

16. New investment in existing pipelines

Summary of legislation

While the NGL maintains the amendments made earlier in 2006 to the Gas Access Regime which provide regulatory incentives for investment in greenfields pipeline projects (see Part 5 of the NGL), the NGL does not:

- deal with investment in existing pipeline infrastructure; and
- correct the deficiencies that exist in the Gas Code that act as a disincentive to expansions in existing pipelines.

Key Issues

Chapter 5 of the NGL carries across the scheme of incentives for greenfields/international pipelines which were introduced into the Gas Access Regime earlier in 2006. APIA welcomes the scheme and recognises that it is important for the proponents of new pipeline systems. However, in order to ensure that the forecast demand can be met in SE and SW Australia in the medium to long term, the NGL needs to provide incentives and certainty for investment in the expansion and extension of existing pipeline systems, particularly where the capital expenditure that is expected to be required will be significantly in excess of the expenditure required for new pipeline systems.

However, the NGL does not contain any provisions dealing expressly with new investment in existing pipelines (although it is noted that the national gas objective refers explicitly to the promotion of efficient investment in natural gas services).

While the NGR does contain provisions dealing with new investment in existing pipelines (both by way of extensions and expansions), these provisions:

- perpetuate the ambiguity that exists in the Gas Code, particularly in connection with the Anticipated Incremental Revenue test and the system wide benefits test in s. 8.16(a)(ii) of the Gas Code; and
- fail to provide the Service Provider with certainty about the regulatory treatment of investments in existing pipelines before the investment decision needs to be made.

Detailed comments

While APIA will provide further submissions in relation to the NGR as part of the public consultation process in connection with the NGR, it is noted that Rule 26(2) allows inclusion in the initial capital base of an existing pipeline of “conforming capital investment” made during the previous access arrangement period.

The term “conforming capital investment” means capital expenditure that complies with the new capital investment criteria, which are set out in Rule 27.

Rule 27 replicates much of ss. 8.16(a) and 8.17 of the Gas Code. In replicating these Gas Code provisions, Rule 27 perpetuates the way in which s. 8.16(a)(ii) discouraged new capital investment. This, and related problems with Rule 27, are discussed below.

Rule 27(2)(b)(i) perpetuates ambiguity

Rule 27(2)(b)(i) appears to carry forward the anticipated incremental revenue test of s. 8.16(a)(ii)(A) of the Gas Code. However, this is not entirely clear because the NGR provide none of the guidance that was provided in the Gas Code through the definition of anticipated incremental revenue (a definition which was not without ambiguity).

The Gas Code defined anticipated incremental revenue as the difference between the present value of incremental revenue and the present value of incremental non capital costs resulting from investment in new facilities. In accordance with s. 8.16(a)(ii)(A), this difference – a present value – was to be compared with the amount of the new investment. In circumstances where the new investment was forecast to be made over a number of years, at least one Australian regulator interpreted the Gas Code literally, insisting that the present value of the net revenue stream be compared with the sum of capital expenditures. Although this was incorrect, ambiguity in the Gas Code had the effect of making the investment less attractive than should have been the case, with the possible consequence that a significant part of the investment could not be rolled in to the capital base and recovered via reference tariffs.

The NGR also does not define certain terms which were defined in the Gas Code (eg. prevailing tariff).

Ambiguities of this type must be removed from the NGL and the NGR.

Rule 27(2)(b)(i) discourages new capital investment

New capital investment required to expand the capacity of a pipeline to provide services, or to extend the pipeline, must satisfy the criterion of Rule 27(2)(b)(i) before it can be added to the capital base.

If, as assumed, the criterion of Rule 27(2)(b)(i) is equivalent of the anticipated incremental revenue test of s. 8.16(a)(ii)(A) of the Gas Code, it is based on two critical assumptions:

- (a) the prices of the labour, materials and services required to expand pipeline capacity do not increase as capacity is expanded (that is, they do not increase relative to the prices implied in the establishment of the initial capital base, and relative to the prices at which the value of new facilities previously added to the capital base was determined); and

- (b) irrespective of whether the prices of the inputs to pipeline construction increase over time, average costs decline smoothly as the Service Provider invests in new facilities to expand capacity.

These are two of the assumptions required for the constant price which economic theory predicts should prevail in a perfectly competitive market in long run equilibrium.

Unfortunately, they are not always valid for gas transmission pipelines.

Relative price changes

If the prices of the labour, materials and services required for pipeline expansion are higher (in real terms) than the prices of those inputs implied in the first establishment of the capital base, and are higher (in real terms) than the prices at which the value of new facilities investment previously added to the capital base was determined, the prevailing regulated tariff (which is derived from average cost) is likely to be lower than the incremental cost of expansion. Investment in the expansion is, then, unlikely to satisfy the criterion of Rule 27(2)(b)(i).

