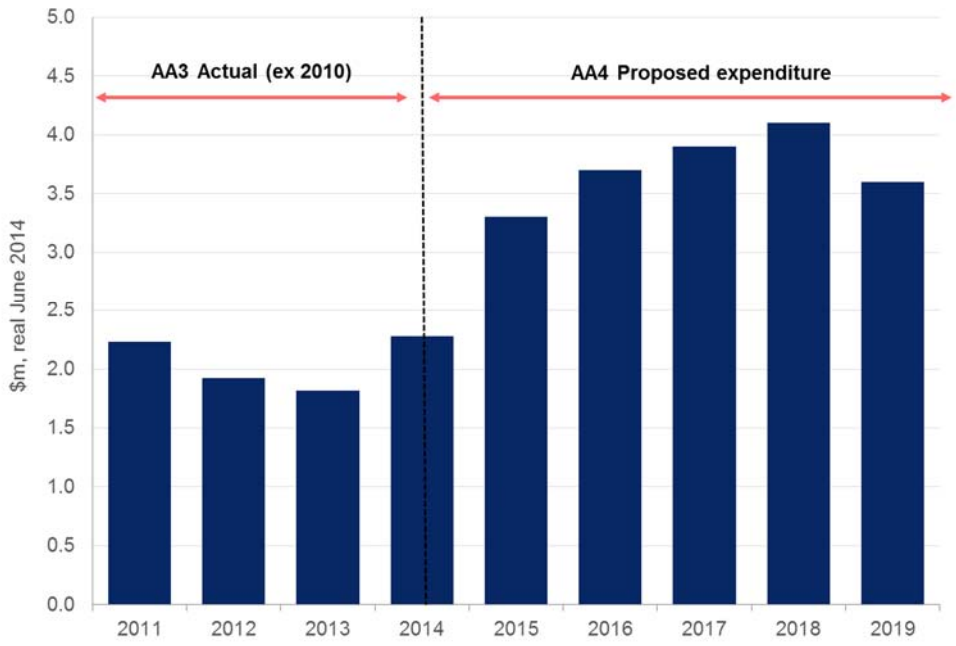
[253] That is, acting efficiently, in accordance with good industry practice, and so as to achieve the lowest sustainable cost of providing services to and on behalf of its customers

590. We do have some concerns though with individual projects, because ATCO has provided insufficient evidence to demonstrate that projects are delivered efficiently. As discussed below, ATCO forecast that it will incur $15.5m of new Usage Charges associated with new shared IT projects during AA4.

Usage Fee

591. ATCO has proposed spending $20.0m on the cost of shared infrastructure in AA4 (the Usage Fee), which is $11m higher than the cost in AA3 (see Figure 67).

Figure 67: IT Usage Fee



Source: EMCa analysis based on ATCO, IT AMP, March 2014, tables 7 and 11 and Appendix 2.

592. ATCO's IT AMP outlines $15.5m of 'new opex' derived from IT Shared Services capital projects to be undertaken during the AA4 period[254]. There are 10 projects and, as shown in Figure 46, the majority of the AA4 projects relate to shared infrastructure and applications lifecycle refresh with the largest being AGA-10 (Infrastructure Enhancements - $9.2m) and AGA-14 (MIS/BI - $3.0m).

593. The replacement/refresh projects are designed to mitigate the risk of system failure and non-compliance with its license provisions. Given that the infrastructure was established in 2008, the relatively low Usage Fee in the first half of the AA3 period reflects that the EOL for these assets had not been reached and/or they remained supported by the relevant vendors.

594. The IT AMP outlines the asset replacement and maintenance program. Based on the nominated economic life for IT infrastructure and good industry practice, the proposed shared replacement projects and the nominated scopes of work appear to be prudent. ATCO note that this investment will bring its infrastructure costs more in line with the market benchmark.[255]

[254] ATCO, IT AMP, figure 12.

[255] ibid, section 6.2.2.4.

595. With essentially like-for-like asset replacement, significant direct operational savings would not normally be expected. However, ATCO advise that the proposed expenditure of $9.2m on AGA-10 has been forecast *by the vendor*[256]. Presumably this is through I-Tek and is also the case with the other nine projects[257]. Noting the related party issues discussed above, ATCO has not provided any evidence to demonstrate that the expenditure on this project, or indeed any of the other nine proposed projects, is consistent with the costs that would be incurred by a prudent service acting efficiently.

596. Work on SAP has been split across three AA4 projects (AGA-15, AGA-16, and AGA-26) with a combined opex impact of $2.2m on top of the existing Usage Fee payment. A number of the initiatives described in the IT AMP indicate that there will be efficiency gains in addition to other business improvements (such as data accuracy). No attempt has been made though in the IT AMP, or the AAI to quantify these benefits and a business case has not been provided which indicates any quantification of the nominated benefits. Whilst the primary drivers of the work appear to be to improve the consistency, accuracy and availability of data (i.e. integrity of services), efficiency gains should be substantial.

597. ATCO also discuss the dependency of the second biggest single expenditure item, the Management Information System project (AGA-14 MIS/BI - $3.0m opex) on the successful implementation of the Infrastructure Upgrade/Enhancement project, bringing into question the high degree of parallel expenditure between the two projects. Furthermore, ATCO has not demonstrated I-Tek's (and its own) capacity to undertake all nine of Shared capital projects and the Direct IT-capital projects given the significant increase in proposed activity in AA4 and the acknowledged capacity limitations (to participate in the development and implement) ATCO experienced in AA3.

598. Given the concerns outlined above, we are of the view that the Usage Fee should be capped at $3m p.a. for AA4. This is a reduction of approximately 20% in the Usage Fee, which will require a commensurate reduction in the project scope and/or number of Shared IT projects undertaken in AA4. We believe that this level of expenditure is deliverable (when the Direct IT capex projects are taken into account) and is consistent with the prudent service provider test in rule 91(1) and the best forecast/estimate arrived at on a reasonable basis than ATCO's proposal. If the Usage Fee was capped in this manner, then the total AA4 allowance for the Usage Fee would be $16.5m over AA4, which is $3.5m (~18%) *lower* than the amount proposed by ATCO.

