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Dear Mr Henry

Valuation of Queensland Electricity Distributors

The attached submission is made by AGL in response to the Authority's Discussion Paper on the above subject prepared by Sinclair Knight Merz.

If you wish to discuss the submission, or require further information, please contact Warwick Tudehope on telephone (02) 9922 8929.

Yours sincerely

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DORC valuation of the Queensland electricity distribution networks being undertaken for the Queensland Competition Authority

Submission in Response to the Authority's November 2003 Discussion Paper

1. Summary:

The Queensland Competition Authority (the Authority) is undertaking a Depreciated Optimised Replacement Cost (DORC) valuation of the Queensland electricity distribution networks and has invited submissions on a Discussion Paper prepared by Sinclair Knight Merz (SKM). This submission is made by The Australian Gas Light Company (AGL).

The calculation of a DORC value for an existing asset involves two principal steps:

- The establishment of an ORC value -- the cost of an optimised modern engineering equivalent system to replace the service potential of the existing asset; and
- The depreciation of the ORC to reflect the reduced remaining economic life and service potential of the existing asset.

This submission focuses on the second, depreciation, step.

Regulators and practitioners have conventionally performed the depreciation step by straight line adjustment of the ORC – DORC has been calculated by multiplying the ORC by the ratio of the remaining economic life of the existing asset to the economic life of the optimised replacement asset. However, there is now strong support for the view that straight line adjustment is inconsistent with the accepted economic meaning of DORC.

Firstly, in considering how the depreciation step should be performed, it is essential to establish what the DORC value represents and what it is seeking to measure. It is only when the conceptual basis for the DORC valuation is understood, that the calculation can have structure and the value itself can have meaning. As NERA have said:

“It is our view that in this [i.e. the Gas Code] (or any other) context DORC should be determined exclusively by reference to the economic principles underpinning it.”¹

In the absence of a conceptual basis, the value of DORC becomes arbitrary and lacks meaning. That is untenable given that the purpose of DORC is to reflect the economic value of the asset. For example, in the Gas Code, DORC defines the

¹ NERA 2002, p4

normal upper limit for the value of the initial capital base which is used for calculating regulated service prices.

The SKM Discussion Paper (SKM 2003) is deficient in that it does not present any discussion or statement of the conceptual underpinnings for the DORC valuation.

DORC is an economic concept and its calculation should be approached from that perspective. It is now becoming widely accepted that the Hypothetical New Entrant Construct (HNEC) provides the conceptual basis for DORC². The HNEC in turn defines the form that the depreciation step must take. Reputable economists now agree that the true economic value of DORC, i.e. a value that is consistent with the HNEC, requires that the depreciation step be approached as a forward-looking Net Present Value (NPV) calculation. Conversely, straight line adjustment of ORC is inconsistent with the HNEC and has no valid economic meaning. A value calculated by straight line adjustment of ORC cannot be considered a satisfactory proxy for the true economic value of DORC.

As the first step in the valuation, it is important that the Authority establish what the DORC value represents and is seeking to measure i.e. the conceptual basis and meaning for DORC. In AGL's submission, it is now widely accepted that DORC is defined by reference to the HNEC. We are not aware of any alternative conceptual basis that has any currency.

Once the conceptual basis for the valuation is established, the DORC value must be calculated in a manner that is consistent with those principles. In particular, to be consistent with the HNEC, the depreciation step must be formulated as a forward-looking NPV calculation. The preferred formulation is as follows:

$$\text{DORC} = \text{NPV}(R_{\text{New},n}) - \text{NPV}(O \& M_{\text{Old}})$$

where $\text{NPV}(O\&M_{\text{Old}})$ is the NPV of forecast O&M costs for the existing asset for the remainder of its life, and $\text{NPV}(R_{\text{New},n})$ is the NPV of the Hypothetical New Entrant's (HNE's) revenue requirement over the first "n" years of the ORC asset's life, where "n" is the remaining life of the existing (DORC) asset.

