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Dr Duc Vo
Rate of Return Guidelines Review
Economic Regulation Authority
PO Box 8469
PERTH BC
WA 6849

28 February 2013

Dear Dr Vo

Rate of Return guideline Review – Submission on the Consultation Paper

ATCO Gas Australia Pty Ltd (ATCO) welcomes the opportunity to make a submission in response to the Economic Regulation Authority's (ERA) initial consultation paper on the rate of return guidelines under the recently amended rule 87 of the National Gas Rules (NGR).

ATCO owns and operates the Mid West and South West Gas Distribution System, (MWSWGDS) which is a covered distribution pipeline in Western Australia, serving an area from Geraldton to Busselton (including the greater Perth metropolitan area) together with two non covered gas distribution systems in the regional centres of Kalgoorlie and Albany.

The ATCO Group invested in the MWSWGDS in 2011. The decision to invest in Australian assets was based on a variety of factors, not the least of which was the stability of the rate of return climate in Western Australia.

ATCO welcomes the clarity of intent related to the determination of the rate of return provided by the amendments made to rule 87 of the NGR as a result of the Australian Energy Market Commission's (AEMC) decision in November 2012. ATCO is keen to see this clarity reflected in the rate of return guidelines developed by the ERA.

ATCO attaches three documents to the ERA's consultation process; a submission in response to the ERA's consultation paper; a paper by Dr Jeff Makholm, Senior Vice President of the National Economic Research Associates in Boston, Massachusetts in the USA, titled *"The Source of the Fair Rate of Return for Investor-Owned Utilities in North*

America: the Applicability of those Methods for Jurisdictions in Australia"; and a letter from Mr. Brian Bale, Senior Vice President and Chief Financial Officer of ATCO Group Ltd.

ATCO believes all three documents will contribute significantly to the consultation process on the rate of return guidelines and welcomes any questions or comments the ERA may have in respect of these papers.

ATCO notes on page 4 of the ERA's consultation paper, that there is a stakeholder workshop on the rate of return guidelines proposed for April/ May 2013. ATCO is supportive of a workshop and is looking forward to attending.

Should you have any questions or comments on any of the matters discussed in this letter please contact Mrs Deborah Evans, on 6218 1722 or 0414 946 112.

Yours sincerely

Brian Hahn
President

Att: Submission on Rate of Return Guidelines
Dr Jeff Makholm Paper
ATCO Group Letter 26 February 2013

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Response to ERA consultation paper on rate of return guidelines

1. Introduction

Rule 87 of the National Gas Rules (NGR) governs determination of the rate of return to be used in setting the total revenue and reference tariffs for regulated gas pipeline systems. Changes to Rule 87, made by the Australian Energy Market Commission (AEMC) in response to rule change requests from the Australian Energy Regulator (AER) and the Energy Users Rule Change Committee, came into effect on 29 November 2012.

The rules which came into effect on 29 November 2012 were a major change to the NGR. Rule 87 previously comprised just two subrules. Rate of return determination is now governed by some 19 subrules (and two new related rules, 9B, the rate of return consultative procedure, and 87A, which requires estimation of the cost of corporate income tax consistent with the rate of return measure required by rule 87).

More importantly, rule 87 now sets out an approach to rate of return determination which is different from the approach previously taken by both service providers and regulators. The new rule calls for examination of the evidence from relevant financial models and estimation methods, and from financial markets, and for the weighing of that evidence to arrive at a rate of return which meets an explicit allowed rate of return objective.

Previous practice in rate of return determination, even if it is reviewed and refined, cannot produce the allowed rate of return now required by rule 87.

1.1 Rate of return guidelines

Rule 87(13) requires that the regulator – in Western Australia, the Economic Regulation Authority (ERA) – make, and periodically review, rate of return guidelines (Guidelines) following the rate of return consultative procedure in rule 9B.

The Guidelines are to set out:

(a) the methodologies that the regulator proposes to use in estimating the allowed rate of return (rule 87(14)(a));

(b) the application of those methodologies in the determination of a return on equity and a return on debt in a way that is consistent with the allowed rate of return objective (rule 87(14)(a)); and

(c) the financial models, estimation methods, market data and other evidence the regulator proposes to take into account in estimating the return on equity, the return on debt and the value of imputation credits (rule 87(14(b)).

In accordance with the requirements of the rate of return consultative procedure, the ERA issued a consultation paper, *Guidelines for the Rate of Return for Gas Transmission and Distribution Networks* (Consultation Paper) on 21 December 2012. The Consultation Paper advances a comprehensive view of (new) rule 87, and of the way in which the rule might be implemented through the Guidelines, and in decision making on individual access arrangement proposals. Some 59 specific questions about the rate of return determination process are raised in the Consultation Paper, and the ERA has invited submissions on the issues they address.

1.2 ATCO's response to the Consultation Paper

ATCO Gas Australia (ATCO) owns and operates the Mid-West and South West Gas Distribution Systems in Western Australia. ATCO's Canadian parent owns and operates major regulated natural gas and electricity distribution and transmission utilities in Canada.

Rate of return determination is important to ATCO, and we appreciate the opportunity to contribute to the process which the ERA has initiated.

During the process through which rule 87 was amended, we met with the AEMC and made written submissions on the rule change requests, on the AEMC's draft determination and on transitional arrangements.

The financial models, estimation methods, market data and other evidence which are now to be taken into account in estimating the rate of return on equity, the rate of return on debt and the value of imputation credits are all relatively easily identified.

While the following list is not exhaustive, the financial models which might be used for estimation of the rate of return on equity include:

(a) discounted cash flow (dividend growth) models;

(b) risk premium models (which estimate the rate of return on equity as a base rate of return plus a risk premium);

(c) the (Sharpe-Lintner) Capital Asset Pricing Model (CAPM);

(d) Black's capital asset pricing model;

(e) the Fama-French three factor model;

(f) arbitrage pricing models; and

(g) the consumption capital asset pricing model.

Estimation of the rate of return on debt usually proceeds from a risk premium model in which the cost of debt is estimated as the sum of a base rate of return (which may be a risk free rate) and a debt risk premium. There is much debate about the way in which the risk premium is to be estimated.

Other evidence which ATCO would expect to see used in informing rate of return determination includes:

(a) current equity returns for comparable entities;

(b) rates at which debt has recently been obtained by comparable entities; and

(c) the views of investment banker and other advisors on expected rates of return on equity and expected rates of return on debt.

In choosing among financial models and estimation methods, and among the data and other evidence, regard must be had to the requirements of rule 87 and, in particular, to its requirements for:

(a) relevance (rule 87(5)(a));

(b) consistency (rule 87(5)(b); and

(c) recognition of interrelationships (rule 87(5)(c)).

ATCO sees the critical issues for the Guidelines as being, in these circumstances:

(a) identification of the financial models, estimation methods, market data and other evidence that will be used; and

(b) the way in which the ERA intends to weigh the evidence from the models, methods and data so as arrive at a rate of return which achieves the allowed rate of return objective of rule 87(3).

ATCO is concerned that the criteria proposed in the Consultation Paper, and the approach implicit in many of the Consultation Paper's questions, do not address these critical issues. This is not consistent with the requirements of rule 87, and does not reflect the intentions of the AEMC when it amended the NGR.

We have found returning to the AEMC's intentions, as they were explained in the Rule Determination issued at the time of amendment of rule 87, helpful when considering the issues raised in the Consultation Paper.[1] These intentions will also inform the ACT's or a court's interpretation of rule 87. In section 2 of this submission we set out our understanding of those intentions.

In subsequent sections of the submission ATCO:

(a) examines the issue of whether it is reasonable to consider criteria when evaluating alternative rate of return methodologies (section 3);

(b) shows how appropriate criteria for rate of return determination are already set out in rule 87 itself, eliminating the need for extraneous criteria which lie outside the regulatory regime (section 4);

(c) responds to the Consultation Paper's questions concerning the valuation of imputation credits (section 5); and

(d) concludes with views on the form of the Guidelines which are now to be made and published by the ERA in accordance with rule 87(13) (section 6).

1.3 NERA's advice on the North American experience

ATCO welcomes the Consultation Paper's consideration of regulatory practices in other countries. To assist the ERA in this area, ATCO commissioned Dr Jeff Makholm of NERA to describe North American regulatory practice across over 50 regulatory jurisdictions.

Dr Makholm's paper is in two parts. The directly relevant material appears in sections 4 and 5. There, Dr Makholm describes the evolution of robust methods for estimating the rate of return on equity which use relevant market data. These methods have evolved as utility regulators and regulated utilities, in both Canada and the United States, have responded to court decisions which established the opportunity cost of capital as the standard by which utility returns should be judged.

[1] Australian Energy Market Commission, *Rule Determination, National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012, National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012,* 29 November 2012 (Rule Determination).

The earlier part of Dr Makholm's paper demonstrates that the North American experience is both relevant and applicable to the ERA's task under the NGL. Although there are differences in detail and terminology, Dr Makholm describes a mature regime in which transparent judicial and administrative processes hold independent regulators closely accountable to apply well articulated and stable rules, in a way which continues to attract stable investment in the long term interests of consumers. ATCO submits that it is appropriate for the ERA to give due consideration to the decisions of regulators operating within such a regime. Dr Makholm also describes the evolution of the "fair return" concept in both Canada and the United States. This concept is not directly applicable to the NGL, but in ATCO's view it is conceptually very similar to the NGR's "allowed rate or return", despite some differences in the detailed wording. In ATCO's view the similarity is sufficient for the ERA to appropriately consider the models, methodologies and data used by North American regulators in determining "fair return", for inclusion in the ERA's own suite of models, methodologies and data for determining the allowed rate of return. Dr Makholm also sees the North American experience as being relevant to, and capable of directly informing, Australian regulatory decision making.

2. The AEMC's rationale for rule change

In its Rule Determination the AEMC advised that a simple formulaic approach to rate of return determination had been set out in Chapter 6A of the National Electricity Rules (NER), while a more flexible framework had been included in the NGR.[2] The original rate of return framework of the NGR, the AEMC contended, had been better aligned with achieving the national gas objective (NGO) of section 23 of the NGL and the revenue and pricing principles (RPP) of section 24. This was not because rule 87(2) prescribed a superior estimation process. It was because rule 87(1) specified an overall objective for the rate of return that directly aligned with achieving the NGO and the RPP.

However, the AEMC found that the greater flexibility available in the framework of the NGR had not been used. Rate of return decision making under the NGR had become influenced by the inflexible approach of Chapter 6A of the NER, and this had been reinforced by recent decisions of the Australian Competition Tribunal (ACT).[3] The ACT had interpreted rule 87 in a way that reduced the range of information which could be taken into account in determining the rate of return.[4]

In its decisions in *ATCO* and *DBP*, the ACT had rejected the applicants' contentions that giving primacy to rule 87(1) of the NGR would achieve the requirements of the NGO and the

[2] Rule Determination, page 41.
[3] Rule Determination, page 41.
[4] Rule Determination, page 41.

RPP.[5] The ACT concluded that, although rule 87(1) had set out the objective for rate of return determination, it did not provide guidance on how that objective was to be achieved. Such guidance was in the interests of regulatory consistency, and the ACT was of the view that this consistency was provided by rule 87(2).[6]

This was not, the AEMC advised, its view of the way in which rate of return determination should be approached.[7] The AEMC was of the view that rate of return determination should focus on producing an overall rate of return which was consistent with the objectives of the regulatory regime. The interpretation which had been provided by the ACT in *ATCO* and *DBP* meant that the AEMC could not be confident that, without amendment, the NGR framework would provide rates of return which best met the NGO and RPP.[8]

The ACT's conclusion, the AEMC reasoned, presupposed that a single model, by itself, could achieve all that was required by the rate of return objective of rule 87(1). However, this was not the case: rate of return determination could not be reduced to a simple formulaic approach. A simple formulaic approach, the AEMC maintained, placed undue emphasis on individual parameter values, and did not inquire into whether the overall rate of return produced could best achieve the NGO and the RPP. A framework relying on a relatively mechanistic approach was not well placed to achieve the NGO and the RPP.[9]

There was a need to bring the focus of rate of return determination in the NGR back to the NGO and the RPP. To this end, the AEMC included an overall objective for the allowed rate of return in rule 87.[10] By including the allowed rate of return objective of rule 87(3), the AEMC intended that the regulators and the appeal body focus on whether the overall estimate of the rate of return met the objective for the allowed rate of return, which was closely linked to the NGO and the RPP.[11]

Whether a particular candidate rate of return achieved the allowed rate of return objective would, the AEMC recognized, invariably require some level of judgement. The exercise of this judgement was to be made with reference to all relevant financial models, estimation methods, market data and other evidence that could reasonably be expected to inform the regulator's decision.[12]

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5 *Application by WA Gas Networks Pty Ltd (No 3) [2012] ACompT 12* (*ATCO*), and *Application by DBNGP (WA) Transmission Pty Ltd (No 3) [2012] ACompT 14* (*DBP*).

6 Rule Determination, page 48.

7 Rule Determination, page 42.

8 Rule Determination, page 42.

9 Rule Determination, page 57.

10 Rule Determination, page 43.

11 Rule Determination, page 38.

12 Rule Determination, page 67.

A focus on the rate of return outcome rather than detailed prescription of the rate of return determination process would also provide the flexibility that was needed to deal with changing market conditions and new evidence.[13]

While flexibility was desirable, that flexibility did not extend to ignoring important interrelationships between key parameters likely to be used in rate of return determination. Accordingly, the AEMC introduced rule 87(5)(c), which requires that the regulator and service providers have regard to these interrelationships.[14]

In *ATCO* and *DBP*, the ACT had concerns that a focus on the objective in rule 87(1) would remove the prescription of rule 87(2), lead to idiosyncratic regulatory decisions, and contribute to greater uncertainty about rate of return determination. The AEMC acknowledged this greater uncertainty, but was of the view that it should be balanced against the potential benefits. Limited prescription, and a focus on the outcome of the process of rate of return determination would, the AEMC contended, better achieve the NGO. The certainty which rule 87(2) had provided through more or less well defined steps in a process of rate of return determination had been removed, but it was replaced by certainty of outcome.[15]

The regulator's task is primarily to give effect to new rule 87 as now implemented. To do this, the regulator (or a court) must seek to determine the rule-maker's intentions. The AEMC's publications are a vital guide to ascertaining these intentions.

3. Criteria are required to guide rate of return determination

Rule 87(5) requires that regard be had to relevant financial models, estimation methods, market data and other evidence in determining the allowed rate of return. It requires that a service provider proposing a rate of return for use in access arrangement revisions, and a regulator assessing the proposal, undertake a task of potentially very broad scope.