IT Services Fee

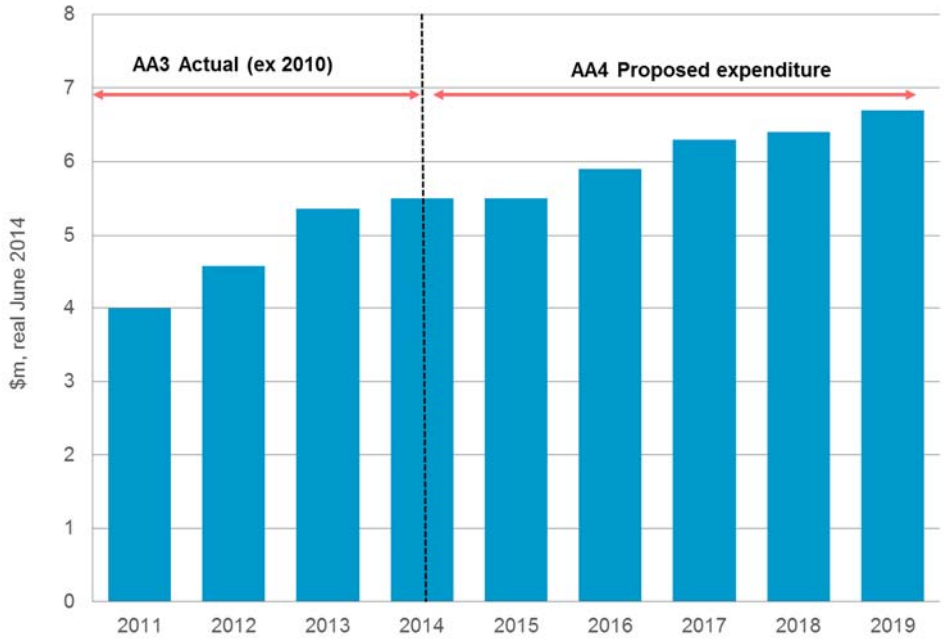
599. ATCO has proposed spending $33.5m on IT Services Fees in AA4, which is $13m higher than it paid in AA3 (i.e. an average increase of $2.4m pa). ATCO has sought to attribute the increase to the change in corporate ownership and the need to support new and replacement IT systems (see Figure 68).[258]

256 ibid

257 Based on the approach described in the ITSA, but not explicitly described in the AAI or the IT AMP.

258 ATCO, AAI, March 2014, section 6.10.2.

Figure 68: IT Service Fee



Source: EMCa analysis based on ATCO, IT AMP, March 2014, tables 7 and 11 and Appendix 2.

600. While ATCO provide a list of new and replacement IT systems that are driving the proposed increase in costs, we have two concerns:

- the link between the new systems and the requirement for continually rising IT service fees is not in our view compelling. We would expect that the requisite telephony, telecommunications, network servers, security monitoring, applications, desktop support, incident management, back-up and DR/BCP readiness and change and release management would have been 'right sized by the end of AA3' because all the nominated systems were or will be in place by the end of AA3. We are sceptical therefore about the need for the IT services fee to increase by $13m in real terms over AA4, particularly if the corporate head count does not grow as dramatically as predicted by ATCO, and
- consistent with the concern expressed in our assessment of the proposed Shared projects underpinning the proposed increase in the Usage Fee, we have not seen compelling evidence that ATCO has sufficient capacity and capability to develop and implement the multiple proposed projects, many of which require additional support[259]. As we have recommended that ATCO undertakes fewer IT-projects in AA4, there should be a reduction in the IT-Service Fee.

601. Put another way, we are not satisfied that the proposed increase is consistent with the expenditure that would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost as required by rule 91(1). We believe that the Service Fee should be capped at the 2013 level of $5.4m to reasonably reflect the lower fees to support new systems and the relative maturity of the existing services (by 2013).

[259] ATCO AAI, *Section 6.10.2*

602. If the Service Fee was capped in this manner, then the total AA4 allowance for the Service Fee would be $29.7m over AA4, which is $3.8m (11%) *lower* than the amount proposed by ATCO.

IT Licence Fees

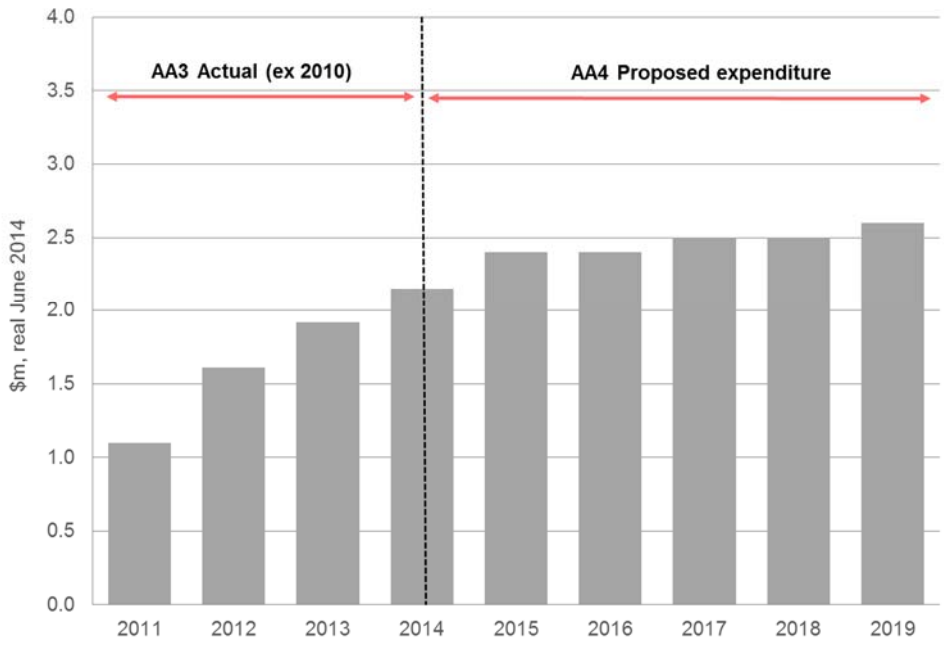
603. ATCO has proposed spending $13.5m in the AA4 period on licence fees, which is double the expenditure in AA3. The increase in the AA3 period illustrated in Figure 69 and has been attributed by ATCO to the '*change [in] allocation in the same fashion as noted for IT Services…and increased system requirements use by [ATCO] employees to meet regulatory requirements such as the Safety Case*'.

604. ATCO has not provided the proportion of the cost increase attributable to these two drivers. The additional $7m forecast expenditure in AA4 compared to AA3 is due to 'instituting new applications and integrating these new applications…with existing applications…which is requiring a broader cross section of [ATCO's] employees to have access to these applications.'[260] ATCO's proposed increase in headcount also leads to an increase in the IT license fee.[261]

605. ATCO procure its vendor-supported software through either re-negotiation with existing vendors or through competitive procurement.

606. Based on our review of this aspect of ATCO's proposed IT opex, we are of the view that the proposed expenditure satisfies rule 91(1) and the forecasts are consistent with rule 74(2).

Figure 69: IT License Fees



Source: EMCa analysis based on ATCO, IT AMP, March 2014, tables 7 and 11 and Appendix 2.

[260] ATCO, IT AMP, section 6.2.2.3.

[261] We understand from the information provided by ATCO that its vendors levy a fee on a per user basis and also charge an annual maintenance fee.