² In essence, the HNEC casts DORC as the maximum amount that a Hypothetical New Entrant would be prepared to pay for the existing asset, given the alternative of constructing a new asset to replicate the service potential of the existing asset. If the existing asset were valued any higher than the DORC calculated in this manner, and services priced accordingly, system-wide bypass would become feasible.

2. The conceptual underpinnings of DORC – the Hypothetical New Entrant Construct

NERA have stated that “[in the context of the Gas Code] (or any other) context DORC should be determined exclusively by reference to the economic principles underpinning it.”³ The economic principles embodied in the Hypothetical New Entrant Construct (HNEC) are now widely accepted as the conceptual basis for DORC.

2.1. *The position of the ACCC:*

The ACCC, in its 1999 Draft Statement of Principles for the Regulation of [Electricity] Transmission Revenues ("DRP") describes DORC by reference to the HNEC as follows:

"This potential circularity is eliminated by the use of DORC. The DORC of a network is the sum of the depreciated replacement cost of the assets that would be used if the system were notionally reconfigured so as to minimise the forward looking costs of service delivery. There are two definitions of what DORC attempts to measure:

- One interpretation of DORC is that it is the valuation methodology that would be consistent with the price charged by an efficient new entrant into an industry, and so it is consistent with the price that would prevail in the industry in long run equilibrium.
- The second interpretation is that it is the price that a firm with a certain service requirement would pay for existing assets in preference to replicating the assets."⁴

and

"Finally, another justification for DORC setting the upper limit to valuations comes from what a DORC valuation actually is attempting to measure. This is the maximum price that a firm would be prepared to pay for ‘second-hand’ assets with their remaining service potential, higher operating costs, and (old) technology - given the alternative of installing new assets which embody the latest technology, and which generally have lower operating costs, and which will have a greater remaining service potential. Therefore, if prices reflect a value that is in excess of DORC, then users would be better off if the existing system were scrapped and replaced by new assets. Similarly, if assets are sold for prices above the DORC valuation, then this implies that scarce investment funds are being inefficiently applied: in this case, it would have been a more efficient use of investment funds for the existing assets to be scrapped and a duplicate system installed."⁵

³ op. cit.

⁴ ACCC 1999, p39

⁵ ibid. p40

The ACCC refers again to that meaning of DORC in its current review of the DRP:

"The DRP states that the underlying economic concept for DORC is that the DORC-based tariffs mimic the discipline of an efficient market. More specifically, DORC is held out as the upper limit of the regulated asset base (RAB), above which a new entrant would be attracted, and is therefore the asset base on which a profit maximising asset owner would fix tariffs in a contestable market."⁶

The ACCC has adopted this same meaning in other regulatory contexts and in particular, in its various decisions under the Gas Code including the Victorian gas transmission system (1998); the Amadeus Basin to Darwin Pipeline (2002); and the Moomba Sydney Pipeline system (MSP) (draft decision December 2000 and final decision October 2003). For example, in the MSP final decision, the ACCC states that:

"A valuation based on DORC, which represents the forward-looking efficient costs of delivering services, would be consistent with section 8.1(b) of the Code. In theory, prices based on DORC represent the maximum that would be observed in a competitive market. Prices in excess of DORC would result in customers by-passing the incumbent in favour of a new entrant."⁷

Moreover, in the same decision the ACCC recognises that the "true economic value of DORC"⁸ is a value calculated by reference to the HNEC.

2.2. The positions of economists:

Reputable economists define DORC by reference to the HNEC.