This was intended. In its Rule Determination the AEMC advised that, in making economic regulatory decisions in accordance with the NGR, the AER and the ERA were required to take into account the NGO and the RPP. The AER and the ERA were expected to follow good administrative decision making practice and, in this context, that required a full and considered explanation for decisions and adherence to due process, rigour and objectivity required under administrative law principles. The AEMC continued: the regulators should, in these circumstances, be striving for the best possible estimates of the benchmark efficient

[13] Rule Determination, page 44.
[14] Rule Determination, pages 44-45.
[15] Rule Determination, page 49.

financing costs. This, in turn, required an estimation process of the highest possible quality.[16] A range of financial models, estimation methods, market data and other evidence had to be considered, and the regulatory regime needed to give the regulator the discretion to be able to give appropriate weight to all of this material.[17] The Guidelines should not fetter this discretion.

Any relevant evidence, including that from a range of financial models, should, the AEMC advised, be considered in determining whether the allowed rate of return objective was satisfied.[18] Requiring the regulator to have regard to relevant information on financial models, estimation methods, market data and other evidence, and allowing the regulator greater scope to achieve an overall rate of return objective, combined with a strengthened requirement to achieve that objective, was more likely to achieve the NGO than the (then) current approaches to rate of return determination.[19]

There are, however, many financial models which might be considered. There are alternative estimation methods for many of those models, and there is a multiplicity of market data and other evidence relevant to determining a rate of return.

As the ERA observed in the Consultation Paper, there will be a large number of possible combinations of models, methods and data. Some level of judgement may be necessary, but an explicit set of criteria is required to give structure to, and guide, the process of reasoning through which the many possible combinations are reduced in a process which leads to the allowed rate of return required by rule 87.

The ERA asks:

9. Is it reasonable to consider criteria when evaluating alternative RoR methodologies?

ATCO is of the view that it is certainly reasonable to consider criteria when evaluating alternative models, methods and data used in the process of determining the allowed rate of return. Criteria will provide the means of establishing, from the many models, estimation methods and types of data which must now be considered in accordance with the requirements of rule 87(5), the allowed rate of return which is to be used in total revenue and reference tariff determination. It will likely be appropriate for at least some of these criteria to form the Guidelines.

However, in the Consultation Paper the ERA appears to be applying its proposed criteria as a precursor test to determine what should and should not be included in the Guidelines

16 Rule Determination, pages 43, 55-56.
17 Rule Determination, pages 43-44.
18 Rule Determination, page 48.
19 Rule Determination, page 49.

themselves. ATCO does not agree with this establishment of a further precursor filtering stage because it would inappropriately exclude relevant financial models, estimation methods, market data and other evidence from the Guidelines, and hence from rate of return determination. Further, whether they are used to determine what appears in the Guidelines, or are used in the Guidelines to assist in rate of return determination, ATCO considers that for the reasons set out below the proposed criteria are inappropriate.

In paragraph 68 of the Consultation Paper, the ERA notes that a good criterion is one which is independent, objective, concise, and relevant. Specific criteria are proposed in Box 1.

Before examining the criteria proposed by the ERA, it is worth reminding ourselves of the AEMC's intentions:

. . . the regulator has the flexibility to adopt the approach it considers appropriate to estimate the rate of return, ***provided it considers relevant estimation methods, financial models, market data and other information****. This is so that the* ***best estimate*** *of the rate of return can be obtained that reflects efficient financing costs of the service provider* ***at the time of the regulatory determination****.*[20]

The criteria set out in Box 1 of the Consultation Paper are:

(1) the methodology should have a strong theoretical underpinning;

(2) the methodology should be well accepted;

(3) the methodology should be supported by robust, transparent and replicable analysis that is internally consistent and uses available, current and credible data sets;

(4) the methodology should have the flexibility to reflect changing market conditions and new information as appropriate; and

(5) the methodology should lead to consistent regulatory decisions across industries, service providers and time.

These criteria are proposed to be applied in a sequential decision making process which is summarised in the Consultation Paper's Figure 1.

In the first step of this sequential decision making process, models which might be used in determination of the allowed rate of return are to be tested against criterion (1). The models which might be used are proposed to be restricted to those which have strong theoretical underpinnings.

[20] Rule Determination, page iii, emphasis added.

However, not all theoretically based models are well accepted. The subset of models with strong theoretical underpinnings must be further tested against criterion (2). Models which might be used in the determination of the allowed rate of return are proposed to be those with strong theoretical underpinnings, and which are well accepted.

Models which are both theoretically based and well accepted may, nevertheless, be inapplicable because current and credible data required for parameter estimation are not available, or because the estimation methods which might be used are not robust. It is proposed that the subset of theoretically based and well accepted models be tested against criterion (3). Models which might be used in the determination of the allowed rate of return are those theoretically based and well accepted models for which robust methods of parameter estimation can be applied to current and credible data sets.

Models may be theoretically based and well accepted, and robust methods of parameter estimation which can be applied using current and credible data may be available for use with those models. However, both the models and methods may be inflexible and difficult to change when new information becomes available. Through testing against criterion (4), the subset of models which might be used in the determination of the allowed rate of return is proposed to be further reduced to those with flexibility to change as market conditions change and as new information becomes available. The estimation methods used with those models should also be flexible allowing response to changing market conditions and new information.

In the final stage of the sequential decision making process of the Consultation Paper, candidate schemes of rate of return determination (flexible models and estimation methods, together with the current and credible data sets required for parameter estimation) are to be tested against criterion (5). Only those schemes which satisfy criterion (1) to criterion (4), and which lead to consistent regulatory decisions across industries, service providers and time, are proposed to be used to determine the allowed rate of return.

The ERA asks:

10.	*Is the decision framework identified robust? Are the criteria identified consistent with the RoR objective and requirements? Are there other criteria that might be considered?*

Requiring that a scheme of rate of return determination lead to consistent regulatory decisions across industries, service providers and time may be desirable for many reasons. However, this requirement for consistency will not always lead to a rate of return outcome which achieves the allowed rate of return objective. Since this criterion is capable of producing results which are inconsistent with the allowed rate of return objective, it cannot properly be adopted as a criterion. Rates of return determined by applying the proposed decision

framework may be consistent across industries, service providers and time, but this consistency does not ensure commensurability with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services.

Requiring that a scheme of rate of return determination have the flexibility to reflect changing market conditions and new information is necessary to ensure commensurability with service provider efficient financing costs. Moreover, it is necessary if, in estimation of the rate return on equity, regard is to be had to the prevailing conditions in the market for equity funds as is required by rule 87(7). However, the criterion of flexibility is not sufficient to ensure that a candidate rate of return is the allowed rate of return required by rule 87(2).

Similarly, robust, transparent and replicable analysis that is internally consistent and uses available, current and credible data sets is desirable, but cannot of itself ensure a rate of return commensurate with service provider efficient financing costs.

Nor does the use of financial models and estimation methods that are well accepted necessarily lead to a rate of return that achieves the allowed rate of return objective. Models and methods for determining rates of return which are well accepted may have become well accepted for reasons other than (and in some cases inconsistent with) achieving the allowed rate of return objective of the NGR. Financial models, like the CAPM, may be well accepted because they are found in standard textbooks used to teach the elements of corporate finance, and not because they can provide estimates of the required rate of return.

ATCO notes that the proposed criterion of “well accepted” was in the previous version of rule 87. The rule-maker has clearly rejected this test by excluding it from (new) rule 87. As such, it is not appropriate for use as a criterion. There was also circularity of reasoning in this criterion. Regulators tended to favour CAPM because it was seen as “well accepted”, but each such use reinforced the perception of acceptance. New rule 87 is clearly intended to break this cycle.

Requiring that financial models to be used in determining the allowed rate of return have strong theoretical underpinnings is desirable for a number of reasons. However, again, it is not sufficient to ensure that a candidate rate of return is the allowed rate of return required by rule 87(2). There are many models with strong theoretical underpinnings which might be used in rate of return determination, but not all of them can lead to the required outcome. The CAPM, for example, may have stronger theoretical underpinnings than the dividend growth model. However, the fact that the CAPM understates the returns on shares with low asset betas, and overstates returns on shares with high asset betas, means that it cannot provide an estimate of the rate of return on equity consistent with prevailing conditions in the market for equity funds, and which is commensurate with service provider efficient financing costs.

It is significant that there is no requirement in the rules for a model to have strong theoretical underpinnings. ATCO considers it inappropriate to impose additional criteria in this fashion. It is entirely possible that a model might have strong theoretical underpinnings but could yield a result inconsistent with the allowed rate of return objective or, conversely, that a model without such underpinnings might produce an outcome consistent with the allowed rate of return objective.

At no stage of the decision framework summarized in Figure 1 of the Consultation Paper is it proposed to ask whether a candidate rate of return is commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of the reference services. At no stage in the framework is it proposed to ask whether a candidate rate of return meets the allowed rate of return objective. ATCO considers that this is a serious flaw.

ATCO is of the view that the rate of return decision framework which the ERA has advanced in the Consultation Paper, a framework which does not incorporate the allowed rate of return objective, is not focused on producing the rate of return required by rule 87. The proposed approach could produce a result inconsistent with the allowed rate of return objective, and so is not appropriate.

In its discussion of the requirement for criteria to be used in determining the allowed rate of return, the Consultation Paper notes the AEMC's comment that the role of the allowed rate of return objective is to indicate what the regulator should be striving to achieve, and that the substance of the objective may not be fully achieved.[21] In making this comment, the AEMC was, ATCO believes, indicating its recognition of the practical difficulties which may arise in the specific circumstances of particular regulatory decisions. The AEMC's recognition of these difficulties does not provide support for design of a decision framework which cannot, or does not, deliver the rate of return outcome now required by the NGR.

The sequential decision making process of Figure 1 of the Consultation Paper commences with assessment of whether the financial models which might be used in determination of the allowed rate of return have strong theoretical underpinnings.

In general, when models are used in the determination of the allowed rate of return, ATCO would prefer to see models which have been carefully derived from more fundamental principles. Knowing the principles from which a model has been derived, and how the model has been derived, allow a potential user to make a judgement about whether that model might be relevant in the circumstances in which it is to be applied which, here, is making the best estimate consistent with the allowed rate of return objective.

[21] Noted in paragraph 67 of the Consultation Paper.

We are, though, concerned about a decision making process which starts with models and, in particular, with models which have strong theoretical underpinnings.

Such a process excludes, at the outset, the use of market data and other evidence to inform rate of return determination when rule 87 explicitly requires that regard be had to those data and that evidence.

Furthermore, it introduces uncertainty into rate of return determination. What is a "strong theoretical underpinning", and what types of models might satisfy this criterion? Importantly, are there models with theoretical underpinnings which might not be regarded as "strong", but which could nevertheless usefully inform determination of the allowed rate of return required by rule 87?

We see the models which might be used in determination of the allowed rate of return as being models drawn from the discipline of financial economics. Financial economics has developed rapidly over the last 50 years producing many models of the way in which financial assets – including equity and debt – are priced. More recent models generally have stronger theoretical underpinnings than earlier models, but have not necessarily displaced those earlier models.

In economics, a good model focuses on the way in which a particular class of economic agents behaves, or on the way in which a particular part of the economy works. In the development of such a model, much complexity is stripped away, so that the model and its use in elucidating economic behaviour or the working of the economy are only loosely connected to reality. A good model is one that yields a significant insight after the complexity of the real world has been removed.

Ariel Rubinstein, in his 2004 Presidential Address to the Econometric Society, likened economic models to fables:

As is the case of fables, models in economic theory are derived from observations of the real world, but are not meant to be testable.

As in the case of fables, models have limited scope.

As in the case of a good fable, a good model can have an enormous influence on the real world, not by providing advice or by predicting the future, but rather by influencing culture.

By "influencing culture" Rubinstein meant influencing the accepted collection of ideas and conventions which guide the way people think and behave.

A requirement, at the outset, for models with strong theoretical underpinnings, will lead to the rejection of models which are well accepted and in respect of which there are reasonable prospects of finding current and credible data sets which can be used in transparent and

replicable ways with robust estimation methods. Models which have been widely used to inform regulated rate of return determination, such as the CAPM and the dividend growth model in its various forms, are likely to be rejected. These models remain important in practice because they embody significant insights into the way in which rates of return are determined; they have "influenced the culture". They are not, however, models which are now regarded as having strong theoretical underpinnings. The CAPM is essentially a static model of the demand for financial assets. It has been displaced by models with stronger theoretical underpinnings (from contemporary economic theory) which incorporate adjustment to changing market conditions and new information and, more recently, which also incorporate the "supply side" of markets for financial assets. Although the dividend growth model has a sound theoretical rationale and continues to be used by regulators in North America, it has been largely rejected in the Australian regulatory proceedings because it is not seen as being derivable from economic theory.

There are desirable aspects to each criterion proposed by the ERA in Box 1 of the Consultation Paper. It may be that some or all of the models or methods for use in a given rate of return determination will turn out to meet those criteria. But the criteria cannot validly be used to exclude other financial models, estimation methods, market data or other evidence which may better contribute to achieving the allowed rate of return objective, which would happen if the criteria were used in the way proposed by the ERA, as a series of filters which sequentially narrow the choice of models, methods, data and other evidence.

ATCO sees the decision framework advanced in the Consultation Paper as not being robust, and as being inappropriate for the task given to the ERA by rule 87. In starting from a requirement for a model (or models) with strong theoretical underpinnings, it excludes from consideration market data and other evidence to which regard must be had in accordance with rule 87(5)(a). It will introduce uncertainty into rate of return determination by precluding the use of models which have been widely used in determining rates of return and in applying economic regulation, not necessarily in Australia but certainly in North America, for many decades. Furthermore, the criteria of the framework are not consistent with the allowed rate of return objective or with the other requirements of rule 87. The criteria which are central to the decision framework proposed in the Consultation Paper will not necessarily lead to a rate of return which is commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services, and may well produce a result which is well removed from that objective. As evidence of this, the proposed criteria appear to be leading the ERA towards an undue emphasis on CAPM. Such an emphasis would be clearly inconsistent with (new) rule 87 and the AEMC's intentions.

Other means of evaluating alternative rate of return methodologies are required. The ERA asks:

11.	*What other means might be used to evaluate alternative RoR methodologies to ensure that the RoR objective is best met?*

The starting point for addressing this question must be rule 87 itself.

4. Rule 87 already guides rate of return determination

ATCO is of the view that rule 87 already provides the criteria which guide rate of return determination. The NGL and the NGR do not call for, or require, criteria which lie outside the regulatory regime.