Compliance with rule 91(1)

607. Based on our review of ATCO's proposed IT opex allowance, we are of the view that:

- The proposed expenditure on IT Licence Fees satisfies the prudent service provider test in rule 91(1) and the forecast is consistent with principles in rule 74(2);
- The proposed expenditure on the IT Usage Fee is not consistent with the requirements of rule 91(1) and should be capped at $3m p.a. because ATCO has provided insufficient evidence to demonstrate that:
  - the projected costs of the projects that will involve I-Tek are consistent with the costs that would be incurred by a prudent service acting efficiently; and
  - I-Tek has the capacity to deliver the proposed Shared and Direct IT projects.
- The proposed expenditure on the IT Services Fee is not consistent with the requirements of rule 91(1) and should be capped at $5.4m p.a. because the link between the new systems and the evidence to support the requirement for continually rising IT service fees is not compelling.

608. In total, we recommend that $7.3m be deducted from ATCO's proposed IT opex, which would bring the allowance for AA4 down to $59.7m, which is still higher than the amount spent in AA3 but is appropriate in our view given that many of the IT assets have or will reach the end of their lives during the AA4 period and need to be replaced.

7.8 UAFG expenditure

7.8.1 ATCO's proposal

609. ATCO has projected that it will spend $67.7m (~$12.3m p.a.) on UAFG in AA4, although it has noted that the proposed allowance will be revised once its competitive tender for the supply of UAFG is finalised.[262] The $67.7m forecast is predicated on the following assumptions:[263]

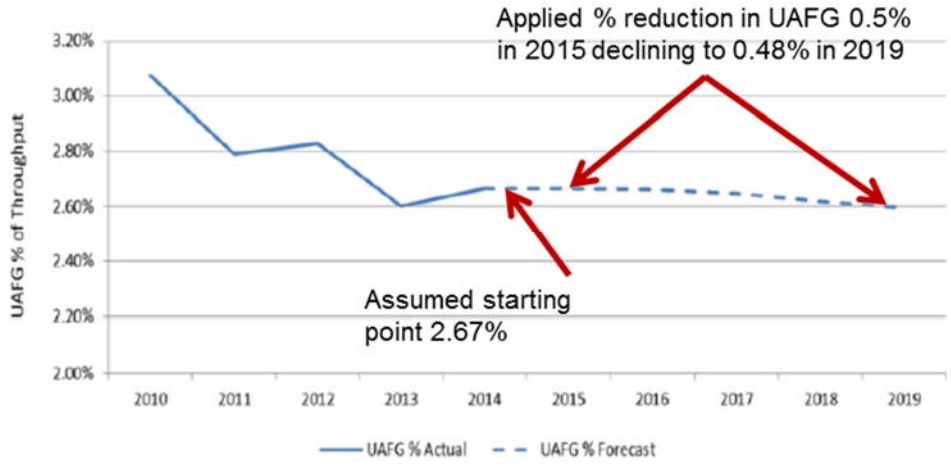
- An average gas price of $15.85/GJ has been used as a placeholder for the AA4 period and is assumed to rise in line with inflation over AA4.
- The rate of UAFG is assumed to 'increase slightly during AA4 and then return to the same level as in 2014 (2.6%)' (See Figure 70).
- Throughput is assumed to increase from 27.6 PJ p.a. to 30.6 PJ p.a. over AA4.[264]

[262] ATCO, AAI, March 2014, table 10 and pp. 104-109.

[263] ATCO, AAI, March 2014, pp. 104 and 109.

[264] Note that the throughput estimates include both the demand for gas and an allowance for UAFG.

Figure 70: ATCO's assumed UAFG rate



Source: ATCO, AAI, March 2014, figure 52 with EMCa additions to highlight forecasting approach.

7.8.2 EMCa assessment

610. To assess the consistency of ATCO's projected UAFG costs with rules 91(1) and 74(2), we have examined each of the assumptions underlying its proposed allowance. The results of our examination are set out below.

Gas price assumption

611. As noted above, ATCO has used a placeholder value for the UAFG gas price and intends to replace this once it has completed the competitive tender process. In our view, ATCO's proposal to conduct a competitive tender to acquire UAFG is consistent with good industry practice[265] and is in keeping with what we would expect a prudent service acting efficiently to do. We are satisfied therefore that this aspect of ATCO's proposal is consistent with rule 91(1).

UAFG rate

612. As Figure 70 highlights, ATCO has had some success in reducing the rate of UAFG over the last three years, with the rate falling from over 3% to 2.6%. The benchmarking analysis provided by ATCO also indicates that it currently has one of the lowest UAFG rates of its peers. [266]

613. Notwithstanding these positive indicators, when we undertook our initial review of the UAFG rate ATCO has assumed for AA4, we had some concerns about:

- the extent to which ATCO had taken into account the effect of the asset replacement programme on leakage rates in AA4;
- the assumption implied by Figure 52 of ATCO's AAI that UAFG would *rise* from 2.6% in 2013 to 2.67% in 2014 and take five years to return to its 2013 level; and
- the 2.67% starting point that ATCO adopted when projecting the path that the UAFG rate will take over AA4.

[265] See for example, AER, Final Decision - Envestra Ltd Access arrangement proposal for the SA gas network, June 2011, pxii and AER, Final Decision - Jemena Gas Networks Access arrangement proposal for the NSW gas networks, June 2010, p384.

[266] ATCO, AAI, March 2014, p105.

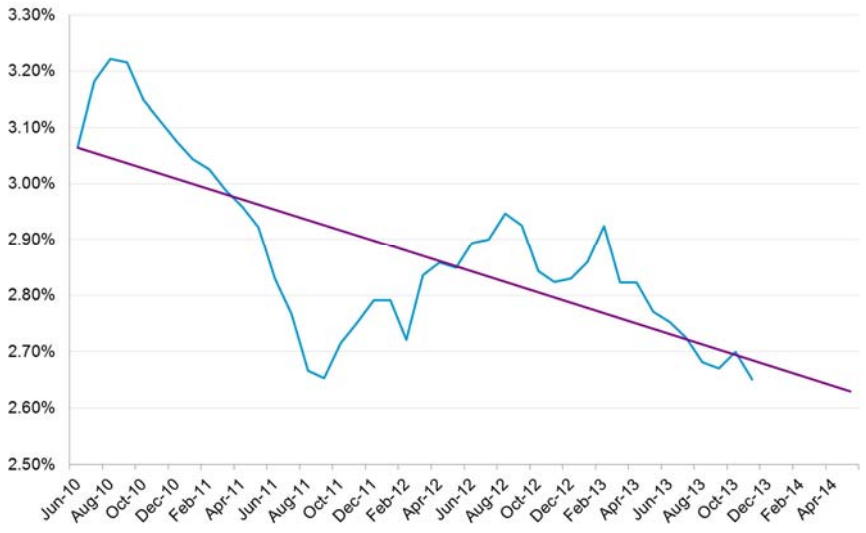
614. We therefore sought further information from ATCO on these issues. Based on the additional information ATCO provided, it would appear that;[267]

- The 2.6% estimate appearing in Figure 52 of the AAI in 2013 may have been an error, because the monthly data provided by ATCO for the first 11 months of 2013 indicates that the average UAFG rate was 2.76% while the minimum rate over this period was 2.65%.
- ATCO has sought to take into account the following factors when deriving the assumed percentage reduction in the UAFG rate in 2015-2019: the asset replacement programme; the turbine meter replacement programme (A tariff customers); and improved metering accuracy for B tariff customers.