Even if the new capital investment satisfies the criterion of Rule 27(2)(a), and the AER considers it to be investment of a kind that a prudent Service Provider might be expected to make, it will not be added to the capital base for subsequent recovery via regulated tariffs.

When the timing of expansion is such that the prices of labour, materials and services required for pipeline construction are high relative to the input prices implied in the capital base, the criterion of Rule 27(2)(b)(i) operates to discourage new capital investment required to expand the provision of pipeline services.

Average costs do not decline smoothly as capacity is expanded

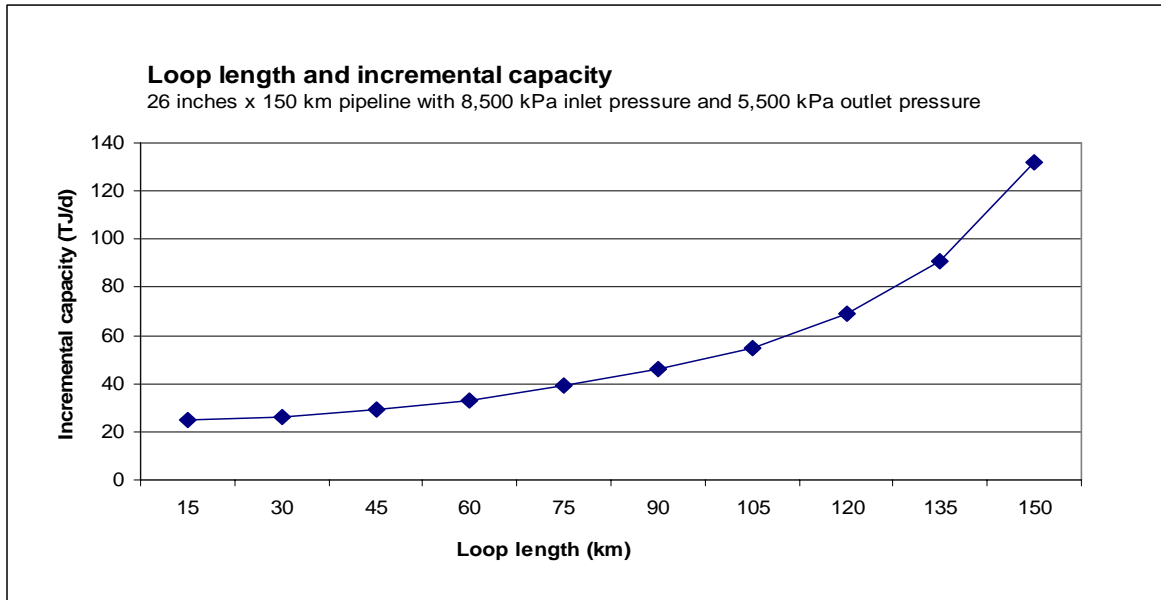
The second assumption underlying the criterion of Rule 27(2)(b)(i) – the assumption that average costs decline smoothly as pipeline capacity is expanded – is not valid because gas transmission pipeline systems usually use a mix of technologies – the pipe itself, and compressor plant – to provide the capacity to transport gas.

Typically, as user requirements for capacity increase, the additional capacity is provided – initially – by adding compressor units to a pipeline system.

Initially, additional compressor units provide relatively large increases in capacity. However, a point is reached at which the addition of compressors has little or no effect on the system's capacity (compression power reaches “saturation”). Before the point of saturation is reached, the Service Provider will examine the option of providing additional capacity by duplicating sections of its pipeline which are pressure – and, therefore, capacity – constrained. The Service Provider will consider switching its expansion technology from “compression” to “looping”.

When a pipeline is looped, the capacity increase per kilometre of loop is an increasing non linear function of the total length of looping. As loop length increases, the capacity per kilometre of loop increases more than proportionally to length of the loop.

This is illustrated in the following diagram. The diagram has been prepared using the results of capacity calculations for a 26 inches diameter pipeline, 150 km in length, with an inlet pressure of 8,500 kPa and an outlet pressure of 5,500 kPa. (These conditions approximate some of the conditions on the Dampier to Bunbury Natural Gas Pipeline in Western Australia.)



Non linearity in the relationship between the capacity provided by looping and loop length implies a high cost per unit of additional capacity when a pipeline is initially looped.