The process to be followed in applying rule 87 is simple. It proceeds through the following six steps.

(1) In accordance with rule 87(4), the allowed rate of return is (subject to the allowed rate of return objective) to be a weighted average of the rate of return on equity and the rate of return on debt, and (subject to the allowed rate of return objective) this weighted average cost of capital (WACC) is to be determined on a nominal vanilla basis.

(2) Multiple financial models are available for estimating the rate of return on equity and the rate of return on debt, various estimation methods are available for use with those models, and there is a variety of market data and other evidence which can used to make the estimates. Rule 87(5)(a) requires that regard be had to those financial models, estimation methods, market data and other evidence which are relevant to determination of the allowed rate of return.

(3) Some of the models available for estimating the rate of return on equity and for estimating the rate of return on debt may have common parameters. Where this is the case, rule 87(5)(b) requires that regard be had to the consistent estimation and application of those parameters across all of the models which have parameters in common.

(4) There may be interrelationships between the parameters in some of the models available for estimating the rate of return on equity and in some of the models for estimating the rate of return on debt, and there may be interrelationships between parameters in models available for estimating the rate of return on equity and models for estimating the rate of return on debt. Rule 87(5)(c) requires that regard be had to

any interrelationships between parameters and to their implications for estimation of the rate of return on equity and the rate of return on debt.

(5) Having regard to relevant models, methods, data and evidence, to requirements for consistency, and to parameter interrelationships, in accordance with the requirements of rule 87(5), will lead to multiple estimates of the rate of return on equity and to multiple estimates of the rate of return on debt. Multiple nominal vanilla WACCs can be calculated from these estimates of the rate of return on equity and estimates of the rate of return on debt. The process will lead to multiple candidate rates of return.

(6) These multiple candidate rates of return must be assessed and, from them, a rate of return must be determined which best achieves the allowed rate of return objective of rule 87(3). This may or may not be one of the candidate rates of return.

Rule 87 provides further guidance on each of these six steps.

4.1 The allowed rate of return is to be a nominal vanilla WACC

The changes to the NGR which came into effect on 29 November 2012 included an amendment to rule 76 to require inclusion of the estimated cost of corporate income tax in the total revenue of a service provider. The inclusion of the cost of tax is no longer optional, depending on whether it is appropriate, as was the case in earlier versions of the NGR. Rule 87A, which also came into effect on 29 November 2012, then requires that the value of imputation credits available to shareholders through the dividend imputation provisions of Australian tax legislation be explicitly taken into account in the determination of total revenue (that is, as a separate "line item", akin to the forecast of operating expenditure). In these circumstances, the WACC required by rule 87(4)(a) – the nominal vanilla WACC – must be, as Officer has shown, a simple weighted average of:

(a) the nominal post-tax rate of return on equity; and

(b) the nominal rate of return on debt.[22]

The weight given to the post-tax rate of return on equity should be the proportion of equity in the total financing of the service provider, and the weight given to the nominal rate of return on debt should be the proportion of debt in the total financing of the service provider.

For calculation of the nominal vanilla WACC required by rule 87(4), estimates must be made of:

[22] R. R. Officer (1994), "The Cost of Capital of a Company Under an Imputation Tax System", Accounting and Finance, May, pages 1 – 17.

(a) the nominal post-tax rate of return on equity;

(b) the nominal rate of return on debt; and

(b) the gearing (the ratio of debt to equity).

In its Rule Determination, the AEMC advised that determination of the allowed rate of return by separate estimation of the rate of return on equity and the rate of return on debt, and the weighting of these two components, was required for practical purposes. The application of rule 87 was to be a process of joint estimation which produced an overall estimate of the rate of return.[23]

The ERA has asked:

3.	*What elements need to be considered 'jointly' under the WACC and what does this mean?*

ATCO is of the view that, in respect of this process of estimation of a WACC from estimates of its component parts, rule 87 is clear. The WACC is to be a weighted average of an estimated rate of return on equity and an estimated rate of return on debt determined on a nominal vanilla basis (rule 87(4)). Where common parameters are used in estimating the rate of return on equity and estimating the rate of return on debt, regard must be had to the consistent estimation and application of those parameters (rule87(5)(b)). Furthermore, regard must be had to any interrelationships between those parameters and their implications for estimation of the rate of return on equity and the rate of return on debt (rule 87(5)(c)).

4.2 Estimating the rate of return on equity

Rule 87(6) and 87(7) provide further guidance on estimation of the rate of return on equity.

Rule 87(6) indicates that the estimate of the rate of return on equity which is required is for an access arrangement period. It is, therefore, not a historical rate of return on equity but a forward looking rate of return. In consequence, it is likely to be estimated using a financial model. Rule 87(7) ensures that any use of a model does not give undue weight to the historical market data which are likely to be used in its estimation: when estimating the rate of return on equity, regard must be had to prevailing conditions in the market for equity funds.

However it is estimated, and irrespective of the data which are used, the rate of return on equity must be estimated in such a way that it contributes to achievement of the allowed rate of return objective (rule 87(6)).

[23] Rule Determination, page 67.

The ERA asks:

23.	*What criteria could be used to select a model for estimating the return on equity that best meets the RoR objective and requirements?*

Rule 87 is clear on this issue:

(a) regard must be had to models which are relevant to estimation of the rate of return on equity;

(b) estimates of the rate of return on equity should be obtained from those models; and

(c) those estimates are to be "tested" to see whether they contribute to achieving the allowed rate of return objective.

ATCO does not see rule 87 as requiring criteria for selection of a model which will then produce the estimate of the rate of return on equity that best meets the allowed rate of return objective and the other requirements of rule 87. Question 23 of the Consultation Paper presumes the existence of a single model which can produce the required estimate of the rate of return on equity. The AEMC explicitly rejected this view. It acknowledged the inherent limitations of models, and amended rule 87 in a way intended to ensure that the process of rate of return determination led to an overall rate of return which was consistent with the NGO and the RPP.

The ERA has also asked:

24.	*Is it reasonable to rely on a single internally consistent model for determining the return on equity, or should a broader range of models and methods be used? If so, how might internal consistency be retained for the overall method?*

In ATCO's view, rate of return determination in accordance with the requirements of rule 87 cannot rely on a single internally consistent model for estimating the rate of return on equity. To do so would not be in compliance with the rule, and would be inconsistent with the stated intentions of the AEMC when it amended rule 87. Regard must be had to relevant models, and the estimates of the rate of return on equity made using those models must be "tested" to see whether they contribute to achieving the allowed rate of return objective. The issue of retention of internal consistency, raised in question 24 of the Consultation Paper, does not arise.

A substantial part of the Consultation Paper is concerned with use of the CAPM and estimation of its parameters.

If the CAPM is to be used, and ATCO expects that it would be one of the financial models relevant to estimating the rate of return on equity, then it is reasonable to ask:

25.	*Is the adoption of a domestic form of the CAPM – with foreign investors recognised only to the extent that they invest within Australia – appropriate from a theoretical and practical point of view? If not, what are the alternatives?*
26.	*Would it be appropriate, feasible and practical to adopt either a fully segmented (domestic) or a fully integrated (international) version of the CAPM?*

Use of the CAPM requires an estimate of the nominal risk free rate of return, and it is reasonable to ask:

18.	*What criteria should be used to determine an appropriate method/model to estimate the nominal risk free rate of return?*
19.	*What is the best proxy for the nominal risk free rate of return in the context of the Australian regulatory environment?*
20.	*Are there any viable alternatives to the Commonwealth Government Securities as an appropriate proxy for the nominal risk free rate of return in Australia?*
21.	*Should the long-term average or the prevailing risk free rate be used as a proxy for a forward looking estimate of the next five years?*
22.	*Is there a proxy for the risk free rate, other than the 5 year CGS estimated over the 20 to 40 days just prior to the commencement of the regulatory period, which would better meet the new NGR RoR objective and requirements?*

Similarly, use of the CAPM requires an estimate of the market risk premium, and it is reasonable to ask:

29.	*What criteria should be used to select a model/approach for estimating the Market Risk Premium?*
35.	*Is there a method to calculate the MRP, other than using an average of historical data, which would better meet the new NGR RoR objective and requirements?*
30.	*What is the best method to be used in estimating the MRP?*
31.	*Are there any other methods that could be adopted for estimating the MRP, which the ERA has not presented in the previous section?*
32.	*When using historical data, what is the relevant sampling period given that: (i) there are significant increases in the quality of data on equity returns becoming available in more*

recent periods; and (ii) recent periods may be more relevant to the current financial environment in Australia?

33. *Are there any theoretical grounds for an inverse relationship between the risk-free rate of return and the MRP?*

34. *When the risk-free rate of return is low/high, should the MRP be revised upwards/downwards? If yes, what is an unbiased mechanism for doing so? What is the threshold of the risk-free rate in which the prevailing risk-free rate can be considered low?*

A key input to the CAPM is an estimate of the equity beta, and it is reasonable to ask:

36. *What criteria could be used to help select a model/approach for estimating the equity beta?*

37. *Should the estimate of equity beta be based on a sample of businesses that only includes regulated utility businesses?*

38. *Results from the econometric evaluation of historic market returns as a means to estimate the equity beta are quite sensitive to input data. What is the best way to determine the point estimate of the equity beta from the resulting wide range of estimates (i.e. median, average, any relevant quartiles)?*

39. *Are there any viable alternative methods to the econometric evaluation of historic market returns, such that the equity beta for regulated businesses might be estimated in a more robust manner? If so, would the alternative method better meet the new NGR RoR objective and requirements?*

These are, in ATCO's view, all questions which must be asked if the CAPM is to be used to estimate the rate of return on equity. They have been considered at length in previous regulatory decisions, and ATCO expects that they will continue to be addressed by service providers in access arrangement revisions proposals, and by the ERA in assessing those proposals. They are not, in ATCO's opinion, questions which need to be addressed in the Guidelines.

Three of these questions are of particular concern to ATCO. They are:

22. *Is there a proxy for the risk free rate, other than the 5 year CGS estimated over the 20 to 40 days just prior to the commencement of the regulatory period, which would better meet the new NGR RoR objective and requirements?*

35. *Is there a method to calculate the MRP, other than using an average of historical data, which would better meet the new NGR RoR objective and requirements?*

39.	*Are there any viable alternative methods to the econometric evaluation of historic market returns, such that the equity beta for regulated businesses might be estimated in a more robust manner? If so, would the alternative method better meet the new NGR RoR objective and requirements?*

Question 28 is similarly of concern:

28.	*Are there alternative approaches to estimating the cost of equity, other than the Sharpe Lintner CAPM, which would better meet the new NGR RoR objective and requirements?*

Underlying these questions is the assumption that a single model – the CAPM – is capable of producing an estimate of the rate of return on equity which can contribute to achievement of the allowed rate of return objective.

This does not accord with the requirements of rule 87, or with the AEMC's intentions in amending the rule in November 2012.

Asking whether a particular estimate of the risk free rate of return, or of the market risk premium, or whether a particular method of estimating the equity beta, better meets the allowed rate of return objective and other requirements of rule 87 is an incorrect way of proceeding under that rule. Similarly, presuming that the CAPM meets the allowed rate of return objective and other requirements of rule 87, and asking whether there is a better approach to estimating the rate of return on equity is an incorrect way of proceeding.

Rule 87 now admits all relevant financial models, estimation methods, market data and other evidence. There is no presumption that the CAPM is a relevant model and, if it is, that it alone produces the best estimate of the rate of return on equity to contribute to achievement of the allowed rate of return objective. There is no presumption that when an estimate of the rate of return on equity made using the CAPM is used to calculate a nominal vanilla WACC, that that WACC is the allowed rate of return of rule 87. Whether the CAPM is a relevant model, whether it produces an estimate of the rate of return on equity which contributes to achievement of the allowed rate of return objective, and whether a nominal vanilla WACC calculated using that estimate of the rate of return on equity achieves the allowed rate of return objective, are all questions which must now be asked explicitly, and to which reasoned answers must be given, when determining the allowed rate of return.

Rule 87 guides rate of return determination by requiring that:

(a) the estimate of the rate of return on equity used in determining the rate of return contribute to the achievement of the allowed rate of return objective; and

(b) any candidate rate of return achieve the allowed rate of return objective.

These are tests to be applied to an estimate of the rate of return on equity and to a candidate rate of return. They are not applicable to the individual parameters of specific models, or to the ways in which those parameters might be estimated.

Establishing whether a candidate rate of return achieves the allowed rate of return objective would, the AEMC recognized, invariably require some level of judgement. The exercise of that judgement was to be made with reference to all relevant financial models, estimation methods, market data and other evidence that could reasonably be expected to inform the regulator's decision.[24] The AEMC was of the view that, in these circumstances, the AER and the ERA would no longer be able rely solely on the CAPM, and hence that service provider concerns about the regulators continuing to make exclusive use of the CAPM were unfounded. The AEMC's intention was to ensure that the regulators take relevant models, estimation methods and other evidence into account when estimating the required rate of return on equity.[25]

Rule 87 now requires the use of relevant financial models, estimation methods, market data and other evidence. It clearly does not restrict the process of estimating the rate of return on equity to use of a single financial model. ATCO is concerned that, as a result of its unnecessary examination of a large number of essentially technical questions about a specific financial model, the Consultation Paper has failed to address the critical issues of the requirements of rule 87, and how the ERA intends to weigh the evidence from models, methods and data so as arrive at a rate of return which achieves the allowed rate of return objective of rule 87(3).

4.3 Estimating the rate of return on debt

Rules 87(8), (9), (10), (11) and (12) provide more detailed guidance on estimation of a rate of return on debt for use in determining the allowed rate of return.

In accordance with rule 87(9), return on debt estimation may result in a rate of return on debt which is:

(a) the same in each year of an access arrangement period; or

(b) different for different regulatory years in the access arrangement period.

Irrespective of whether estimates of the rate of return on debt are the same or different for the different regulatory years in an access arrangement period, rule 87(8) requires that the rate of

[24] Rule Determination, page 67.

[25] Rule Determination, page 57.

return for a regulatory year be estimated in a way that contributes to the achievement of the allowed rate of return objective.

Rule 87(8) indicates that the estimates of the rate of return on debt which are required are for an access arrangement period. They are, therefore, not historical rates of return on debt but forward looking rates of return. In consequence, they are likely to be estimated using a financial model.

The method used to estimate the rate of return on debt – the financial model used and the way in which that model is employed to provide a specific estimate or estimates – may be designed, in accordance with rule 87(10), to produce an estimate which reflects:

(a) the return that would be required by debt investors in a benchmark efficient entity if it raised debt at the time, or shortly before the time, when a regulatory decision on an access arrangement revisions proposal was to be made;

(b) the average return that would have been required by debt investors in a benchmark efficient entity if it had raised debt over a period prior to commencement of a regulatory year in an access arrangement period; or

(c) a combination of the returns referred to in (a) and (b) above.