615. Whilst this information allayed the first two of our concerns, we still have concerns about the 2.67% starting point ATCO has used when projecting the path that the UAFG rate will take over AA4, which appears to have been set by reference to an observed rate in 2013.

616. In short, we are of the view that the starting point for the AA4 UAFG rate should be set by reference to the trend line observed in AA3, rather than a single observation, because as the data provided by ATCO demonstrates (see Figure 71), the UAFG rate can exhibit some volatility throughout the year and over time.

Figure 71: Actual UAFG rate over AA3 and trend line



Source: EMCa analysis based on ATCO's response to EMCa38.

617. If this change was made to ATCO's forecast, then it would result in the following:

- the starting point for the UAFG rate in mid-2014 would be 2.62%, which is 0.05% lower than the starting point assumed by ATCO; and
- by the end of the AA4 period, the UAFG rate would be 2.56%, rather than 2.6% if ATCO's assumptions about the effect that its UAFG related initiatives will have on the UAFG rate between 2014 and 2019 are applied.[268]

[267] ATCO response to EMCa38.

[268] Under this approach, the UAFG rates in each year would be 2.62% in 2014, 2.61% in 2015, 2.59% in 2016, 2.58% in 2017, 2.57% in 2018 and 2.56% in 2019.

618. In our view, these forecasts are more consistent with the principles in rule 74(2) (i.e. best estimate arrived at on a reasonable basis) and, by extension, rule 91(1) than the approach employed by ATCO and should therefore be used in the derivation of ATCO's UAFG allowance.

Throughput

619. The throughput estimates ATCO has used when calculating the UAFG allowance have been calculated by multiplying its demand projections by (1+UAFG rate). As noted in section 4.6, we have some concerns with the assumptions underlying ATCO's demand projections and have suggested that these forecasts be scaled down to reflect our findings on the conformance of ATCO's proposed capex with rule 79 (see section 6.5.2) and ATCO's proposed expenditure on BD and marketing (see section 7.7.2).

Compliance with rule 91(1)

620. For the reasons set out above, we are of the view that the UAFG allowance should be revised down to reflect both:

- the reduction in throughput arising from the exclusion of a significant proportion of Growth capex and ATCO's proposed BD and marketing allowance (i.e. the revision is required to ensure internal consistency and compliance with rule 74(2)); and
- the change in the starting point used to project the UAFG rate over AA4 (i.e. the revision is required to ensure compliance with rule 74(2)).

621. The effect of the revisions is shown in the table below. As this table indicates if the starting point for the AA4 UAFG rate was based on the AA3 trend (2.62%) and with throughput adjusted as per the demand adjustments that we have estimated, then the UAFG allowance would fall to $64.5m over AA4, which is 4.7% lower than ATCO's proposal.

Table 34: Effect of revisions on proposed UAFG allowance

Year	Revised UAFG Rate	Revised Throughput (TJ)	ATCO Gas Price ($/GJ)	Revised UAFG Allowance ($m, real June 2014)	ATCO UAFG Proposed Allowance ($m, real June 2014)	Difference ($m, real June 2014)
2H 2014	2.62%	13,738	$18.65	$6.71	$6.87	-$0.15
2015	2.61%	27,619	$15.81	$11.38	$11.74	-$0.36
2016	2.59%	27,770	$15.86	$11.43	$11.96	-$0.54
2017	2.58%	28,128	$15.85	$11.51	$12.18	-$0.67
2018	2.57%	28,612	$15.86	$11.65	$12.36	-$0.71
2019	2.56%	29,154	$15.84	$11.81	$12.60	-$0.79
Total				**$64.49**	**$67.70**	**-$3.21**

Source: EMCa analysis based on ATCO, AAI, March 2014, Table 21 and EMCa Table 34.

622. In our opinion, the forecasts in Table 34 are more consistent with the principles in rule 74(2) (i.e. best estimate arrived at on a reasonable basis) and, by extension, rule 91(1)[269] than the approach employed by ATCO and should therefore be used in the derivation of ATCO's opex for AA4.

[269] Rule 91(1) is also relevant because a prudent service provider acting efficiently and in accordance with good industry practice can be expected to ensure that its forecasts are internally consistent.

7.9 Implications

7.9.1 Cost implications

623. Table 35 sets out the effect that the revisions to Network opex, Corporate support costs, BD and marketing, IT opex and the UAFG allowance would have on ATCO's AA4 capex proposal. It also includes the effect of $1.93m p.a. efficiency adjustment that we believe should be made to reflect the productivity gains associated all the IT investment ATCO has carried out in AA3 (see section 5.7.2).

Table 35: Proposed revisions to ATCO's AA4 opex forecast

$m, real June 2014

Description	ATCO Expenditure AA4	EMCa Proposed Revisions	Net Adjusted amount
Network opex			
Baseline and incremental recurring	181.3	-12.7	168.6
One-off costs	1.8	0.0	1.8
Total	**183.1**	**-12.7**	**170.4**
Corporate costs			
Corporate support costs	90.9	-21.2	69.8
Business development and marketing	25.4	-15.7	9.7
Licence fees	16.0	0.0	16.0
Total	**132.3**	**-36.9**	**95.4**
IT opex			
IT Usage Fee	20.0	-3.5	**16.5**
IT Services Fee	33.5	-3.8	**29.7**
IT Licence Fee	13.5	0.0	**13.5**
Total	**67.0**	**-7.3**	**59.7**
UAFG			
UAFG	67.7	-3.2	64.5
Total	**67.7**	**-3.2**	**64.5**
Ancillary services			
Ancillary services	3.8	n.a.	3.8
Total	**3.8**	**n.a.**	**3.8**
IT efficiency gain from AA3 investment			
Efficiency gain	0.0	-10.6	-10.6
Total	**453.8**	**-70.7**	**383.2**

Source: EMCa analysis of tables 10, 13, 20 and 22 of ATCO's AAI.

624. As the final row of this table indicates, the revisions to these aspects of ATCO's AA4 opex proposal would result in $70.7m being excluded from the derivation of reference tariffs.

625. If these exclusions are made, then over a 5.5 year period the average opex allowance would be $69.7m p.a., rather than the $82.5m p.a. proposed by ATCO. To put this into perspective, it is worth noting that an annual opex allowance of $69.7m p.a. is 1% lower than the allowance approved by the ERA in AA3 ($70.8m p.a.) but 10% higher than the amount actually spent by ATCO in AA3 ($63.2m p.a.). As this comparison highlights, we consider that an increase in opex from the actual levels of expenditure in AA3 is

appropriate given changes in the Safety Case and other cost pressures. However we are *not* satisfied that all of ATCO's proposed increase is required and, more importantly, we are not satisfied that it complies with the prudent service provider test in rule 91(1) and the principles in rule 74(2).