When looping is initiated, each section of loop line must be “tied in” at two points on the existing pipeline system, and the facilities required for operation of the loops – principally, instrumentation and control systems – must be installed. Existing facilities at compressor stations (not only the compressor units, but also scrubbers, aftercoolers, power generating equipment and station pipework), which are likely to have been installed at much earlier stages of expansion, and which are not able to accommodate the higher gas flows through the looped line, must also be upgraded. The costs of tie-in, of facilities required for loop operation, and of compressor station upgrading, are semi-fixed costs. They also contribute to a high cost per unit of additional capacity when a pipeline is initially looped.

Unless the switch to looping is a response to user requirements for a very large increase in capacity, it is likely to increase the average cost of providing pipeline service.

Once the switch from compression to looping has taken place, additional capacity can be provided (at least over a range determined by the configuration of the pipeline system at that time) by further looping, and by compression of the looped line. With the tie-ins and other infrastructure in place, further looping and compression has a lower incremental cost, lowering the average cost of providing gas transportation service.

For purely technological reasons – and not because the investment is inefficient – some pipeline expansions are “high cost” expansions, and will not satisfy the requirements of the criterion of Rule 27(2)(b)(i). Not all of the investment required for these “high cost” expansions can be added to the capital base and subsequently recovered via regulated tariffs. The criterion of Rule 27(2)(b)(i) thereby acts to discourage investment in the expansion of existing pipeline systems.

Consequences of failure to satisfy the criterion of Rule 27(2)(b)(i)

When a relative increase in the price of labour, materials or services required for pipeline expansion, or a switch from compression to looping, increases the new capital investment required to provide service above the maximum amount that would satisfy the criterion of Rule 27(2)(b)(i), either:

- (a) users using the additional capacity provided by the investment can be required to pay a surcharge (Rule 31); or
- (b) the Service Provider must defer (in accordance with the speculative investment account provisions of Rule 32) the return on, and of, that part of the investment which exceeds the amount that would satisfy the test.

Investments in transmission pipeline expansions are substantial, and it is not in the legitimate commercial interests of pipeline Service Providers to make investments in respect of which they must defer – possibly indefinitely – the earning of a return and investment recovery.

A pipeline Service Provider may, in accordance with Rule 31(2), be able to earn a return on, and of, that part of new capital investment which exceeds the maximum amount that would satisfy the criterion of Rule 27(2)(b)(i) if users of the additional capacity provided by the investment were required to pay a surcharge.

A surcharge is, however, likely to be unpalatable to those users requiring the capacity from the new capital investment because their costs are increased relative to those of their competitors.

This is clearly the case where a prospective user requires capacity to compete in an expanding downstream market, and its competitors in that market are existing users.

A surcharge on the existing users of the pipeline is also likely to be unacceptable to those users who have contracted on a certain basis.

The criterion of Rule 27(2)(b)(i) is, in these circumstances, likely to act as a significant barrier to increased competition in the gas market, particularly where markets are served by pipelines operating at full or near full capacity. Competition is restricted to competition from those users who, solely through the timing of their capacity requirements, are able to access “low cost” capacity. The NGR effectively allow these users to retain privileged positions in the markets they serve, by ensuring that they always benefit from reductions in the cost of pipeline service, but do not incur higher costs, even when their potential competitors must do so.

This asymmetric outcome is not the outcome that would be expected in a competitive market. In a competitive market, an increase in costs incurred by all suppliers would result in a higher market price payable by all buyers. A reduction in the costs incurred by all suppliers would lead to a lower market price payable by all buyers.

Appendix 3 uses, as a case example, the proposed expansion of the Dampier to Bunbury Natural Gas Pipeline (DBNGP) to demonstrate the problems with the new investment provisions relating to existing pipelines and the additional regulatory risk associated with making such investment decisions.

Recommendation

APIA proposes two alternative solutions to overcome the regulatory uncertainty facing new investment in existing pipelines:

1. Part 5 should apply to expansions of existing (or brownfields) pipelines as well as greenfields pipelines (it is noted that the ACCC did not disagree with this during the review conducted by the Productivity Commission and in its draft guidelines for greenfields pipelines).
2. Three changes need to be made to the NGL:
 - a. Provision needs to be made in the NGL to expressly provide that investments in existing pipelines that meet the specified test for inclusion in the capital base, are to be included in the capital base
 - b. The test for what investments can be included in the capital base needs to be limited to the efficiency test (currently in rule 27(2)(a)). The criteria that presently exists in Rule 27(2)(b) should be removed.
 - c. The uncertainty created by requiring that the AER, in administering Rule 27(2), speculate on future requirements for gas transportation capacity should be removed by removing Rule 27(3) from the NGR.