If the rate of return on debt is estimated using a method which produces an estimate which reflects (b) above, then a decision on an access arrangement revisions proposal which incorporates this method must specify a formula through which the service provider's total revenue is automatically adjusted (rule 87(12)).

Rule 87(11) requires that, in estimating the rate of return on debt, regard be had to the following four factors:

(a) the desirability of minimising any difference between the return on debt and the return on debt of the benchmark efficient entity referred to in the allowed rate of return objective;

(b) the interrelationship between the return on equity and the return on debt;

(c) the incentives that the return on debt may provide in relation to capital expenditure over the access arrangement period, including as to the timing of any capital expenditure; and

(d) any impacts (including in relation to the costs of servicing debt across access arrangement periods) on a benchmark efficient entity referred to in the allowed rate of

return objective that could arise as a result of changing the methodology that is used to estimate the return on debt from one access arrangement period to the next.

Rules 87(10) and 87(11) have no parallels in the scheme of rule 87 which guides rate of return on equity estimation. Estimating the rate of return on debt is a more complex and nuanced process.

However, no consideration seems to have been given to this in the Consultation Paper. Nor does the Consultation Paper address the general issue of the use of relevant financial models, estimation methods, market data and other evidence in the context of estimation of the rate of return on debt. Instead, the Consultation Paper appears to advocate use of a single model for estimation of the rate of return on debt, and a single approach to estimation of that model.

The ERA asks:

48.	*What criteria could be used to select an approach/a model for deriving the debt risk premium?*

The implication here is that the rate of return on debt is to be estimated as the sum of a risk free rate of return and a debt risk premium. Question 49 indicates the ERA has in mind a specific implementation of this model – the bond-yield approach – when it asks:

49.	*Are there any issues associated with the bond-yield approach that have not been considered by the ERA?*

If the bond-yield approach were to be used, then it would be reasonable to ask:

40.	*What criteria might be used to help select an approach for determining the credit rating?*
41.	*What are the key characteristics or the selection criteria for companies to be included in the benchmark sample to determine the credit rating for a regulated business in gas transmission and distribution?*
42.	*Is the S&P list of Australian utilities a good starting point for forming a benchmark sample?*
50.	*Should Moody's credit ratings of Australian corporate bonds be included in the selection criteria for the benchmark sample?*
43.	*Among the different types of credit rating for the same company, for example, entity credit rating (i.e. the credit rating for the entire entity) versus instruments credit rating*

(i.e. the credit rating for a particular debt instrument), which type is more appropriate for determining the RoR?

44. *How recent should the credit ratings for the company and debt instruments be in order to be considered valid as an input to determining credit ratings? How many years credit ratings assigned in the past can be used?*

45. *Is the median of credit rating of a benchmark sample the best indicator for the credit rating of a regulated business in gas industry? If not, then which is the best method to determine the credit rating from the benchmark sample?*

46. *What methods are suitable as a cross-check of the robustness of a determination of a credit rating for a regulated business?*

51. *If the bond-yield approach was to be adopted, should the current joint-weighting approach be retained, or else an alternate weighting approach be considered? Are there any other issues the ERA should consider with regard to the average of the debt risk premium?*

These are, however, all essentially technical questions about a specific financial model and about the way in which its parameters should be estimated. But, again, rule 87 now requires the use of relevant financial models, estimation methods, market data and other evidence. It does not restrict the process of estimation of the rate of return on debt to use of a single financial model and a single estimation method, and nor does it permit the Guidelines to impose or produce such a restriction.

ATCO is concerned when the ERA asks:

47. *Are there alternatives to the ERA's current method for estimating the credit rating that would better meet the new NGR RoR objective and requirements?*

and

52. *Would a method other the ERA's bond yield approach better meet the new NGR RoR objective and requirements?*

Underlying these questions are the assumptions that a single model, in which the rate of return on debt is represented as the sum of a risk free rate of return and a debt risk premium (debt model), and a single method of estimating the key parameter (the bond-yield approach), are capable of producing an estimate of the rate of return on debt which can contribute to the allowed rate of return objective.

As with the sole use of the CAPM to estimate the rate of return on equity, sole reliance on the debt model, and estimation of the debt risk premium using the bond-yield approach, does not

accord with the requirements of rule 87, or with the AEMC's intentions in amending the rule in November 2012.

Again, rule 87 now admits all relevant financial models, estimation methods, market data and other evidence. There is no presumption that the debt model is a relevant model and, if it is, that it produces, in conjunction with the bond-yield approach, an estimate of the rate of return on debt which contributes to achievement of the allowed rate of return objective. There is no presumption that when an estimate of the rate of return on debt made using the debt model and the bond-yield approach is used to calculate a nominal vanilla WACC, that that WACC is the allowed rate of return of rule 87.

Whether the debt model is a relevant model, whether it produces in conjunction with the bond-yield approach an estimate of the rate of return on debt which contributes to achievement of the allowed rate of return objective, and whether a nominal vanilla WACC calculated using that estimate of the rate of return on debt achieves the allowed rate of return objective, are all questions which must now be asked explicitly, and to which reasoned answers must be given, when determining the allowed rate of return. In addition, explicit consideration must be given to how use of the debt model, in conjunction with the bond-yield approach, accords with the design criteria of rule 87(10), and to how, when using the model and the approach, regard is to be had to the factors of rule 87(11). Beyond restating those rules, the Consultation Paper makes no reference to the specific – and new – requirements of rules 87(10) and 87(11).

Rule 87 now requires the use of relevant financial models, estimation methods, market data and other evidence. It does not restrict the process of estimating the rate of return on debt to use of a single financial model. In its examination of a large number of essentially technical questions about a specific financial model and a specific estimation method, the Consultation Paper fails to address, in the context of estimation of the rate of return on debt, the critical issues of the requirements of rule 87, and how the ERA intends to weigh the evidence from models, methods and data so as arrive at a rate of return which achieves the allowed rate of return objective of rule 87(3).

The Consultation Paper anticipates that any proposed rate of return on debt will include an allowance for the costs of raising debt, and the ERA asks:

53.	*What criteria could be used to select an approach/a model for estimating debt raising cost?*
54.	*What data source is best to gather evidence of debt raising costs incurred by businesses when they use debt financing to finance their capital programs?*

55.	*Are there alternatives to the ACG method for estimating the debt raising costs that would better meet the new NGR RoR objectives and requirements?*

ATCO doubts whether approaching the estimation of debt raising costs through a model is feasible. ATCO is not aware of suitable models which might be used to estimate those costs. A more pragmatic approach, like that adopted by the Allen Consulting Group (ACG) for the estimates it made of debt raising costs for the Australian Competition and Consumer Commission in December 2004, is required. However, the specific estimates of debt raising costs in the ACG report are now obsolete. The costs of raising debt have increased substantially since the Global Financial Crisis.

4.4 Gearing and financial risk

The nominal vanilla WACC required by rule 87(4) is a simple weighted average of the estimated rate of return on equity and the estimated rate of return on debt, where the weights are to be the assumed proportions of equity and debt in the total financing. These proportions, which are summarised in the gearing, indicate the extent of financial risk.

The ERA asks:

14.	*What criteria could be used to select an appropriate methodology for deriving the gearing level?*

ATCO is, again, of the view that the answer to this question must be guided by rule 87, and not by reference to criteria external to the regulatory regime of the NGL and the NGR.

Since the WACC to be calculated using the gearing is to be a candidate rate of return, the financial risk represented by the gearing should be the financial risk of the benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services.

ATCO does not, therefore, see an obvious alternative to benchmarking, and responds in the negative to the ERA's question:

17.	*Would a methodology other than the benchmarking approach for assessing gearing better meet the NGR RoR objective and requirements?*

In respect of benchmarking for the purpose of deriving the gearing, the ERA asks:

15.	*What are the key characteristics or the selection criteria for companies to be included in the benchmark sample?*

An answer to this question has wider implications for rate of return determination under rule 87 than the assumption which is to be made about gearing. We defer its consideration to the next section of this submission, in which we address the issue of the elements of the rate of return which should be informed by benchmarking.

We fully understand that the gearing to be used in the calculation of a WACC is to be the ratio of the market value of debt to the market value of equity, that the market value of debt may be difficult to establish because debt is not frequently traded, and that book values must sometimes be used in determining the gearing. We are also aware that the gearing might be an average over a period of time to reduce the effect of transient changes in the market values of equity and debt.

These are issues about which the ERA inquires:

16.	*What are the appropriate time periods and the methodology for determining the benchmark gearing ratio from available market data?*

Although any assumption about gearing should now be formulated in a way which ultimately leads to a rate of return which achieves the allowed rate of return objective of rule 87(3), ATCO notes that the AER and the ERA have required, for over a decade, that a gearing of 60:40 debt to equity be used in regulated price determination. Accordingly, ATCO and, we believe, other regulated pipeline service providers, have over time, sought to align their actual gearings with the regulatory norm. This has required careful financial planning and has been achieved at some cost although the costs have largely been the costs of effort and are not easily quantified. We would not expect to see a rapid shift away from the assumed 60:40 gearing in subsequent applications of rule 87.

4.5 Multiple candidates and the criterion for determining the allowed rate of return: the benchmark efficient entity

Rule 87(5) requires that regard be had to relevant financial models, estimation methods, market data and other evidence in determining the allowed rate of return. However, there are, as we have noted earlier, many financial models which might be considered for estimating the rate of return on equity and the rate of return on debt, and there are alternative estimation methods for many of those models. There will, therefore, be multiple candidates for the allowed rate of return (each calculated as a nominal vanilla WACC in accordance with the requirement of rule 87(4)). A choice must be made between these multiple candidates, and that choice is to be guided by the allowed rate of return objective of rule 87(3).

Inclusion of the allowed rate of return objective in rule 87 would, the AEMC advised in its Rule Determination, ensure that the rate of return allowed to a service provider reflected the efficient financing costs of a benchmark efficient entity with similar circumstances and degree

of risk to the service provider. This requirement was necessary, according to the AEMC, to ensure that service providers could earn revenues sufficient to attract investment into gas pipeline systems in the long term interests of energy consumers while minimising the costs to those consumers. It was necessary to ensure that the NGO could be achieved. Rule 87(3) therefore requires that the allowed rate of return be consistent with the rate of return required by a benchmark efficient firm with similar risk characteristics to the service provider in question.[26]

Any candidate rate of return which is to be taken as the allowed rate of return must, then, be commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services.

One way of assessing a candidate rate of return for whether it is the allowed rate of return required by rule 87(2) is via assessment of its component parts: are the estimate of the rate of return on equity, the estimate of the rate of return on debt, and the gearing individually commensurate with service provider efficient financing costs so that, when combined, the resulting WACC is commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services? This assessment will be assisted by the availability of multiple relevant models and estimation methods, against which considered comparisons can be made. It may also be assisted by direct comparisons with market data and other relevant evidence (for example, the rate of return on debt for a gas distribution business, estimated using the debt model, might be compared with the returns to lenders from recent debt issues to distribution pipeline businesses with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services).

Another way of proceeding is via assessment of the candidate rate of return itself for whether it is the allowed rate of return required by rule 87(2). This assessment is more likely to be made by direct comparisons with market data and other relevant evidence than by comparison with the results obtained from particular models and estimation methods.[27] Although potentially more difficult, this assessment of the candidate rate of return itself for whether it could be taken as allowed the rate of return seems to have been the intention of the AEMC when it amended rule 87. As noted earlier in this submission, the AEMC saw the structure of rule 87 as focusing the regulator and the appeals body on the question of whether

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[26] Rule Determination, pages 23, 43.

[27] The sequential decision making framework of the Consultation Paper does not include either an assessment of the WACC itself, or an assessment via its component parts. The decision framework appears to retain the view of the ACT in *ATCO* and *DBP* that, if a well accepted model is used with inputs commensurate with prevailing conditions in financial markets, the result will be the required rate of return. This view was explicitly rejected by the AEMC. As noted earlier, its rejection was important among the reasons for the changes which have now been made to rule 87.

an overall estimate of the rate of return achieved the allowed rate of return objective, which was closely linked to the NGO and the RPP.[28]

We note, though, that even if a candidate rate of return – a nominal vanilla WACC – can be shown to achieve the allowed rate of return objective, rule 87(6) requires, independently, an assessment of whether the estimate of the rate of return on equity used to calculate that WACC contributes to the allowed rate of return objective. Furthermore, rule 87(8) requires, independently, an assessment of whether the estimate of the rate of return on debt used to calculate the WACC contributes to the allowed rate of return objective.

If assessment of a candidate rate of return for whether it is the allowed rate of return required by rule 87(2) is to be via assessment of its component parts, the following will need to be established:

(a) any estimate of the rate of return on equity which is used to calculate the nominal vanilla WACC of rule 87(4) must be shown to be an estimate made for a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services;

(b) any estimate of the rate of return on debt which is used to calculate the nominal vanilla WACC of rule 87(4) must be shown to be an estimate made for a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services; and

(c) any estimate of the gearing which is used to calculate the nominal vanilla WACC of rule 87(4) must be shown to be an estimate made for a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services; and

(d) the candidate rate of return itself must be shown to be the efficient financing cost for a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services.

The ERA asks:

5.	*What elements of the evaluation of the rate of return should be informed by benchmarking?*

Items (a) to (d) above indicate to ATCO that, among other things, the rate of return on equity, the rate of return on debt, the gearing, and the candidate rate of return itself, should all be estimated or determined by reference to the circumstances of a benchmark efficient entity

[28] Rule Determination, page 38.

with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services.

Item (d) further requires that the candidate rate of return not only be determined by reference to the circumstances of a benchmark efficient entity; it must also be commensurate with the efficient financing costs of that entity.

It is in this context that the ERA asks:

2.	*What constitutes 'efficient financing costs', and how should this inform the approach to estimating the RoR?*

and

4.	*Are there other methods which provide information on efficient financing costs, which need to be taken into account?*

ATCO agrees with the view in the Consultation Paper that efficient financing costs are the lowest costs of financing reliable service provision at the standards required by the regulatory regime. Establishing those costs may be quite difficult. But the AEMC knew of this difficulty and nonetheless gave the regulators this task. Hence the difficulty of the task is not grounds to depart from that path. Ascertaining the lowest costs of financing reliable service provision in any specific circumstances will generally be a matter of judgement because it will not be feasible to identify all of the possible costs of a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services, and to choose the lowest among those possible costs.