A. National Economic Research Associates (NERA):

"... the asset valuation methodology consistent with the hypothetical new entrant test is ODRC."⁹

or, conversely, DORC is defined by reference to the hypothetical new entrant test, which is described as follows:

"A *hypothetical new entrant test* assesses an incumbent firm's price(s) against the maximum price(s) it could charge without encouraging entry into the market *if it were subject to the threat of competitive entry*. The hypothetical new entrant test asks "are prices at a level that would encourage new firms to enter the market if entry and exit were not restricted?". If this is the case, the incumbent may be exercising market power. In the case of a business with the scale-economy features of a natural monopoly, a hypothetical new entrant test presumes that customers can form a coalition to purchase services from

⁶ ACCC 2003a, p16
⁷ ACCC 2003b, p68
⁸ ACCC 2003, p46
⁹ NERA 2003, p8

the new entrant as a group (without this assumption, scale economies can pose an entry barrier). In this case, the hypothetical new entrant test asks: what is the maximum price consumers would be willing to pay an existing infrastructure owner if they had the hypothetical option to overcome transaction costs and negotiate as a coalition with a new entrant to provide substitute services? By assuming away the barriers to consumers acting as a unified coalition, the hypothetical new entrant test (hypothetically) removes market power from incumbent producers."¹⁰

and

"ODRC represents the maximum asset value consistent with the long-term prices a hypothetical new entrant would need to charge in order to serve the relevant market."¹¹

In addition NERA conclude that DORC should be applied independently of asset type:

"In our view, there is no rationale for treating easements any differently from other assets necessary for the provision of a gas transport service. The concepts of historical cost and ODRC, and their economic or institutional underpinnings, are invariant to the nature of infrastructure assets. There is no economic or legal case to treat the valuation of land or easement assets any differently from other types of system fixed assets. In principle, they can be subjected to the same 'optimisation' or 'used and useful' test that might be applied to any other asset."¹²

Note that this final view of NERA is also relevant to the valuation being undertaken by the Authority.

B. The Allen Consulting Group (ACG):

In the context of the ACCC's current review of the DRP, ACG refer to DORC as follows:

"A straightforward implication is that the ODRC value provides an estimate of the value that existing assets (that is, those that are inputs to production) would have in a market where the price was set at the level consistent with the price that would be charged by a hypothetical (efficient) new entrant (that is, assuming a perfectly contestable market). The logic for this is follows.

- The hypothetical (efficient) new entrant would be expected to set a price that recovered – over the life of its asset – the cost of providing the service with the new, optimum asset (including a competitive, or normal, return on its investment).

¹⁰ ibid., p8

¹¹ ibid., p16

¹² ibid., p27

- Taking this price as given, the value of the existing asset would be given by its discounted future cash flows – which must deliver a value equal to the cost of the new, optimum asset, but adjusted for any differences in the forward-looking costs and/or service potential associated with the existing asset compared to and new, optimum asset."¹³

2.3. The position of SKM:

SKM (in SKM 2002a, b, and c) have also acknowledged the relevance of the HNEC. For example:

"The ODRC model is a model for establishing a value for a monopoly asset based on a simulated scenario where new entrants are considering whether to bypass the asset in question with their own asset. The replacement asset is assumed to be constructed of modern engineering equivalent materials etc, and where the design of the replacement asset is optimised in its configuration (with fixed source and load points) and design."¹⁴

and:

"The ODRC method is a method of estimating the top price in this wide, grey band [between short run marginal cost of the existing asset and the long run marginal cost of a new entrant] – the cost of a new entrant competitor bypassing the asset in question."¹⁵

2.4. Conceptual Basis – Conclusion:

The HNEC provides the accepted conceptual basis for DORC. There is no alternative conceptual basis that has any currency.

¹³ ACG 2003, p21
¹⁴ SKM 2002a, p3
¹⁵ *ibid.*, p7

3. The construction of DORC from ORC – the depreciation step

3.1. *Past practice has involved straight line adjustment of the ORC:*

As we observe above, SKM acknowledge the relevance of the HNEC in several reports. Despite this, SKM express reservations about its implementation:

"We do not see the DORC as a slavish implementation of a new entrant bypass costing analysis but suggest instead that this model provides an indication of the historical and economic roots of the ODRC model and can be used to provide guidance in the event of procedural uncertainties in the DORC method."¹⁶

SKM cite a number of considerations which they suggest make "slavish implementation" of the HNEC inappropriate, including:

- the point of reference for the calculation -- whether it is "greenfield" or "brownfield";
- the treatment of easements; and
- inconsistencies that may arise where the hypothetical bypass technology may differ from and be more expensive than, existing technology e.g. where an above ground existing asset would be bypassed underground.