7.9.2 Performance implications

626. As discussed in Section 6.9.2, over AA3 ATCO's performance data does not show a deterioration in performance outcomes. The performance has exceeded ATCO's proposed targets in each of its nominated KPIs, typically by a significant margin. ATCO has not provided evidence to support any assertion that its performance level during AA3 has been unsatisfactory. Further, ATCO has not forecast any material improvement in performance outcomes that would result from the increase in operational expenditure that it has proposed as being required.

627. Since the adjusted AA4 opex exceeds ATCO's actual AA3 opex on an annualised basis, the evidence above can be taken to imply that ATCO's performance outcomes will not be impaired if ATCO incurs the adjusted level of opex in AA4, and provided ATCO continues to prioritise and undertake its work in a prudent manner in accordance with its Safety Case processes.

Appendix A ATCO's Safety Case, FSAs and ALARP

A.1 Background

628. ATCO is required by *Gas Standards (Gas Supply and System Safety) Regulations 2000* (GSSSR) to develop and comply with the processes described in the Safety Case to provide assurance that the management, development, maintenance and operation of the GDS is delivering satisfactory safety outcomes.

629. The Safety Case prepared under previous business ownership (WAGN) was accepted by Energy*Safety* in July 2011 and according to information provided by ATCO was implemented in January 2013.[270] There have been no amendments to the Safety Case since its acceptance by Energy*Safety* and ATCO have advised that a revision will be undertaken in 2014.

630. The Safety Case is required under the GSSSR to undergo an annual audit; ATCO have undertaken internal compliance audits during 2012 and 2013 and have engaged Worley Parsons to undertake a compliance audit with a report date 14 January 2014.

631. The accepted Safety Case refers to compliance with primary Australian Standards AS/NZS 4645 (Gas Distribution Networks) and AS 2885 (Pipelines – Gas and Liquid Petroleum Pipelines). Safety and risk assessment concepts and approach are prescribed in these standards; while similar, they are not identical.

632. In the Safety Case, ATCO defines a FSA process and in turn the FSA process is underpinned by risk assessment processes generally in accordance with AS/NZS4645 and AS2885. In the development of these Australian standards the Qualitative Risk Assessment within AS/NZS4645 was developed using the AS2885 process as a basis.

[270] ATCO, AAI, March 2014, section 3.3.2, p29.

633. The risk matrix and definitions for the risk evaluation are detailed within the AS/NZS4645 and AS2885 standards. ATCO have developed, modified and extended the definitions of consequence (severity) from the common AS/NZS4645 and AS2885 definitions to account for its risk appetite and for wider business risk considerations.[271]

634. The Consequence definitions added by ATCO include *Business impact guidelines, reputation, and financial* categories. The *People* and *Supply* categories have also been changed by ATCO from the AS/NZS4645 and AS2885 standards. The specific changes it has made to these two categories are set out in Table 36 and Table 37.

Table 36: Changes to the People category of risks

Consequence Category	AS/NZS4645 & AS2885 People	ATCO Gas Australia People
Catastrophic	Multiple fatalities result.	More than 2 fatalities
Major	Few fatalities, or several people with life threatening injuries	Upto 2 fatalities; Several people with life threatning or permanent disabling injuries
Severe	Injury or illness requiring hospital treatment	Injury or illness requiring hospital treatment
Minor	Injuries requiring first aid or medical treatment	Injuries requiring first aid treatment
Trivial	Minimal impact on health and safety	Minimal impact on health and safety

Source: ATCO, RMT PL 00001 PR 0002 Revision 4 Appendix 4 - Risk Matrix (provided at on-site meetings and in ATCO response to EMCa 012)

Table 37: Changes to the Supply category of risks

Consequence Category	AS/NZS4645 & AS2885 Supply	ATCO Gas Australia Supply
Catastrophic	Long term interruption of supply	Interruption to supply affecting >25,000 customers
Major	Prolonged interruption or long term restriction of supply	Interruption or restriction of supply affecting >5,000 customers
Severe	Short term interruption or prolonged restriction of supply	Interruption or restriction of supply affecting >5,000 customers Prolonged interruption to critical customers
Minor	Short term interruption or restriction of supply but shortfall met from other sources	Interruption or restriction of supply affecting =>100 customers Short term interruption to critical customers
Trivial	No impact; no restriction of gas distribution network	Interruption or restriction of supply affecting <100 customers No impact to critical customers

Source: ATCO, RMT PL 00001 PR 0002 Revision 4 Appendix 4 - Risk Matrix (provided at on-site meetings and in ATCO response to EMCa 012)

635. ATCO's Risk Management Policy, Procedure and hence the definitions outlined above form part of the Safety Case.

A.2 ATCO strategy

636. ATCO have used the outputs of the FSA process outputs (and their approach to the As Low As Reasonably Practicable (ALARP) test described below) to develop and drive the inclusion of the:

- Asset related Sustaining capex; and

[271] ATCO, Appendix A Risk Matrix - RMT PL-00001 PR 0002 Rev4.

- inspection and maintenance activity network Opex.

A.3 Assessment and commentary

637. ATCO confirmed there have been no changes to the Safety Case since it was accepted by the Energy*Safety* in 2011, yet there have been significant organisational changes and an audit non-conformance[272] was raised in this regard.

638. We consider the ATCO FSA process is fundamentally a robust approach and is being applied in accordance with the ATCO guideline outlined within the Safety Case, which is consistent with the following finding from the Worley Parsons' audit:[273]

> *FSAs are generally of good quality and in line with the ATCO Gas Australia guidance document TCO-GL0001 for conducting FSAs'*

639. In some cases the FSA, provided in support of the business cases, only address the design and construction risks and hazards but do not address the fundamental justification regarding development of the business case (e.g. the Mandurah Gas Lateral).[274]

640. The AS/NZS4645 and AS2885 FSA process requires that when risks are assessed and become categorised as Intermediate risks these risks must be considered further and only accepted (tolerable) if they are still rated as Intermediate and satisfy the ALARP assessment test.

641. In accordance with AS/NZS4645 and AS2885 the test of ALARP is as follows:[275]

> *A risk cannot be designated as ALARP until the following has been completed:*
>
> *(a) Analysis of the means of further reducing the risk, including an analysis of various options.*
>
> *(b) Review as to the reasons why these further means have not been adopted.*
>
> *(c) Substantiation that the cost of further risk reduction measures is grossly disproportionate to the benefit gained from the reduced risk that would result.*

642. Importantly, AS/NZS4645 and AS2885 do *not* envisage risk mitigations at any cost.

643. ATCO has not provided any evidence (which was confirmed in answer to questions during the on-site meetings) that it has carried out the cost benefit assessment required by AS/NZS4645 and AS2885.