The ERA then proceeds to ask:

6.	*What considerations are relevant when estimating the associated parameters for the benchmark efficient service provider?*

The position of this question in the Consultation Paper indicates that, in asking it, the ERA is concerned with the issue of how the benchmark efficient service provider is to be established. The question is not directed toward estimation of particular rate of return parameters for the benchmark efficient service provider.

The benchmark efficient service provider is, in ATCO's view, a hypothetical construct and not a specific individual service provider with particular characteristics. This would seem to accord with the view of the ERA: the Consultation Paper notes that benchmarking is undertaken for a business segment, or for a wider industry sector.

Rule 87(3) requires that this hypothetical entity be an efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services. The parameters of this hypothetical entity must then be established from the set of actual entities with similar degrees of risk as that which applies to the service provider in respect of the provision of reference services.

Beyond this, rule 87 provides no guidance on how the benchmark efficient entity is to be established. This seems to have been intentional. In its Rule Determination the AEMC noted that the concept of efficiency and the characteristics of the benchmark efficient firm were not specified in rule 87. The AEMC was of the view that they, and the benchmark characteristics that relate to service provider risk, were best left to regulator determination.[29] This was, in part, necessary because the concept of a benchmark efficient service provider and the risks that a benchmark service provider may face can change over time.[30] Furthermore, the AEMC was of the view that the regulator and the industry should have the opportunity to discuss these matters periodically and to make incremental changes as required. Guidelines revision provided the forum for these discussions.[31]

Paragraph 57 of the Consultation Paper correctly identifies risk as the key issue in establishing the benchmark efficient entity for rate of return determination. The ERA asks:

7.	*How may the degree of risk for a benchmark service provider be measured? What does this imply for the estimation methods, models, data sets and other information required to determine the RoR?*

The Consultation Paper notes that the degree of risk is generally taken to be associated with the industry rather than with the individual service provider. ATCO concurs with this, but observes that rule 87 calls for something more: it calls for consideration of a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in the provision of reference services.

The starting point for establishing the benchmark efficient entity is the degree of risk of the service provider in the provision of reference services. More precisely, it is the degree of risk of the service provider in the provision of the reference services provided using the service provider's pipeline system. The risks involved are not generic risks of the type to which pipeline service providers might generally be exposed. Rule 87(3) should be read in the context of the RPP of section 24 of the NGL. Section 24(2) requires that the service provider be provided with a reasonable opportunity to recover at least the efficient costs which the service provider incurs in providing reference services. This will be the case only if the risks

[29] Rule Determination, page 65.
[30] Rule Determination, page 65.
[31] Rule Determination, page 65.

involved in providing reference services are risks involved in providing reference services using the pipeline with which the service provider provides pipeline services. Furthermore, section 24(5) of the NGL requires that a reference tariff allow for a return commensurate with the regulatory and commercial risks involved in providing the reference service to which that reference tariff relates. Again, the risks in question are the specific risks to which the service provider is exposed in its provision of reference services using the pipeline with which the service provider provides pipeline services.

The Consultation Paper advises, in paragraph 58, that the current practice of the ERA is to assess risks, at least in the context of estimating the rate of return on equity, by reference to a set of Australian energy utilities and to the beta of the CAPM estimated using data for those utilities. For debt, the ERA assesses risk from the debt margin of an observed sample (Consultation Paper, paragraph 59).

Unfortunately, neither of these approaches would be adequate under rule 87. Rule 87 now requires that, before data for a set of Australian energy utilities is used to estimate a CAPM beta which might be taken as a measure of risk, the utilities in that set must be shown to be entities with a similar degree of risk as that which applies to the service provider in respect of provision of reference services. A similar issue arises in respect of the rate of return on debt. Before a debt margin is calculated from an observed sample of debt issues, the issuers of that debt must be shown to be entities with a similar degree of risk as that which applies to the service provider in respect of provision of reference services.

The characteristics of the benchmark efficient entity of rule 87 must now be established explicitly by reference to entities with a similar degree of risk as that which applies to the service provider in respect of provision of reference services. That the risks of potentially comparable entities are similar, in degree, to those of the service provider can no longer be assumed as was the case when the benchmark was considered to be a set of Australian energy utilities with traded shares.

Nor is reliance on a single indicator of risk – credit rating – for the purpose of establishing the benchmark adequate as was previously assumed when choosing an observed sample of debt issues. Credit ratings are, as ATCO has previously pointed out, imperfect indicators of risk.[32]

[32] Credit ratings are indicators of default risk. They are derived by mapping company attributes into a discrete number of rating classes, and the rating classes are, in turn, mapped to probabilities of default on the basis of historical data. The relationship between rating classes and probabilities of default is essentially a statistical relationship. The relationship is not a causal relationship; it does not have clear conceptual foundations. Research has shown that bonds within a given (Standard & Poor's, or Moody's) rating class cannot be assumed to be of the same default risk. See Edwin J. Elton, Martin J. Gruber, Deepak Agrawal and Christopher Mann (2004), "Factors affecting the valuation of corporate bonds", Journal of Banking & Finance, 28: 2747-2767.

A prior assessment of the degree of risk of the service provider in the provision of reference services must be made for the purpose of establishing the benchmark efficient entity. A classification of risks is required for:

(a) assessing the degree of risk of the service provider; and

(b) identifying entities with similar degrees of risk ("comparables"), for which data are independently available, and which can be used to establish the benchmark.

This issue of ensuring similarity between the degree of risk of the service provider, and the degrees of risk of "comparables" for which data are independently available, and which might be used in rate of return determination, is an issue which has been addressed by regulators in other jurisdictions.

In the United States, the Federal Energy Regulatory Commission (FERC) has relied on the discounted cash flow (dividend growth) model for estimation of rates of return on equity for regulated interstate gas transmission pipelines. In individual pipeline "rate cases", the FERC estimates the rate of return on equity by applying the discounted cash flow model to a set of "proxy companies" which has, historically, comprised:

(a) companies with shares which are publicly traded;

(b) companies which are recognised as natural gas pipeline companies with shares recognised and tracked by investment information services such as Value Line; and

(c) companies in which pipeline operations are a high proportion of business measured in terms of assets or operating income.[33]

The National Energy Board in Canada applies a fair return standard in setting allowed rates of return. The Board has described its use of this standard as follows:

The Fair Return Standard requires that a fair or reasonable overall return on capital should:

- *be comparable to the return available from the application of the invested capital to other enterprises of like risk (comparable investment requirement);*
- *enable the financial integrity of the regulated enterprise to be maintained (financial integrity requirement); and*
- *permit incremental capital to be attracted to the enterprise on reasonable terms and conditions (capital attraction requirement).*[34]

An after-tax weighted average cost of capital approach has been used to compare the rates of return of sample companies considered to be of similar risk to the regulated entity.

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[33] Federal Energy Regulatory Commission, Policy Statement: Composition of Proxy Groups for Determining Gas and Oil Pipeline Return on Equity, Docket No. PL07-2-000, issued April 17, 2008.

[34] National Energy Board, *Reasons for Decision In the Matter of Trans Québec & Maritimes Pipelines Inc. Cost of Capital for 2007 and 2008*, RH-1-2008, March 2009, pages 6 - 7.

Although the CAPM was used for estimating the rate of return on equity, the Board adopted a wider view of risk when establishing a fair rate of return for a regulated entity for which tariffs were to be reset. In assessing the sample companies considered to be of similar risk to the regulated entity in question, and in setting the regulated entity's rate of return, the National Energy Board examined quantitative and qualitative evidence pertaining to five types of risk:

(a) supply risk: risk that the physical availability of economical natural gas volumes could affect a pipeline's income-earning capability;

(b) market risk: the business risk that stems from the overall size of the market and the market share that a pipeline is able to capture;

(c) competitive risk: the business risk that results from competition for customers at both the supply and market ends of a pipeline system;

(d) operating risk: risk to the income-earning capability that arises from technical and operational factors; and

(e) regulatory risk: risk to the income-earning capability of the assets that arises due to the method of regulation of the company.

The Board also sought to compare returns on Canadian pipelines with returns on pipelines in the United States.35

In the United Kingdom, the water industry regulator, the Water Services Regulation Authority (still referred to as Ofwat) can make comparisons across some 34 privately owned businesses which supply water, sanitation and drainage services in England and Wales. Although Ofwat has data for a relatively large number of similar businesses, the regulator recognises, in determining rates of return for individual businesses, risk differences between water-only companies and companies which supply water and provide sewerage services. Ofwat also recognises that, within each of these two classes of services providers, size is an important determinant of risk. In determining the rate of return for a particular business, Ofwat makes comparisons with those other water business in the same size category. For this purpose, Ofwat classifies all water businesses as belonging to one of three size categories (large, including all water and sewerage companies; larger water-only companies; and smaller water-only companies).

These three examples of regulatory practice from the United States, Canada and the United Kingdom indicate the ways in which risk can be classified for the purpose of assessing the degree of risk of a particular service provider in the provision of reference services, and for

35 National Energy Board, *Reasons for Decision In the Matter of Trans Québec & Maritimes Pipelines Inc. Cost of Capital for 2007 and 2008*, RH-1-2008, March 2009, chapter 5.

identifying the comparables with similar degree of risk to be used in establishing the benchmark efficient entity of rule 87.

Once the benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services has been established, it can be used to guide the evaluation and setting of the rate of return on equity, the rate of return on debt, the gearing, and the allowed rate of return.

ATCO recognises that the number of Australian entities with degree of risk similar to that which applies to the service provider in the provision of reference services, and for which information is independently available, may be quite small. Electricity distribution entities, and electricity and gas transmission entities, are unlikely to be comparables for a gas distribution entity. In consequence, there may not be sufficient data available to make statistically significant estimates of the CAPM beta, to estimate a debt margin, or to determine the gearing. In these circumstances, rate of return determination will have to proceed either:

(a) without statistical estimation of beta, and without a statistically significant estimate of the debt risk premium, but using data from the appropriate comparables; or

(b) with an explicit scheme which allows:

  (i) conversion of a statistically significant beta estimate calculated using price and dividend data for a group of entities with degrees of risk not all similar to the degree of risk which applies to the service provider in the provision of reference services into a beta for a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in the provision of reference services; and

  (ii) conversion of a statistically significant debt margin calculated using bond yields for a group of issuers with degrees of risk not all similar to the degree of risk which applies to the service provider in the provision of reference services into a debt margin for a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in the provision of reference services.

Either way of proceeding is likely to be challenging. The FERC cautions against the conversions noted above, arguing that adjusting for risk when the proxy group is less than clearly representative is a difficult undertaking requiring detailed support from contending parties and detailed case-by-case analysis.[36]

[36] Federal Energy Regulatory Commission, Policy Statement: Composition of Proxy Groups for Determining Gas and Oil Pipeline Return on Equity, Docket No. PL07-2-000, issued April 17, 2008, page 12.

ATCO is of the view that establishing the benchmark efficient entity will require extending the set of potential comparable entities to include similar entities from other (international) jurisdictions.

Indeed, as Dr Makholm advises in the paper attached, the data for comparable North American utilities can be used in establishing the benchmark efficient entity, or it can be used directly as part of the process of estimation of the rate of return on equity. Whether these data are used to establish the benchmark, or whether they have a role in rate of return on equity estimation, are questions which should be left to individual service providers proposing access arrangement revisions.

Establishing the benchmark efficient entity required by rule 87 will require prior determination of a risks assessment framework careful comparisons and reasoning drawing on both quantitative and qualitative evidence of risk. The result cannot be assumed, the process will not be simple and formulaic, and it will require the exercise of judgement. In addition, the benchmark efficient entity will need to be established independently for each individual service provider, and will need to be re-examined to ascertain whether the degree of risk which applies to the service provider in the provision of reference services has changed each time access arrangement revisions are proposed.

The ERA asks:

8.	*Does a current estimate of the degree of risk of a service provider provide a reasonable proxy for risk over the course of a future access arrangement? Should any expected new risks be accounted for? What are the implications for the return on equity and debt?*

Whether a current view of the degree of risk of a service provider is a reasonable proxy over a future access arrangement period will depend on conditions which are expected to prevail during that period. This will have to be assessed at the time revisions to the access arrangement are approved, and may well require that expected new risks be taken into account. Taking those risks into account may change the comparables for the benchmark efficient entity used in estimating the rate of return on equity and the rate of return on debt and, in consequence, change any nominal vanilla WACC taken to be a candidate rate of return.

Assessing the degree of risk of the service provider in the provision of reference services, and establishing the benchmark efficient entity as a hypothetical entity with a similar degree of risk, will, ATCO believes, be tasks central to the process of rate of return determination under rule 87. They will involve careful thinking about types of risk, about relevant comparables, and about the way in the benchmark efficient entity is to be “constructed”. These issues must

be addressed before estimates can be made of rates return on equity, rates of return on debt, and gearing, for the calculation candidate rates of return. In ATCO's view, these are major issues central to the methodologies that the ERA proposes to use in estimating the allowed rate of return, and to understanding the way in which the regulator intends to apply those methodologies in the determination of a rate of return on equity and a rate of return on debt in a way that is consistent with the allowed rate of return objective. They are issues which must be addressed in the Guidelines required by rule 87(13). The Consultation Paper has little to say about them.

5. Valuation of imputation credits: estimation of gamma

We noted, in section 4.1 above, that the changes to the NGR which came into effect in November 2012 included an amendment to rule 76 to require inclusion of the estimated cost of corporate income tax in the total revenue of a service provider. The inclusion of the cost of tax is now no longer optional, depending on whether it is appropriate. Rule 87A, which also came into effect in November 2012, then requires that the value of imputation credits available to shareholders through the dividend imputation provisions of Australian tax legislation be explicitly taken into account in the determination of total revenue.

Rule 87A is a provision about estimation of the cost of corporate income tax. It requires that the estimated cost of corporate income tax of a service provider (ETC) be calculated, for each regulatory year of an access arrangement period, from the estimated taxable income (ETI) of a benchmark efficient entity providing reference services. The estimated cost of corporate income tax is to be calculated using the formula:

$ETC_t = ETI_t \times r_t \times (1 - \gamma)$,

where r is the statutory tax rate and γ (gamma) is the value to shareholders of $1 of imputation (franking) credits.

The ERA asks:

56. What criteria should be used to select an approach/model for estimating gamma?

ATCO is of the view that the criteria used to select an approach/model for estimating gamma cannot be found in rule 87, but must be found elsewhere in the general principles for price and revenue regulation of Part 9 of the NGR, guided by the NGO and the RPP. They cannot be external to the scheme of the NGL and the NGR. In particular, in accordance with rule 74(2), the estimate of gamma must:

(a) be arrived at on a reasonable basis; and

(b) represent the best forecast or estimate possible in the circumstances.