It is noteworthy that these concerns have no relationship to the principles of the depreciation step where SKM have chosen to eschew the consequences of the HNEC, simply on the grounds that the result would be inconsistent with past practice:

"We see depreciation (specifically the depreciation within DORC, not going-forward depreciation) as one area where there might be differences between a strict interpretation of the 'new entrant model' and the procedure used in DORC. We have suggested the straight line depreciation regime is appropriate for the DORC algorithm as this is consistent with previous gas and electricity DORC assessments that we are familiar with (including the Victorian gas access arrangements which seem to be the reference case for gas in Australia)."¹⁷

As SKM observe (SKM 2003, p17), the ACCC has also proposed straight line depreciation of the ORC in the context of its current review of the DRP. The ACCC's Discussion Paper contains the following discussion under the heading "Depreciation [of ORC]":

"The Commission has traditionally adopted DORC as the Optimised Replacement Cost (ORC) multiplied by the ratio of the existing TNSP's assets remaining useful life over the useful life of a new asset. The way in which depreciation is handled is of great importance, particularly in regard to any

¹⁶ SKM 2002b, p6

¹⁷ *ibid.*, p6

incorporation of accelerated depreciation either due to technological obsolescence or due to stranding (i.e. economic obsolescence). The depreciation profile chosen will have an impact on the DORC valuation. For example, a front-loaded profile would result in a higher DORC valuation whereas an escalating profile would result in a lower DORC valuation.

The Commission always has the discretion to adopt an annuity depreciation scheme which can respond to the associated pricing changes in replacement cost taking account of general price increases and technological change in a manner which mimics competitive market behaviour. However, the Commission's initial view is that factors such as technological change do not have major impacts in the electricity industry. Therefore, a straight-line approach for the electricity industry is easier to implement and gives rise to clearer incentives for efficient investment than alternatives such as annuity depreciation."¹⁸

In the case of the MSP, the ACCC has:

"used straight line depreciation to determine a value for DORC, which could be considered a proxy for the true economic value of DORC."¹⁹

NERA have also suggested, without any apparent argument or justification, that straight line depreciation may be appropriate:

"A preliminary conclusion from [NERA's modelling] is that the Commission's straight-line depreciation approach may be more consistent with the characteristics of gas pipelines than Agility's proposed methodology."²⁰

These qualified arguments for use of the straight line adjustment are, at best, equivocal and, when analysed, can be shown to be unsupportable.

3.2. The correct approach to the depreciation step:

The position of reputable economists is clear. Taking the HNEC as the conceptual foundation for the valuation, NERA, despite the preliminary conclusion referred to above, and ACG, both formulate DORC as a NPV calculation:

1. NERA²¹ define DORC as follows:

$$\text{DORC} + \text{NPV}(\text{Capex}_{\text{Old}}) + \text{NPV}(\text{O \& M}_{\text{Old}}) = \text{NPV}(\text{Capex}_{\text{New}}) + \text{NPV}(\text{O \& M}_{\text{New}})$$

where DORC is the balancing item.

¹⁸ ACCC 2003a, p29

¹⁹ ACCC 2003b, p46

²⁰ NERA 2002, p4

²¹ *ibid.*, p7

2. ACG²² adopt the following formulation:

$$ODRC_0 = ORC_0 - \sum_{t=1} \frac{Serv_{New,t} - Serv_{Existing,t}}{(1+r)^t} - \sum \frac{Cost_{Existing,t} - Cost_{New,t}}{(1+r)^t}$$

It can be shown very simply²³ that both these formulations reduce to:

$$DORC = NPV(R_{New,n}) - NPV(O \& M_{Old})$$

where NPV(O&M_{Old}) is the NPV of forecast O&M costs for the existing asset for the remainder of its life, and NPV(R_{New,n}) is the NPV of the Hypothetical New Entrant (HNE's) revenue requirement over the first "n" years of the ORC asset's life, and "n" is the remaining life of the existing (DORC) asset²⁴. This is the NPV DORC formulation first propounded in a submission by Agility to the ACCC in 2000 (Agility 2000).