644. Research of other economic regulatory decisions has not revealed any directly applicable guidance on an ALARP justification as a basis for extensive network reinforcements. However, the AMP's implemented by other regulated distribution

272 Gas Distribution Safety Case Audit 2013 Document Code TCO-RP-0110 NC#2).

273 Safety Case External Audit and Compliance Report 401012-01995-00-PL-RPT-002 Rev 0.

274 Mandurah Gas Lateral Project ML-2.2-OM-001-05 Handover Manual , Volume 5.

275 The relevant provision in AS/NZS4645 is clause 5.2 while the equivalent provision in AS2885 is contained in section F5.2.

pipelines reveal that a range of different definitions for supply related consequences have been adopted. While it is not possible to make exact comparisons across pipelines given the specific contexts in which they are operated, the risk definitions adopted by ATCO are arguably more conservative than those employed by other regulated pipelines.

Table 38: Risk definitions applied by ATCO vs other regulated gas pipelines

Company	Consequence Category Supply - Catastrophic	Consequence Category Supply - Major
ATCO	Interruption of supply affecting >25,000 customers	Interruption or restriction of supply affecting >5,000 customers
SP Ausnet	>200,000 customers or System Black or loss of supply to entire CBD	>100,000 customers
Multinet	Major disruption of multiple services capacity for greater than 1 month – failure of gas supply	Major disruption of multiple services capacity up 1 month –failure of gas supply
Envestra	Long term loss of supply to mass market >100,000 customer weeks Viability of company in doubt	Short term loss of service to >10,000 customer days Area growth affected
Allgas		

Source: SPAusNet, Gas Safety Case, Formal Safety Assessment, 2011, pp. 5-6, Multinet Gas Network Asset Management Plan 2012/13-2017/18, March 2012, pp. 115-116, Envestra, Victorian and NSW Networks Asset Management Plan, March 2012, p16, APA Group, APT Allgas Energy Pty Ltd Networks Technical Asset Management Plan, 20 September 2010, p13.

A.4 Implications

645. The Consequence definitions used by ATCO appear to precipitate some inefficient cost benefit outcomes, particularly when used and related to the investment required to mitigate loss of gas supply due to single point failure within the ATCO network.

646. For a non-essential service there does not appear any evidence to support, at a policy level, that reinforcement is justified to ensure customers do not suffer single point failure at a threshold of 25,000 customers, when the frequency of such an event is extremely low and the consequences of such an event may be manageable without the proposed expenditure.

647. Where the investment driver is underpinned by consideration of the Catastrophic consequence for supply there may be opportunity for a case to be made for proposal reconsideration. However, a cost benefit analysis is required and this also needs to be mindful of good industry practice. If safety of people is also a consideration, as was asserted by ATCO in the on-site meetings, then this also needs to be part of the cost benefit[276] analysis undertaken.

648. The level of proactive attention in the form of inspections condition monitoring and maintenance (Opex) also needs to be commensurate with the residual risk exposure, with respect to high consequence low frequency incidents.

[276] See for example, the references in AS2885.1 Appendix G ALARP: UK Health and Safety Executive, "Guidance on 'As Low As Reasonably Practicable' (ALARP) Decisions in Control of Major Accident Hazards", and http://www.hse.gov.uk/risk/theory/alarpcheck.htm

A.5 References

649. A list of the material that we have reviewed when assessing ATCO's Safety Case related expenditure and when preparing this appendix is set out below:

- Gas Standards (Gas Supply and System Safety) Regulations 2000
- WAGN Gas Distribution System Safety Case – GD PL 0130
- WAGN Safety Case Implementation Plan - GD PL 0130 WI 01 Rev 4
- AS/NZS 4645.1:2008 - Gas Distribution Network Management
- AS 2885: 2012 – Pipelines Gas and Liquid Petroleum
- Gas Distribution Safety Case Audit 2012 – Audit Report Document Code: TCO RP 0050
- Gas Distribution Safety Case Audit 20132 – Audit Report Document Code: TCO RP 0110
- Safety Case External Audit and Compliance Report 401012-01995-00-PL-RPT-002 Rev 0
- Appendix A Risk Matrix - RMT PL-00001 PR 0002 Rev4
- Various FSAs and business cases

Appendix B Labour cost escalation analysis

650. This appendix provides a more detailed explanation of EMCa's assessment of ATCO's labour cost escalation assumption. As discussed in Section 4.4.2, we considered five factors:

B.1 The industry sector

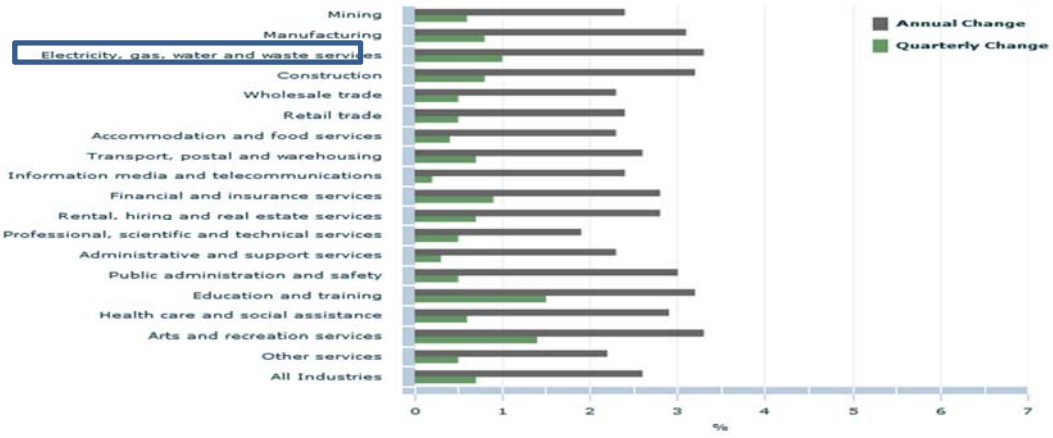
651. Based on comparator information from the ABS[277] and recent AER determinations[278], the EGWWS[279] sector has experienced and is currently experiencing higher wage growth than in most other sectors. As shown in the figure below, the 3.3% rise in total hourly rates of pay over the last 12 months in the EGWWS sector was the equal highest.

[277] ABS, *Wage Price Index report, Australia, Mar 2014*

[278] Eg. AER Determination, AER, Final Decision, Envestra (Gas) Ltd – Final determination 2014-15 to 2016-17, March 2013, table A.1 and AER Determination, Final Decision, SP AusNet – Gas determination 2013-2017, Part 1, March 2013, Section 7.2.2

[279] Electricity, gas, water, waste water services

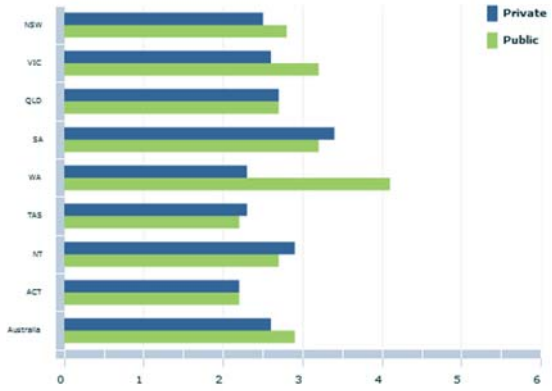
Figure 72: Annual and quarterly changes in total hourly rates of pay (excluding bonuses)[280]



652. Figure 73 and Figure 74 show that hourly rates of pay have been in decline for the last three years, with the WA private sector pay rates well under the public sector and under the Australian average over the last 12 months.