The ERA also asks:

57.	*What are the best methods and/or studies for estimating the value of gamma?*
58.	*What are the main rationales for estimating gamma via the estimates of the payout ratio and theta? Is it possible to estimate gamma directly from available market data?*
59.	*Are there methods – other than for dividend drop off studies – which could estimate the value imputation credits and better meet the new NGR RoR objective and requirements?*

Question 59 incorporates, in ATCO's view, an incorrect construction of rule 87A. Rule 87A is a rule governing the estimated cost of corporate income tax. It is not part of the provisions which govern rate of return determination, and no question arises as to whether there are methods for estimating gamma which might, in some sense, better achieve the allowed rate of return objective of rule 87(3) and the other requirements of rule 87.

ATCO does not offer a view on the issue raised in Question 58. ATCO is satisfied that the "state of the art" dividend drop off study undertaken for the AER, at the request of the ACT, by financial consultants SFG, currently provides an estimate of gamma which has been arrived at on a reasonable basis and which is the best estimate possible in the circumstances. ATCO is well aware of the problems with correlation between the independent variables of the model which has been used by SFG to estimate the parameter theta ($\gamma = F \times \text{theta}$), and that the ERA continues to have reservations about that model and the econometric methods used. ATCO is also aware that, in time, models and data for the estimation of theta, F and gamma may be developed which make obsolete the SFG dividend drop off study which provides the currently accepted value of gamma.

6. Guidelines for determining the rate of return

As we noted at the outset, rule 87 of the NGR now requires that the ERA make, and periodically review, rate of return guidelines in accordance with the rate of return consultative procedure in rule 9B. The Guidelines are to set out:

(a) the methodologies that the regulator proposes to use in estimating the allowed rate of return (rule 87(14)(a));

(b) the application of those methodologies in the determination of a return on equity and a return on debt in a way that is consistent with the allowed rate of return objective (rule 87(14)(a)); and

(c) the financial models, estimation methods, market data and other evidence the regulator proposes to take into account in estimating the return on equity, the return on debt and the value of imputation credits (rule 87(14(b)).

In its Rule Determination, the AEMC advised that it saw the Guidelines as not explicitly "locking in" any methods of rate of return determination, or specific parameters. The purpose of the Guidelines was to "narrow the debate" at the time of a specific regulatory determination or access arrangement revisions decision.[37]

The Guidelines were, the AMEC intended, to provide both flexibility and certainty without an overly rigid prescriptive approach.[38] Their role was to provide service providers, investors and consumers with certainty on the methodologies of the various rate of return components and how the regulator will assess the relevant financial models, estimation methods, market data and other evidence in meeting the allowed rate of return objective.[39] The Guidelines were not to be the determinative instrument for calculating the rate of return. Rate of return determination was about making the best estimate of the rate of return in each regulatory determination or access arrangement revisions process.[40]

The Consultation Paper outlines an approach to rate of return determination under rule 87, discusses the issues which might arise under that approach, and asks some 59 questions. The first of those questions is:

1.	*Is it reasonable to focus on the overall RoR methodologies in developing the RoR guidelines, and not develop specific parameter values within the RoR guidelines?*

ATCO is of the view that it is reasonable for the regulator to focus on rate of return methodologies, and not develop specific parameter values, when developing the Guidelines. The critical issue for the Guidelines is the way in which relevant financial models, estimation methods, market data and other evidence are to be brought together in the determination of the rate of return which achieves the allowed rate of return objective of rule 87(3). There is no need for the Guidelines to specify parameter values.

Central to the methodologies which the ERA proposes to use will be criteria which guide the evaluation of the results obtained from the relevant financial models, estimation methods, market data and other evidence which are to be used in determining the allowed rate of return. Those criteria will not be the criteria of the decision framework proposed in the Consultation Paper. The criteria of the decision framework cannot lead to the rate of return

[37] Rule Determination, page 58.
[38] Rule Determination, page 46.
[39] Rule Determination, page 57.
[40] Rule Determination, page 59.

required by rule 87. The NGL and the NGR do not call for, or require, criteria, like those of the Consultation Paper, which lie outside the regulatory regime. ATCO is strongly of the view that rule 87 itself already provides the criteria for rate of return determination.

The methodologies which the ERA proposes to use should, ATCO believes, articulate the way in which the component parts of rule 87 are to be applied in determining the allowed rate of return. This will then form the core of the Guidelines consistent with the AEMC's intentions that their role is to provide certainty on how the regulator will assess relevant financial models, estimation methods, market data and other evidence, that they not to be the determinative instrument for calculating the rate of return, and that they "narrow the debate" at the time of specific regulatory determinations.

The Guidelines cannot adopt the Consultation Paper's focus on a single model for estimating the rate of return on equity, and on a single model for estimating the rate of return on debt. Were they to do so, they would not be consistent with the requirements of rule 87 and with the AEMC's intentions in amending the rule in November 2012. Rule 87 now admits all relevant financial models, estimation methods market data and other evidence which can be brought to bear on determination of the allowed rate of return.

There are many financial models which might be considered for estimating the rate of return on equity and the rate of return on debt, and there are alternative estimation methods for many of those models. There will, therefore, be multiple candidates for the allowed rate of return (each calculated as a nominal vanilla WACC in accordance with the requirement of rule 87(4)), and a choice must be made between these multiple candidates. That choice is to be guided by the allowed rate of return objective of rule 87(3). Rule 87(3) requires determination of the allowed rate of return by reference to the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services.

ATCO is of the view that the characteristics of the benchmark efficient entity of rule 87 must now be established explicitly. That the risks of potentially comparable entities are similar, in degree, to those of the service provider can no longer be assumed as was the case previously when the benchmark was considered to be a set of Australian energy utilities with traded shares.

The requirement that the benchmark efficient entity has a similar degree of risk as that which applies to the service provider in respect of the provision of reference services will require extending the set of potentially comparable entities to include similar entities from other (international) jurisdictions.

Assessing the degree of risk of the service provider in the provision of reference services, and establishing the benchmark efficient entity as a hypothetical entity with a similar degree of risk, will, ATCO believes, be tasks central to the process of rate of return determination under rule 87. They will involve careful thinking about types of risk, about relevant comparables, and about the way in the benchmark efficient entity is to be "constructed". These issues must be addressed before estimates can be made of rates return on equity, rates of return on debt, and gearing, for the calculation candidate rates of return. In ATCO's view, these are major issues central to the methodologies that the ERA proposes to use in estimating the allowed rate of return, and to understanding the way in which the regulator intends to apply those methodologies in the determination of a rate of return on equity and a rate of return on debt in a way that is consistent with the allowed rate of return objective. They are issues which must be addressed in the Guidelines.

Finally, the Consultation Paper raises two "process" issues:

12.	*Are there any significant transitional issues associated with adopting the nominal vanilla WACC? Do these matters concern the RoR itself, or are they related to other aspects of the revenue model?*

and

13.	*Would there be any issues with the ERA adopting AER's current nominal post tax revenue model?*

ATCO is not currently aware of any significant transitional issues associated with adopting the nominal vanilla WACC but we are still preparing the next revisions to the Access Arrangement for the Mid West and South West Gas Distribution Systems.

Whether issues might arise if the ERA were to adopt the AER's Post Tax Revenue Model (PTRM) is not, at present, clear to us.

We understand that rule 87(4)(b) has the effect of requiring a post-tax approach to total revenue determination. A post-tax approach to total revenue determination would, the AEMC advised, address the issue of service provider overcompensation for the cost of tax when the rate of return is estimated as a pre-tax weighted average cost of capital calculated using the statutory corporate tax rate.[41] A post-tax approach explicitly recognised the benefits to the service provider of accelerated depreciation of some assets for tax purposes.

A post-tax approach was, the AEMC noted, already consistently applied under the NER. Incorporation of that approach into the regime of the NGR would:

[41] Rule Determination, page 47.

(a) streamline the access arrangement review process;

(b) provide gas pipeline service providers with certainty about the basis of rate of return determination;

(c) allow convergence in modelling approaches across sectors; and

(d) improve the ability to compare returns across sectors.[42]

The AEMC intended continued use of the definition of WACC that was found in the NER, and which was used in the AER's Post Tax Revenue Model (PTRM).[43] This definition of the WACC implies a post-tax approach to total revenue determination, but the AEMC did not mandate use of the PTRM. The PTRM is a model of regulated revenue determination which was designed for the electricity sector, and which necessarily incorporates a great deal more than a WACC calculation. ATCO would caution the ERA against adoption of a model developed under another regulatory regime for another industry. Although that model may incorporate the "right" WACC calculation, it may have other implications for regulated gas transmission and distribution service providers, and for the tariffs paid by the users of their pipeline systems. One obvious area of difference which may well have tariff impacts is the use of current cost accounting depreciation in the PTRM. Wholesale adoption of the PTRM would mean adoption of its approach to depreciation. ATCO notes that depreciation remains governed by rules 88 and 89 (which have not been amended), and that the regulator's discretion under rule 89 is limited.

[42] Rule Determination, page 47.
[43] Rule Determination, page 63.

Attachment to ATCO's submission dated 28 February 2013 on the ERA's Rate of Return Guidelines Consultation Paper – see section 1.3 of ATCO's submission

The Source of the Fair Rate of Return for Investor-Owned Utilities in North America: the Applicability of those Methods for Jurisdictions in Australia

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1. Introduction

The purpose of this note, on behalf of ATCO Gas Australia, is to describe the practice of discerning reliably the cost of capital for investor-owned utilities in North America and to discuss the applicability of those methods in Australia. Given the long history of workable regulatory decision making in Canada and the United States on this question, I also make recommendations about using North American data in the determination of reasonable returns with purely Australian data —either directly or at the very least as a check on the reasonableness of such work.

I wish to convey in this note that North American regulatory jurisdictions have for decades been wrestling with the question of the reasonable rate of return that investor-owned utilities can include in their rates and charges. Starting from constitutional and legal requirements based in rights of property to be free from seizure by administrative agencies, these jurisdictions have sought efficient and reliable means to assure investor-owners that the capital they devote to providing utility services will earn a reasonable return and be predictably repaid. A few times these jurisdictions have sought to automate or mechanize the process. Each time they have reverted back to time-tested, case-by-case analyses that by the twenty-first century reflect a reasonably standard and efficient use of timely financial market data.

NERA has done extensive work on deriving the cost of capital (return on equity—ROE—or rate of return—ROR) for regulated utilities in many jurisdictions throughout the firm's history around the world. Since 1981, I have presented evidence to regulatory bodies in the United States, Canada, Australia and elsewhere on the fair return for utilities on scores of occasions.[1]

2. The Meaning of a "Fair Return"

The more than 50 independent Provincial/State and Federal regulatory jurisdictions in Canada and the United States have been wrestling with fair return questions though a decades-long evolution of comparatively well-settled law and procedures designed to create an orderly and predictable regulatory process. Built upon such institutions, regulatory litigation has become a formal and reasonably complex, but relatively reliable and predictable, dispute regulation mechanism—"rate case" by another name. These rate cases square the needs of investor-owners with the needs of the public

[1] I have provided evidence on the cost of capital in about half of the state and federal regulatory jurisdictions in the United States and Canada on behalf of dozens of gas, electricity, telecommunication and water utility clients or trade groups comprising utility companies. In addition, I have written a number of papers (both published and working papers) on the subject of the cost of capital for public utilities. My current Vita is attached to this statement.

under what has been generally accepted as the "regulatory compact."[2] The regulatory compact finds no expression whatsoever in regulatory legislation. This largely explains why its precise boundaries often appear to be undefined. As I see it, the regulatory compact (in Canada, the United States or Australia) is nothing more than a concept reflecting the statutory balance that regulatory bodies must strike between, on the one hand, the regulated entity's interests and, on the other hand, the interests of its customers, in approving just and reasonable prices. Indeed, the general adequacy of the legislative initiatives and judicial decisions of the 1930s and 1940s[3] for ensuring that investor-owners can reasonably expect to have their capital returned to them over the useful lives of the assets funded with that capital, including a fair rate of return, is evidenced by the consistent ability of utilities to finance with comparatively low-cost capital.

For investor-owned regulated utilities, like the gas transmission and distribution networks that are the subject of this inquiry, institutions also matter to the extent that maintaining safe, adequate and reliable service for the public depends on attracting capital from the market to do so. As Professor Bonbright said, in a way that is seemingly self-evident:

> Recalling, then, that we are concerned with the *principles* by which to measure a fair return rather than with details of application to any one case, what criteria of fairness or effectiveness should govern the choice of these principles? Among these criteria, high place, perhaps first place, must be given to that of capital-attracting efficiency. Judged by this test alone, choice should rest with whatever principles of rate control are best designed to permit well-managed, soundly financed public utility companies to attract needed capital.[4] (underlining added)

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[2] Under the regulatory compact, the utility accepts the obligation to serve all comers in return for agreeing to commit capital to the business—as long as regulators grant a fair opportunity for those investors to earn a compensatory return on their capital.

[3] These include the 1944 *Hope Natural Gas* Supreme Court decision (*Federal Power Commission v. Hope Natural Gas*, 320 US 591), the Uniform System of Accounts as first specified in Section 8(a) of the Natural Gas Act of 1938 (52 Stat p. 825) and the 1946 Administrative Procedures Act (60 Stat. 238).

[4] Bonbright, J.D., *Principles of Public Utility Rates,* Columbia University Press, New York (1961), p. 152.

Bonbright in this passage was merely re-stating the opinion of the U.S. Supreme Court in the case that has determined since 1944 the basic constitutional parameters by which the fair return is judged in the United States:

> Rates which enable the company to operate successfully, to maintain its financial integrity, to attract capital, and to compensate its investors for the risks assumed certainly cannot be condemned as invalid….[5]

3. North American Regulation of the Fair Rate of Return

With any investor-owned utility, the regulator and the utility have reciprocal obligations that are generally well recognized. That is, the utility operates the service and provides the capital needed to maintain and expand the facilities that allow the public to be adequately served. For its part, the regulator provides a stable regulatory environment, oversees the adequacy of services, and offers the utility a reasonable opportunity to earn a return on its investments. Among its various duties, a key role for regulators is to credibly signal to the utility's investors how their investments will be recovered in regulated charges.[6]

Such regulation is described in the economic literature as a "form of long-term contracting."[7] Canada and the United States have proven over 100 years of natural gas regulatory history that they are able to honor the long-term contract. The exact form of this long-term contracting has evolved throughout this history as regulators pushed

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[5] Federal Power Commission v. Hope Natural Gas Co., 320 U.S. 591, 605 (1944). Bonbright was well familiar with this ruling, which came as the result of the first litigated test of the Natural Gas Act of 1938, as he was the financial witness for the Federal Power Commission in that case.