The calculation of a DORC value that is consistent with the HNEC involves factors relating to the existing (DORC) and initial hypothetical replacement (ORC) investments alone -- it is unnecessary to consider subsequent renewal investments over the life of the market, as argued by NERA.²⁵ It follows that the difficulties and uncertainties associated with long term estimation of the timing and costs of renewal and replacement investments, which the ACCC cites as its principal reason for adopting straight line depreciation as a proxy value in the MSP final decision (ACCC 2003b, pp42-46), do not arise in the NPV DORC calculation.

Professor Stephen King concludes that:

“... if the economic justification for using DORC is that it either mimics a contestable market, is a maximum value to prevent system-wide bypass, or reflects the maximum price that a new operator would be willing to pay for the existing assets, then only one form of adjustment of ORC to DORC is consistent with each and every one of these interpretations. That adjustment is the one derived above. The basic result is that ORC is transformed into DORC by annualizing the ORC over the new asset lifetime and taking the net

²² ACG 2003, p22

²³ The only assumption required is that each investment (or re-investment) will satisfy the competitive market expectation that:

$$NPV(\text{Revenue}) - NPV(\text{Costs}) = 0$$

i.e. revenues and costs are matched, where costs include capital costs which include DORC (or ORC) in the current context.

²⁴ The HNE will establish a revenue path such that the cost of the HNE's initial replacement (ORC) asset will be recovered over its life for a NPV of zero. It is reasonable to assume that the HNE's revenue requirement will follow a rational profile e.g. based on competition depreciation or straight line depreciation, and will reflect the lower operating costs of the hypothetical new (ORC) asset.

²⁵ Apart from the requirement for whole-of-market-life cost forecasts, the value resulting from the NERA formulation can also be affected by inclusion of costs that could never be justified rationally. For example, mechanistic application of the formulation could lead to the inclusion of costs for a second or later generation replacement asset that is built for as little as one year's service. The value of DORC would be distorted as a consequence. These problems do not arise in the Agility formulation.

present value of this annual flow over the life-time of the existing assets. No other form of adjustment of ORC to DORC is consistent with the economic justification for DORC.”²⁶

“[the straight line adjustment of ORC] is not consistent ... with the contestability or new entrant justifications used by the regulators for DORC. In this sense, the use of a straight line adjustment to convert ORC to DORC is arbitrary and appears to lack any economic justification.”²⁷ and

“the straight-line adjustment to transform ORC to DORC adopted by the ACCC in the Draft Decision on EAPL is clearly inconsistent with the Commission’s stated economic underpinnings and justification of DORC.”²⁸

In addition, ACG state that:

“... the appropriate rate of depreciation is not a simple scaling down of the value to reflect the expired portion of the asset’s life”²⁹; and

“Regarding the *depreciation step*, the common method for depreciating the ORC value has been to use standard financial accounting approaches, that is, to scale down the cost of the new asset to take account of the expired age of the asset in place. This contrasts with the required adjustment, which is to adjust the ORC value upwards or downwards to reflect the difference between the forward-looking cost of continuing to run the old and new asset, and upwards or downwards to reflect the difference between the service potential of the old and new asset.” (Emphasis added)³⁰

Finally, the ACCC in employing the straight line adjustment, has recognised that the resulting value is not the true economic value of DORC, stating that the value “can be considered a proxy for the true economic value of DORC”³¹. However, as we show in section 4 below, the NPV DORC value consistent with the HNEC and the straight line value are fundamentally different – the one cannot be regarded as a proxy for the other.