Figure 73 Increase in total hourly rates of pay: public and private sectors (quarterly trend)

Figure 74: Increase in total hourly rates of pay (%): public and private sectors (Mar 2013 – Mar 2014)



Source: ABS, *Wage Price Index report, Australia, Mar 2014*

B.2 The Western Australian context

653. The Western Australian economy has been outperforming the Australian average in employment metrics over the last decade.[281] Similarly, the WA Wages Price index (WPI) has been higher than the Australian average for the last 5 years, although the downward trend over the last two years with the weakening state economy means that the annual growth in WPI to March 2014 was equivalent to the Australian average at 2.6% nominal and 2.3% nominal for WA.[282]

[280] ABS, *Ibid*

[281] Western Australian Treasury, *Economic Notes – Labour Force,* April 2014

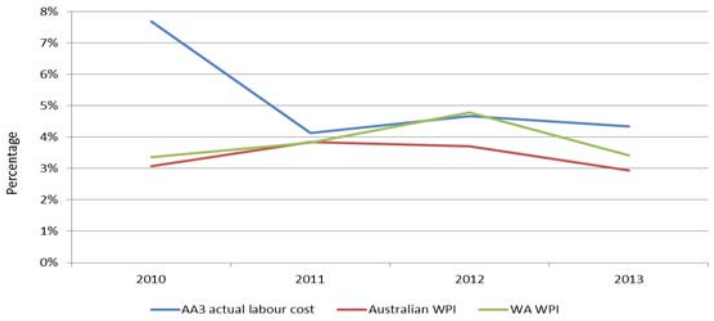
[282] Western Australian Treasury, *Economic Notes – Wages Price Index,* April 2014

654. The WA Treasury forecast for the WA WPI is 1.0-1.25% above CPI through to 2017/18[283]

B.3 Labour cost comparisons

655. ATCO provided a comparison of its labour costs and the WA WPI and Australian WPI as shown in Figure 75. ATCO argues that actual labour costs will again be materially higher than the WPI in establishing its next labour contract. It therefore proposes an adjustment above the WA WPI.

Figure 75: Comparison of ATCO AA3 actual labour cost increases & labour indices (%)[284]



B.4 Recent AER determinations

656. Table 39 summarises the results of recent AER and ERA Access Arrangement determinations in the gas and electricity sectors. The most recent AER decision is for SP AusNet's electricity Revenue Proposal, which was finalised in January 2014. The AER approved above-CPI labour cost escalations of over 2% for the four full-years of the Revenue Period (13/14 – 16/17). The only WA-based utility is Western Power, for which the ERA determined 2% or higher real labour cost escalation rates.

Table 39: Comparison between ATCO's proposed real labour cost escalation and recent regulatory determinations (%)

Business	Measure	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19
SP AusNet Elec[285]	Internal			0.87	2.27	2.20	2.45	2.31		
Jan 2014	External			1.2	2.25	0.75	1.0	1.75		
	Internal				2.0	2.0	0.4	0.6	0.9	

[283] Western Australian Treasury, *Economic Forecasts*, web site, May 2014

[284] ATCO, AAI, *Section 6.6.1*, Figure 31

[285] AER Determination, AER, Final Decision, SP AusNet – Transmission determination 2014-15 to 2016-17, January 2014, table A.1.

ElectraNet Elec[286] March 2013	External				0.9	0.7	0.4	0.1	0.6
Envestra Gas[287] March 2013	EGWWS			2.2	0.9	0.5	1.0	1.0	0.9
	Construction			0.2	-0.1	0.2	0.5	0.3	0.7
PowerLink[288] April 2012	Int specialist	1.0	2.4	0.9	0.9	1.1	0.6	0.7	
	Int general	1.1	2.4	0.9	0.9	1.1	0.6	0.7	
	External	0.4	2.9	2.4	2.3	1.5	1.0	1.2	
SP AusNet Gas[289] March 2013	Opex EGWWS			2.2	1.1	1.2	1.6	1.4	1.4
	Capex EGWWS			2.2	0.9	0.5	1.0	1.0	0.9
	Opex construct			1.5	0.5	1.1	1.4	1.1	1.2
	Capex construct			1.2	-0.1	0.2	0.5	0.3	0.7
Western Power Sep 2012[290]	Internal		1.9	1.5	2.2	2.4	2.0	2.0	

B.5 ATCO's qualitative approach

657. ATCO has not provided a detailed account of how it attributes the various factors it has considered in arriving at a flat 2% labour cost escalation rate above CPI. ATCO argues that it requires a competitive wages and salary adjustment to avoid costly vacancies and turnover and that it targets the midpoint of the market for common law contracts.

658. ATCO argues that it has been able to 'attract and retain quality talent by remaining up to date with market movements.'[291] However, ATCO has not recognised the productivity benefits of hiring quality personnel.

B.6 Assessment

659. We consider that the following are the key determinants of the forecast labour cost escalation for ATCO:

- The WA Treasury's May 2014 WA WPI forecast of 1.0-1.25% above CPI through to 2017/18
- The EGWSS sector wages are about 1% above the average sectorial increases
- The most recent AER determination in the EGWWS sector (January 2014) approved labour cost escalation of more than 2% through to 2016/17
- The most recent ERA determination in the EGWWS sector (September 2012) approved labour cost escalation forecasts of 2.0% or more through to 2016/17
- That the internal labour cost forecast are applicable to the ATCO opex labour forecast used in determining its AA4 expenditure forecasts

[286] AER Determination, AER, Final Decision, ElectraNet – Transmission determination 2013-14 to 2017-18, April 2013, Part 2, table 1.1

[287] AER Determination, AER, Final Decision, Envestra (Gas) Ltd – Final determination 2014-15 to 2016-17, March 2013, table A.1.

[288] AER Determination, AER, Final Decision, Powerlink – Transmission determination 2012/13 to 2016/17, April 2012, Attachment 1, table 1.1.

[289] AER Determination, Final Decision, SP AusNet – Gas determination 2013-2017, Part 1, March 2013, Section 7.2.2

[290] ERA, Final Decision on proposed revisions to the Access Arrangement for the Western Power network, September 2012

[291] ATCO AAI, *Section 6.6.1*

660. We consider that the following factors are secondary factors in determining a reasonable labour cost escalator for ATCO:

- ATCO's current wage agreement, which expires in December 2015, only 18 months into the AA4 period
- Other AER and ERA determinations (either pre-dating the latest EGWWS determinations or in other sectors) as we believe the most recent, relevant EGWWS represent the most up-to-date outlooks
- That private sector hourly wages are currently trending below public sector wages as this may not persist over the next five years.