[6] This mutuality of obligations is sometimes called the "regulatory bargain" or "regulatory compact," but those are merely convenient labels for how governments and investors have traditionally worked out how the public will be adequately served by private companies.

[7] Professor Oliver E. Williamson, an authority on the economics of transactions and regulation, noted that "[a]t the risk of oversimplification, regulation may be described contractually as a highly incomplete form of long-term contracting in which (1) the regulatee is assured an overall fair rate of return, in exchange for which (2) adaptations to changing circumstances are successively introduced without the costly haggling that attends such changes when parties to the contract enjoy greater autonomy." Williamson, O.E., *The Economic Institutions of Capitalism*, Free Press, New York (1985), p. 347. See also Victor Goldberg, Regulation and Administered Contracts, *Bell Journal Of Economics*, Vol. 7 (Autumn 1976): p. 426-448.

against the regulatory boundaries, were reprimanded by courts, were given new direction through legislative action, and were chaired by individuals of various political inclinations as new executives were elected.

In mature regulatory jurisdictions with strong legal and administrative histories, such as Canada and the United States, the regulatory compact represents a concatenation of: (1) strong primary legislation; (2) credible, comprehensive and transparent administrative procedures for making regulatory decisions and adjudicating disputes; (3) accounting regulation specifically designed for utility ratemaking; and (4) clear pathways for reliable judicial review of regulatory decisions.

Strong Constitutional/Judicial Foundations

Canadian regulatory legislation is effectively very similar to that in the United States, although it does not have all of the judicial precedent regarding the constitutional protection of private property that characterizes the latter. Canada's regulatory compact is based instead on common law and "fundamental justice" (as opposed to specific Constitutional requirements) but nevertheless does appear to be comparable to the United States in practice.[8] The US Constitution, especially the fifth and fourteenth amendments, provides the foundation that supports those protections.

In Canada and the United States, Supreme Court interpretations of this primary legislation define the legal limitations on regulators' ability to take action on charges that may damage the value of utility investors' property. The best known case is that of Federal Power Commission v. Hope Natural Gas, in which the Supreme Court set a standard for determining "just and reasonable" returns, a standard that has stood the test of time.[9] Both countries share a remarkably similar regulatory mandate and their "fair

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[8] Canada's equivalent to the US 14th Amendment, Section 7 of the Charter of Rights and Freedoms, states: "[e]veryone has the right to life, liberty and security of the person and the right not to be deprived thereof except in accordance with the principles of fundamental justice." As a relatively recent act, it remains to be seen exactly how "fundamental justice" will be interpreted but it has thus far been interpreted as more than simple procedural rights.

[9] *Federal Power Commission v. Hope Natural Gas*, 320 US 591 (1944).

and reasonable" standards for utilities' returns are almost identical. Indeed, Canada's Northwestern Utilities v. City of Edmonton anticipated the landmark US Hope case by fifteen years. Both established the opportunity cost of capital as the relevant standard by which utilities' returns should be judged.

The Supreme Court of Canada stated in *Northwestern Utilities*:

> The duty of the Board was to fix fair and reasonable rates; rates which, under the circumstances, would be fair to the consumer on the one hand, and which, on the other hand, would secure to the company a fair return for the capital invested. By a fair return is meant that the company will be allowed as large a return on the capital invested in its enterprise (which will be net to the company) as it would receive if it were investing the same amount in other securities possessing an attractiveness, stability and certainty equal to that of the company's enterprise…[10]

In the Hope decision, the US Supreme Court, by a vote of five to three, set a new standard for determining "just and reasonable" returns for investor-owned utilities.

> The return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and attract capital.[11]

In Bluefield, an earlier case leading up to the Hope decision, the US Supreme Court defined the proper rate of return as follows:

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties...[12]

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10 *Northwestern Utilities v. City of Edmonton*, S.C.R. 186 (NUL 1929).

11 *Hope,* 320 US 591, 603 (1944).

12 *Bluefield Waterworks & Improvement Co. v. Public Service Commission of the State of West Virginia et al.*, 262 US 679, 693 (1923). The *Hope* and *Bluefield* decisions refer to two Constitutional Amendments. The Fifth Amendment, as interpreted by the Court, gave the Court jurisdiction over Congress in such matters. The Fourteenth Amendment, under the Court's interpretation, gave it similar jurisdiction over the States.

In setting required revenues, a utility's returns would henceforth be measured by investors' possible earnings on alternative enterprises of similar risk. The Supreme Courts thus ruled that a utility's investments were safe from seizure (i.e., a "taking") if regulators set charges to award returns consistent with investors' opportunity cost of capital. These limitations on the discretion of regulators were not academic exercises. For the purposes of the future gas market, the Hope and Northwestern Utilities decisions were critical. They sharply limited investor or shipper uncertainty regarding the ability of regulators to act in a manner that would damage the value of the assets that investors would devote to regulated enterprises. Taken together, these decisions essentially ended economic inquiry into the meaning of the fair return in North America. One economist at the time called the Hope decision, without hyperbole, as "one of the most important pronouncements in the history of American law."[13]

Credible, Comprehensive and Transparent Administrative Procedures

Predictable regulatory or tariff-making practices are unlikely without a clear set of administrative procedures that bind the way that the independent regulators conduct their business. Canada and the US both provide stability to their utility investors through strong administrative procedures.

An important tenet of Canadian administrative practices is the common law right to procedural fairness. The Supreme Court of Canada has held that judicial and quasi-judicial bodies, but also other administrative decision makers, must follow common law principles of procedural fairness that include the right to be heard and the right to be judged impartially.[14]

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[13] Bonbright, J.C., "Utility Rate Control Reconsidered in the Light of the Hope Natural Gas Case," *American Economic Review* 38, no. 2 (1948): 465.

[14] An important decision with regard to procedural fairness was *Nicholson v. Haldimand-Norfolk Reg. Police Commrs.*, where the Supreme Court of Canada significantly extended the rights to procedural fairness to non-judicial administrative decision makers and solidified the right to justification for a decision. *Nicholson v. Haldimand-Norfolk Reg. Police Commrs*., [1979] 1 S.C.R. 311.

The 1946 Administrative Procedures Act guides regulatory procedures in the US. Similar to Canada, it requires regulators to hold hearings, warn participants of impending rule changes, allow participation in regulatory proceedings from the affected parties, and accept evidence (subject to cross-examination in those hearings). The late US Senator Daniel Patrick Moynihan explained that:

> The APA rests on a constellation of ideas: government agencies should be required to keep the public informed of their organization, procedures, and rules; the public should be able to participate in the rule-making process; uniform standards should apply to all formal rule-making and adjudicatory proceedings; and judicial review should be available in certain circumstances. Taken together with the Freedom of Information Act, an amendment to the APA that was enacted in 1966 and added to in 1974, 1986, and 1996, the APA was intended to foster more open government through various procedural requirements and thus to promote greater accountability in decision making.[15]

These are precisely the elements of "due process" in the administration of regulation. Indeed, the legal inquiries that resulted in the Administrative Procedures Act arose out of the general judicial concern (arising in the US in the 1930s) that regulating prices of investor-owned companies at any level represented a potentially unconstitutional taking of private property. That potential unconstitutionality, it was rightly thought, could only be prevented if a specific framework was applied for assuring the due process of regulatory decisions.

While Canada does not have an exact equivalent to the U.S. Administrative Practices Act of 1946, it does have an umbrella of provincial statutes, the charter(s) of the administrative decision maker(s), and the protection of common law, which includes previous interpretations as well as foundational justice and the founding principles of the constitution.[16] Through these channels, Canadian

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[15] Daniel Patrick Moynihan, *Secrecy: The American Experience* New Haven, Conn: Yale University Press, 1998, p. 157.

[16] The provincial administrative practices acts include: *Statutory Powers Procedure Act*, R.S.O. 1990, c. S.22 (Ont.); *Administrative Procedures Act*, R.S.A. 2000, c. A-3 (Alta.); *Administrative justice, An Act respecting*, R.S.Q. c. J-3 (QC).

administrative procedures are equally well-established and effective as US procedures.

Accounting for Utility Tariff Making

The goals of effective and efficient regulation can be frustrated without a consistent, credible, and sustainable set of regulatory accounts. Strict accounting standards (i.e., the Uniform System of Accounts) rarely leave US or Canadian energy utilities and their regulators in major dispute over basic financial issues (like profitability, depreciation expenses or the admissibility of particular costs).

Strong and transparent accounting standards were established over half a century ago in Canada and the US, but such is not the case in other, supposedly mature jurisdictions. For example, a major component of the reviews of British Gas conducted in recent years by both Ofgas (the gas regulatory body before Ofgem was created) and the Monopolies and Mergers Commission concerned basic accounting and finance items in an environment with no regulatory accounting standards.[17] This confusion in the UK over British Gas's rate of profits on its capital stock and the depreciation allowed on billions of pounds sterling of transportation assets represents a major risk to utility investors that is absent in Canada and the United States. Canadian and US accounting standards would never leave major assets in question, as was the case in the UK following privatization.

Reliable Judicial Review

Effective limits on regulatory authority in systems with well-functioning regimes come from the judiciary and other paths of appeal. In both Canada and the US, the fundamental legal limitations on the ability of regulators to take actions that damage the holdings of utility investors (in some way or another)

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[17] *The Economist* has referred to UK regulatory accounting as a "fiddly bit of guesswork." (See: "Don't you just love being in control?" *The Economist*, May 18th, 1996.)

come from well-known Supreme Court decisions. The Courts in both countries have found that the property rights of investors in regulated companies, as well as the rights of the customers they serve, require strict regulatory attention to invested capital.

Elements of Canadian vs. US Regulatory Risk

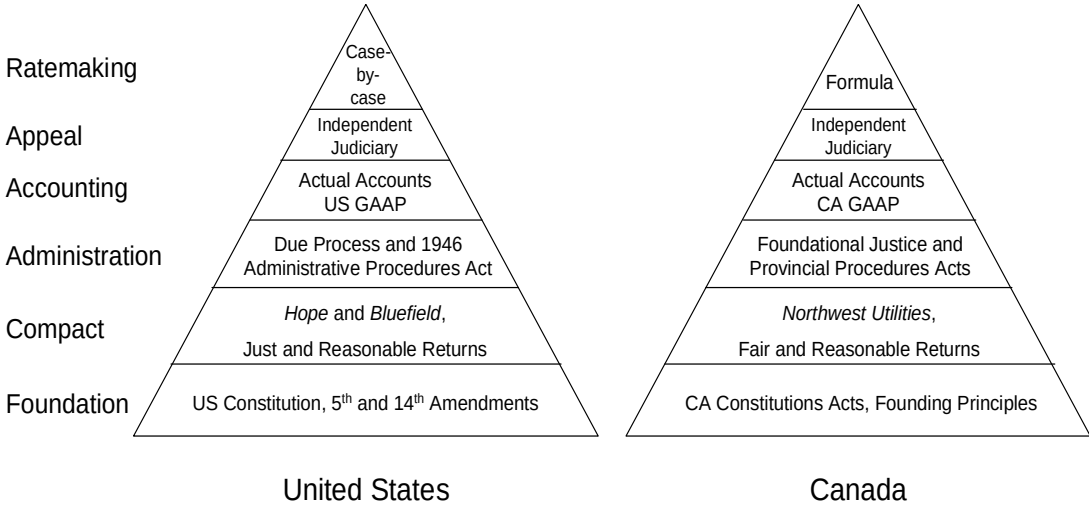
While Canada and the United States share a credible regulatory environment, the exact regulatory foundations are admittedly not identical. However, the differences that do exist are more procedural than fundamental. The two jurisdictions engage in roughly the same practices, although they may go by slightly different names or receive more or less attention. The differing levels of attention does not imply that some practices are superior to others; rather, these differences arise from the dates the practices were implemented, the procedures used to handle the practices, and the emphasis placed on various practices in regulatory proceedings.

These principles are generally true of all regulatory jurisdictions in Canada and the United States. Both equity investors and lenders generally give funds to utilities with the reasonable expectation that the principles of obligations will be provided with a fair return. Even though the particular utility statutes may vary from jurisdiction to jurisdiction, and even though regulatory commissions may have different policies and precedents in different jurisdictions, investors anticipate the basic bargain between them and their regulator (who represents the public) will apply to their investments.

From the constitutional foundation through to administrative practices, accounting practices and judicial review, Canada and the US have virtually indistinguishable regulatory environments—so much so that the US Hope and

Bluefield decisions are even cited in Canadian rate cases.[18] Figure 1 illustrates the regulatory pyramid in Canada and the United states.

Figure 1: Elements of Recent ROE Regulation in the US and Canada



Regulation in Canada and the US is founded on strong primary legislation that protects the rights of citizens. The constitution of Canada is an amalgam of codified acts and uncodified traditions and conventions.[19] The Constitutions Act, 1982 established a Charter of Rights and Freedoms, the Canadian equivalent to the US Bill of Rights. While the Charter extends many protections to Canadian citizens, including the right to "foundational justice," this Charter does not explicitly include the protection of property rights. A significant difference in the regulatory foundations is the strong constitutional protection of property rights in the United States afforded by the 5th and 14th amendments.

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[18] See, for example, Alberta's *Generic Cost of Capital* decision, where the EUB stated, "[t]he Board concurs that the above decisions [*Northwestern*, *Hope*, and *Bluefield*] are the most relevant judicial authorities with respect to the establishment of a fair return for regulated utilities." Alberta Energy and Utilities Board, *Generic Cost of Capital* Decision 2004-052 (2005), p. 13.

[19] The Preamble to the Constitution Act, 1867 states that the provinces shall have, "a Constitution similar in Principle to that of the United Kingdom."[19] This has been interpreted as stating that the practices of the United Kingdom that were common before the creation of the constitution form part of the Canadian constitution—for example, the practice of an independent judiciary has been constitutionally guaranteed under this argument. See *Provincial Judges Reference* [1997] 3 S.C.R. 3.

The regulatory compact in both countries is shaped by judicial decisions and includes the right to earn a "fair return" on investment, as determined by the opportunity cost of capital, which is termed the "comparable investment" standard. While the phrase, "regulatory compact," is not used as often in Canada as in the US, the concept is there. Indeed, the decisions that shape the US compact are cited in Canadian rate cases, and the Canadian decisions are widely recognized as establishing an effective compact that is very nearly identical to that of the US.[20]

While Canada does not have a single, federal administrative practices statute, administrative practices are highly refined in Canada and afford at least as much protection to investors as those in the United States. The Canadian common law protection—enhanced by the introduction of foundation justice in the Charter of Rights and Freedoms and provincial administrative procedures acts—equals the US standard of due process and the Administrative Procedures Act of 1946 in its protection of investors' rights.