3.3. The position of SKM:

SKM accept that the NPV DORC approach is consistent with the HNEC:

“Firstly, there is nothing evidently wrong in itself with the method [proposed by Agility and] discussed by Professor King in finding a value for an asset that represents the value at any point in time that a potential new entrant might offer for the existing asset versus building his alternative new asset, and the method correctly adjusts for the difference in life of the existing asset and the

²⁶ King 2001, p10
²⁷ King 2001, p11
²⁸ *ibid.*, p12
²⁹ ACG 2003, p22
³⁰ *ibid.*, p26
³¹ ACCC 2003b, p46

replacement using an accepted methodology for comparing projects of unequal lives.”³²

Despite this, as noted in section 3.1 above, SKM dismissed the NPV DORC methodology in favour of a straight line adjustment in the context of the Gas Code, simply on the grounds that it does not accord with past practice.

In a more recent report for the ACCC (SKM 2002c), SKM have apparently adopted the ACCC's "competition depreciation" methodology (which is consistent with the NPV DORC methodology) without any discussion of alternative approaches. Then, in SKM's current Discussion Paper (SKM 2003), several depreciation approaches are canvassed in section 2.11. However, the discussion lacks context and direction because SKM have not enunciated the conceptual principles of DORC.

At the very least, SKM's position on depreciation of the ORC appears to have been inconsistent over time or between gas and electricity.

3.4. The Depreciation Step – Conclusion:

The form of the depreciation step follows from, and must be consistent with, the conceptual basis of DORC. There is clear recognition that, to be consistent with the HNEC, the depreciation step must be formulated as a NPV calculation. The alternative NPV formulations proposed by NERA and ACG reduce to the Agility formulation which is supported by Professor King as giving effect to the HNEC i.e.:

$$\text{DORC} = \text{NPV}(R_{\text{New},n}) - \text{NPV}(O \& M_{\text{Old}})$$

SKM acknowledge the HNEC as the reference point for DORC:

“... [the HNEC] provides an indication of the historical and economic roots of the ODRC model and can be used to provide guidance in the event of procedural uncertainties in the DORC method.”³³

To the extent that SKM have any remaining doubts as to how the depreciation step should be performed, they can be characterised as "procedural uncertainties in the DORC method" which, in SKM's own terms, should be resolved by reference to the HNEC. The relevant method is the “[Agility] method discussed by Professor King” which SKM have accepted.