661. Based on the above discussion, we consider that a reasonable forecast for ATCO's labour cost escalation is 2.0% above CPI for the AA4 period.

Appendix C Resumes

Paul Sell

Paul Sell is an energy economist, specialising in energy markets and market reforms. He has over 30 years' experience, which includes providing major advice on restructuring, on deregulation, on the design and implementation of electricity and gas markets and on network regulatory arrangements in Australasia. He has worked extensively with energy utilities, governments, energy regulators and energy market agencies.

Career summary

- Managing Director of Energy Market Consulting associates (EMCa), Sydney, NSW
- Vice President of Cap Gemini Ernst & Young, Global Services Unit (GSU), Sydney, NSW
- Partner of Ernst & Young Consulting, based in Sydney, NSW
- Consultant/Manager/Senior Manager/Principal of Ernst & Young Consulting , Wellington, New Zealand
- Economist in NZ Ministry of Energy, Planning and Forecasting Division Wellington, New Zealand

Expertise

- Electricity and gas utility network pricing, regulation and associated cost analysis
- Energy utility analyses including investment decisions and investment justification processes, energy forecasting and planning studies, and business modelling
- Electricity and gas wholesale markets design and operations
- Energy utility sector reform, restructuring and deregulation policies
- Retail competition in energy markets

Mark de Laeter

Mark de Laeter is an electrical engineer with 30 years' experience in all aspects of the electricity industry, ranging from executive to line management positions in Western Power, a Top 500 Australian company with over 5,000 personnel.

Mark has strong affinity with the needs and desires of customers and is able to bring his deep technical knowledge to bear to help safely and affordably serve customers of all types and sizes.

Mark joined EMCa in May 2013.

Career Summary (all at Western Power)

- General Manager Networks at Western Power, the government trading enterprise responsible for managing the distribution and transmission network in the south west of Western Australia.
- General Manager Customer Service which, in addition to his responsibilities as the GM Networks, included accountability for all service offerings to Western Power's 1m customers and for engineering design
- General Manager Asset Management – transmission & distribution
- Manager Asset Integration - responsible for transmission asset management, engineering design, and project management
- Manager Regional Power Procurement - securing Power Purchase Agreements with private generators
- Construction Services Manager – responsible for transmission substation and line construction and maintenance

Expertise

- Electricity transmission and distribution planning
- Electricity network access
- Asset management practices
- Project management
- Advanced metering infrastructure
- Electricity operations management
- Customer service and community engagement

Hugh Driver

Hugh Driver has a mechanical engineering background and has developed leadership, governance and management skills having been involved in lead roles in strategic development, corporate and operational risk, multi-million dollar construction projects, business operations and logistics, large change management processes and multi-million dollar divestment projects.

Hugh has experience across a range of technical and commercial roles in the corporate sector of New Zealand's energy and gas industries plus some time in Australia.

His most recent New Zealand corporate role was with Vector Gas Limited (formerly NGC New Zealand Ltd) as the Gas Transmission Asset Manager however he has in more recent times been working as an independent contractor/consultant involved in a variety of assignments including for Contact Energy and Powerco Gas.

Prior to the 6 years at Vector Gas, as an independent contractor, he also worked for all the New Zealand oil and gas companies. During the late 90's early 2000's he was based in Perth, as Facilities and Maintenance Manager for Kleenheat Gas with national engineering responsibilities which took him to all states in Australia not only associated with the LPG business but also tempered LPG distribution networks.

Other prior roles include a variety of commercial, operational and engineering management roles with BP New Zealand Limited plus mostly project engineering roles for MWD pipeline project and New Zealand electricity.

Katherine Lowe

Katherine Lowe is an economist with over 11 years' experience providing advice on economic regulation, pricing, third party access to essential facilities and competition issues. Over this period, Katherine has advised a variety of clients including:

- policy makers, rule makers, regulators and law firms;
- electricity networks, gas pipelines and other infrastructure owners; and
- upstream and downstream users of infrastructure.

Career summary

- ACCC (Final position EL1 Gas Group), 2002-2004.
- NERA Economic Consulting (Senior Consultant), 2005-2012
- K Lowe Consulting (Director), 2012-present

Expertise

- Economic regulation of gas pipelines, electricity networks, telecommunication networks, ports and below rail infrastructure.
- Pricing, third party access and competition issues arising in the gas, electricity, telecommunications, ports and rail sectors.
- Consumer related effects of time of use pricing, critical peak pricing and direct load control and requirements for effective network and generation price signals.
- Retail competition in electricity and gas markets.
- Operation of the eastern and Western Australian gas markets and the NEM.

Eddie Syadan

Eddie Syadan is a finance, economics and accounting specialist recently recruited from the WA government. He has had several years' experience undertaking detailed analysis and providing recommendations and reports related to complex budget and finance matters to senior management at an agency level in both the Queensland and Western Australian Governments. He has considerable experience in operational budget development, budget planning and budget forecasting as well as the development of financial plans and strategies.

Career summary

Eddie has managed the budgets of state government funding programs at the agency level in both Queensland and Western Australia. This included developing financial plans and strategies and preparing the annual financial reports, preparing budget submissions, including resource allocation, monitoring budget performance and forecasting. Eddie has assisted in the development of policies and programs to facilitate the development of regional economies and communities.

Expertise

- Undertaking detailed analysis, recommendations and reports related to complex budget and financial matters.
- Preparing budget submissions, monitoring budget performance and forecasting.
- Preparing reports, including financial and project reports.
- Analytical and problem-solving including activity-based costing analysis, cost benefit analysis and variance analysis.

Glossary

AA	Access Arrangement
AAI	Access Arrangement Information
AMP	Asset Management Plan
ALARP	As Low As Reasonably Practicable
BD	Business Development
Capex	Capital Expenditure
CEAR	Capital Expenditure Approval Request
COTS	Commercial off the shelf
EOL	End of Life
ERA	Economic Regulation Authority
EMCa	Energy Market Consulting associates
Economic value test	Test set out in rule 79(2)(a)
FSA	Formal Safety Assessment
GNIS	Geographical network information system
Incremental revenue test	Test set out in rule 79(2)(b)
IT	Information Technology
KPI	Key performance indicator
MIS	Management information system
NDV	Network data visualisation
NGL	National Gas Law
NGO	National Gas Objective
NGR	National Gas Rules
NPV	Net Present Value
Opex	Operating Expenditure

PV	Present Value
Prudent service provider test	Test set out in rules 79(1)(a) and 91(1) of the NGR.
RPP	Revenue and Pricing Principles
SAM	Strategic asset management
SAP	Enterprise management system
UAFG	Unaccounted For Gas
WAGN	WA Gas Networks