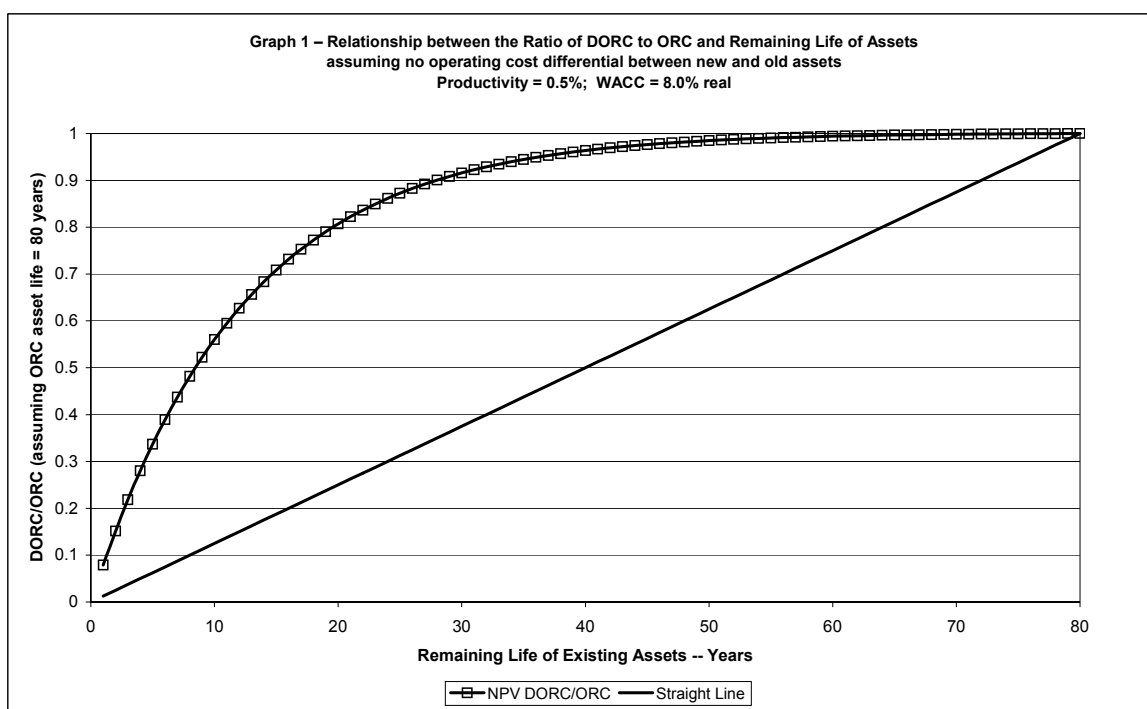
³² SKM 2002a, p13

³³ SKM 2002b, p6

4. The relationship between a DORC value that is consistent with the HNEC and the value calculated by straight line adjustment of the ORC

The relationship between a DORC value that is consistent with the HNEC and the value calculated by straight line adjustment of the ORC is illustrated in the following two graphs:

Graph 1: Relationship between the Ratio of DORC to ORC and Remaining Life of Assets

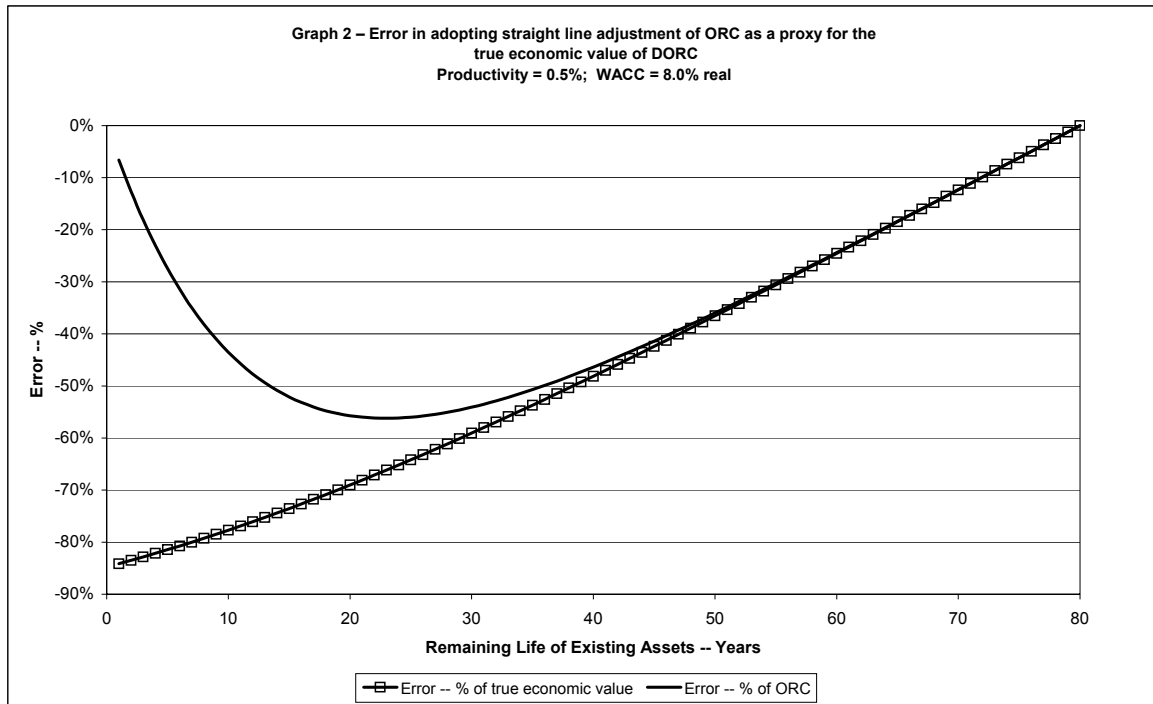


Note that the NPV DORC curve in the graph above is based on the assumption that the HNE would adopt "competition depreciation" i.e. tilted annuity depreciation, as the basis for setting its tariffs. It would be equally rational for the HNE to adopt some other depreciation profile such as straight line in setting tariffs. In the case of straight line, the NPV DORC line would be slightly higher than the NPV DORC curve shown above in all years.³⁴

³⁴

This observation highlights an important technical point in applying the methodology. That is that the depreciation profile assumed for the HNE is reflected in the NPV calculation, and hence in the value of DORC, through the HNE's revenue requirement: it is inconsistent with the NPV DORC methodology to apply the depreciation profile assumed for the HNE directly to the ORC value. As Professor King notes, the methodology can be used to "... value any consistent set of revenues. However, most of these streams of revenue will have no economic meaning." (King, p22). Professor King goes on to provide the formulation for straight line depreciation. Straight line adjustment of the ORC is not consistent with the HNEC, even when straight line depreciation may be appropriate for tariff setting.

Graph 2: Error in adopting straight line adjustment of ORC as a proxy for the True Economic Value of DORC



An analysis of the two approaches reveals the following:

1. It can be shown that the NPV approach coincides with straight line adjustment of the ORC only when the investor is indifferent between spending money now and in the future. Setting aside the effect of differences between the operating costs of new and old assets, this will occur only in the extremely unlikely event that the rate of technological change is negative (i.e. technology is regressing) and equal in magnitude to the real value of WACC. Given this result, NERA's "preliminary conclusion ... that the Commission's straight-line depreciation approach may be more consistent with the characteristics of gas pipelines than Agility's proposed methodology." (NERA 2002, p4), would appear to be unsustainable.
2. The fact that rates of technological change might be low (but presumably positive) cannot be used as a justification for straight-line adjustment of the ORC as suggested by the ACCC (ACCC 2003a, p29).
3. Except when the existing asset is essentially new, the differences between the true economic value of DORC that is consistent with the HNEC and the straight line value are such that the latter cannot be regarded as a proxy for the former as the ACCC has done (ACCC 2003b, p46) and SKM imply by endorsing the straight line adjustment. The straight line value and NPV DORC are fundamentally different values.

5. Conclusion

DORC should be determined exclusively by reference to the economic principles that underpin it. In the absence of a conceptual basis, DORC has no meaning and could take any value. That would be untenable.

As a first step in the valuation process, it is important that the Authority establish what the DORC value represents and is seeking to measure i.e. the conceptual basis and meaning for DORC. AGL submits that the HNEC provides the correct and accepted conceptual basis for DORC. The depreciation step in the DORC calculation must then be performed in the manner that is consistent with the HNEC – it is meaningless and intellectually unsustainable to establish a conceptual basis for DORC and then not apply it. The preferred formulation is as follows:

$$\text{DORC} = \text{NPV}(R_{\text{New},n}) - \text{NPV}(O \& M_{\text{Old}})$$

where $\text{NPV}(O \& M_{\text{Old}})$ is the NPV of forecast O&M costs for the existing asset for the remainder of its life, and $\text{NPV}(R_{\text{New},n})$ is the NPV of the Hypothetical New Entrant's (HNE's) revenue requirement over the first "n" years of the ORC asset's life, where "n" is the remaining life of the existing (DORC) asset.

Whereas the NPV DORC is the product of a coherent and consistent conceptual foundation, straight line adjustment of the ORC has no economic meaning or justification. In particular, the straight line value does not have the attributes generally associated with DORC: it cannot be rationalised as a maximum value, or as a value above which bypass would occur.

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