In both Canada and the United States, regulatory accounting is sufficiently refined that actual accounts are used for ratemaking without contention, avoiding the regulatory conflicts that surround benchmarked costs or replacement value accounting. The right to use actual costs for intraprovincial/intrastate regulation comes from provincial and state statutes. While some provinces have "fair value" mandates and are not required to use book values, they do so nonetheless.[21] This is similar to the US, where five states have "fair value" statues but have defined fair value to be the book value, so it is a difference without a distinction.

There is a perception that Canadian judiciaries are reluctant to interfere with the decisions of utility regulators. However, US judiciaries also do not

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[20] Morin, R.A. *New Regulatory Finance*, Vienna, Virginia: Public Utilities Reports (2006), p. 12.

[21] The use of actual accounts in Canada was upheld in *B.C. Electric Co.*, where the court established that the book value of prudently incurred costs could be used to provide a fair return, despite a statute requiring that appraisal value be used. *B.C. Electric Co. Ltd. v. Public Utilities Commission et al*. (1957) 13 D.L.R. (2d) 589 (BCCA).

overturn regulatory decisions without a clear reason to do so, and judicial rebuke is the exception rather than the rule in the United States. Most important is that clear pathways for appeal exist in both countries and appeals are conducted in a manner such that, should major grievances be raised, the judiciaries are capable of reaching a reasonable decision.

In sum, Canada and the United States share similarly mature regulatory compacts, supported by well-established accounting, administrative and appellate procedures. They are unique in their advanced regulatory environment based on credible, actual accounts.

4. Methodologies to Estimate Return on Equity

North American regulatory commissions, like such specialized governance bodies everywhere perhaps, are made up of practical, politically minded people. As might be expected, they favour "what works" over theories. Because they have been dealing with essentially the same institutional question surrounding the determination of the fair return for almost seven decades, they have had a great deal of experience in determining workable methods for finding the fair return for the investor-owned utilities they regulate. In the twenty-first century, those regulators have generally settled on two theoretical approaches to finding the compensatory return required in the market for capital. I discuss those methods in this section.

Various regulatory commissions, both in Canada and the United States, have sought ways to deal with the contention surrounding the determination of the fair rate of return. The fair rate of return began to be a hotly contested topic in the early 1970s as unprecedented inflation, rapid fuel price increases (reflecting the OPEC oil embargo) and the end of decades of technical advances in lower-cost electricity generating technology ushered-in an era of frequent rate cases. Most rate case issues associated with the cost of service are capable of being resolved through careful review and audit of regulatory accounts. But the repeated case-by-

case litigation of the fair rate of return has defeated the sort of empirical resolution that works for cost of service, depreciation, taxes, debt interest costs, and other elements of the cost of service, seeking as it does a contemporaneous—but unobservable—opportunity cost of equity capital in the market.

Three prominent efforts have been made since the late 1980s to standardize the determination of the cost of equity capital in rate cases. The first was the Federal Energy Regulatory Commission's "Generic Financing" cases begun in 1985 that sought to create a method for the quarterly updating of the cost of equity based on standardized methods.[22] The second was the 1991-1993 Generic Finance Proceeding in New York.[23] The third was an effort by Canadian regulators, begun in 1994, to adopt truly automatic adjustment methods for setting the return on equity based on a fixed spread with observed movements in Canadian interest rates on long-term bonds.[24] In all of these prior attempts to regularize and/or standardize the determination of the return on equity, considerable resources were expended to seek comments from representatives of investors, regulators and interveners. In the end, they all failed to provide a mechanical method for discerning the cost of equity—each to case-by-case analyses of the cost of capital using reliable market data and well-known theories—most particularly the discounted cash flow analysis.

I will describe the three methods in turn in the ways considered standard in evidentiary presentations in North America.

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22 See FERC Order No. 420 (issued, May 20, 1985).

23 See Case 91-M-0509, Recommended Decision (issued July 19, 1994). The Recommended Decision in New York was never confirmed by the Commission, but it has generally guided Commission Staff practices since that time. An administrative law judge ruling in Case 09-E-0428, issued July 15, 2009 (Consolidated Edison) held that deviations from various parameters and methods inherent in the generic formula are subject to a "heavy" burden of proof.

24 See: Ontario Energy Board (OEB) *A Review of the Board's Guidelines for Establishing Return on Equity* RP-2002-0158 (2004) ¶ 122. *See* also: Alberta Energy Board (EUB) *Generic Cost of Capital* Decision 2004-052 (2004) pgs 25-27. Both decisions review the history of the generic formula in Canada.

The Capital Asset Pricing Model (CAPM)

Equity risk premium analyses are based on the observation that for investors it is more risky to hold equities than bonds (which have contractually-set payments and come first in line in default or bankruptcy situations). Assuming that investors are risk adverse, they will require a higher return to hold assets with higher risk. Equity returns therefore carry a premium over bond returns. If risk-free bond yields are observable in the market, and the equity premium capable of derivation, the cost of equity capital will result as the sum of the two.

There are a wide variety of methods for estimating the cost of equity capital along these lines, the most popular of which is the capital asset pricing model (CAPM). The CAPM formula itself is rather straightforward. Its components are: (1) the risk free rate of return; (2) the market rate of return; and (3) the beta. These inputs are combined to estimate the ROE (often referred to as the Sharp-Lintner model).

$$\text{ROE} = \text{Risk-Free Rate} + \beta(\text{Market Risk Premium}) \quad (1)$$

Despite this algebraic simplicity, there are different methods to obtain each of these components and to compute the required rate of return. The effects of choosing one method over another can substantially change the required cost of capital. Because CAPM, with the exception of the beta term, does not have the "law of large numbers" properties in a benchmark comparable group (because the risk free rate and market return are common parts of the computations for each company), the use of a benchmark group is not as helpful in deriving a stable estimate, as in the other popular method discussed below.

Other than the observable risk free rate, the practical elements of the CAPM formula are full of contention. For example, the beta term relates the

movement in an individual company stock price compared with that of the entire market for stocks. Greater relative movement vis-à-vis the market means a higher beta. Those betas published by investment analyst houses (such as Merrill Lynch or others) make use of an adjustment procedure that moves "raw" betas toward 1.0. The "adjusted" published betas are generally the ones used by North American regulators when they make reference to the CAPM.

The other area of contention is the market return—defined as the premium that the market for equities demands as a spread on the risk free rate. Market risk premiums are not published, but have to be derived. Some are based on historical achieved returns and others try to gauge investor expectations on future equity returns not unlike those who perform a DCF analysis. In rate case application of the CAPM, there is always dissension among interested parties regarding the size of the market risk premium, as its choice directly affects the level of "just and reasonable" rates. Practical-minded regulators wrestle with this issue.

Despite these areas of contention, one benefit of the use of the CAPM is that the theory upon which it rests provides a relatively clear method for gauging the effect of increased "gearing" (or "leverage") on the cost of equity. It is well known in both financial theory and in practical investment circles that a high proportion of debt in the capital structure adds financial risk to the business risk facing a company—and raises both the cost of debt and equity. The CAPM model provides a theoretical method to compute the effect of different gearing on the ROE.[25] Indeed, in some prominent cases in the US, this method has been used as the basis for regulators to grant higher equity costs to adjust for the use of greater gearing levels as deemed prudent by the regulator.[26]

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[25] For the theoretical formula regarding the relationship between betas (and hence equity costs) and gearing, see: Copeland, T.E., and Weston, J.F., *Financial Theory and Corporate Policy, Third Edition*, Addison-Wesley, Reading, Massachusetts (1988), p. 457.

[26] For example, in the aftermath of the electricity utility restructuring in Texas, the Public Utility Commission there approved a 50 basis point "financial risk" premium to the cost of equity for all electricity distributors in the state

CAPM is often used in North American rate cases, but it is never used as the sole determinant of the cost of equity capital, particularly in any mechanistic way.[27] The judgment required in selecting parameters for the CAPM is no less significant than the judgment required for appropriate use of the DCF, and the CAPM lacks the "central tendency" properties of DCF that smooth the results to yield a more reliable estimate. Perhaps most important of all is the CAPM's manifest problems in volatile financial markets, which happened in the wake of the 2008-2009 financial crisis. In that environment, with stock prices gyrating, risk-free interest rates dropping precipitously and market risk premiums moving in ways difficult to discern, even the basic Sharp-Lintner CAPM model provided little from which North American regulators could draw confident conclusions regarding the fair rate of return—in contrast to the principal method in North America to be discussed next, the discounted case flow (DCF) method.

Discounted Cash Flow (DCF) or "Yield Plus Growth"

The discounted cash flow (DCF) method is used to estimate the cost of common stock equity by determining the present value of all future income expected to be received from a share of common stock. As such, the DCF method for deriving the return on equity is the common stock equity analog to the way in which debt cost rates are calculated. Just as the present value of a plain vanilla bond is based off of payment schedules and interest rates, the present value of a stock can be calculated from the expectation of future earnings discounted at the investor's required rate of return. If the market believes an investment to be under or overvalued, it is judged so in relation to these expectations, and the price quickly adjusts to reflect the market's consensus.

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to reflect its desire that the utilities all move toward a higher amount of debt in their capital structures (60 percent) reflecting the spin-off of their generating function. *See* Public Utility Commission of Texas, *Order No. 42: Intermin Order Establishing Return on Equity and Capital Structure*, Docket No. 22344 (2000).

[27] One jurisdiction in our experience, Oregon, for some time in the 1990s appeared to use the CAPM as the sole method for finding the ROE. It stopped that seemingly sole reliance in 2001. *See* Public Utilities Commission of Oregon, Order No. 01-777 (2001).

To accept this model we must acknowledge the basic theoretical tenants of an efficient market: stock price reflects the market's consensus opinion on the stock's worth. This worth is based upon expectations of future earnings, comprising stock dividends and stock price appreciation. The total expected future income is discounted to the present at the investor's required rate of return. Thus, given the price of the stock, once the expectation of future earnings is known, the required yield of the share can be determined. In the context of an efficient market, a solid, reliable, and widely accepted proxy for the market's opinion is the consensus forecast of disinterested market analysts.

In order to appreciate the validity of the DCF model and the sound economic theory upon which it is based, it should be stressed that since expectations drive stock price, and stock price likewise reveals expectations of future earnings, what matters is not that these expectation of future dividends are precisely realized, but that they reflect the belief and consensus of the market.

DCF analysis is the most popular method used to determine the ROE among North American regulatory commissions. Its popularity is a function of its ease of use and comprehension by commissioners not necessarily particularly versed in more difficult financial theories like the CAPM. At its most fundamental level, the DCF method endeavors to compute the cost of equity capital by summing the two sources of equity investor returns—the "yield" portion (meaning the dividend yield with respect to the stock price) and the "growth" portions—the rise in the stock price that investors expect to see. In a world of complicated ratemaking formulae and financial theories, it is no surprise that "yield plus growth" has an intrinsic appeal, particularly when there are many sorts of similar utilities by which to gauge the sum of these two common-sense factors that make up the ROE. The formal theoretical statement of the DCF methodology grew out of Professor Myron J. Gordon's work on stock valuation

models, which was first published in complete form in 1962.[28] The theory was first presented widely to regulatory audiences in 1970 as an Appendix to Professor Alfred E. Kahn's book The Economics of Regulation.[29] The same formula has appeared in other books dealing specifically with the cost of capital for utilities; the first being by Gordon in 1974.[30]

The normal formulation of the annual form of the DCF is as follows:

$$k_e = \frac{D_0 * (1+g)}{P_0} + g$$

$$k_e = \frac{D_1}{P_0} + g$$

P_0	=	price of stock
D_0	=	previous dividend paid
k_e	=	cost of equity
g	=	dividend growth rate.

This is the theoretical model discussed Professors Kahn and Gordon. The annual DCF formula calls for three inputs: the contemporaneous price of the stock, the prior annual period's dividend payment and the growth rate. The price of stock and dividends paid are observable in the market. With respect to the source of the growth rate, g, projected earnings growth is the most reflective of current investor expectations of the value of the corporation, which is consistent with the

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[28] *See* Gordon, M.J. *The Investment, Financing and Valuation of the Corporation* (Homewood, IL: Richard D. Irwin Inc., 1962; reprint, Westport, CT: Greenwood Press, Publishers, 1982).

[29] Kahn, A.E., *The Economics of Regulation: Principles and Institutions, Volume I*, John Wiley and Sons, New York (1970), pp. 58-60. Kahn describes its use in Pennsylvania in a case involving the Peoples Natural Gas Company (a local distributor) by my late NERA colleague, Herman Roseman.

[30] Gordon, M.J., *The Cost of Capital to a Public Utility*, MSU Public Utility Studies, Division of Research, Graduate School of Business Administration, Michigan State University, East Lansing (1974).

literature on the practical application of the DCF model. Nevertheless, there is nothing inherently wrong, or biased, in combining growth rates of earnings and book values with a measure of "sustainable" growth that employs factors designed to reflect both internally- and externally-generated funds.[31] Dividend growth rates may show a bias during a number of years if underlying industry payout ratios are expected to change in the future—and hence should only be used if analyst forecasts of futures average payout ratios for a proxy group of companies is generally similar to contemporaneous payouts.

The search for a reasonable growth is a purely prospective pursuit. It should be self-evidently unacceptable to employ historical growth measures as reasonable gauges of current investor expectations that drive the setting of stock prices in the market. Of course, company histories are part of the larger story that inform those, like the analysts business is analyzing for the market the prospects for the growth in earnings, dividends and common equity share prices in the future. But it should be evident that once those analysts have made their projections, combining those projections mechanically with historical averages over some arbitrary period is of no value in gauging investor expectations. After investigating the matter, neither the FERC nor the NYPSC generic methods utilized any historical growth measure for their DCF calculations.

Part of the DCF formula that may not appeal to analysts and regulators is the growth rate expected by investors. That growth rate is inherently inscrutable, and in small capital markets it may be hard to gauge investor expectations and thus to apply the DCF model. But in the US, where the model retains its great popularity, a robust industry of independent stock market analysts helps greatly. In the United States, both in print and on the web, disinterested collections of estimates of utility growth rates are readily available to assist in the calculation of

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[31] The "sustainable" growth measure uses projects of book value (*b*), retained earnings percentages (*r*), sales of new shares (*s*) and values of new shares in excess of book values (*v*) into the formula *br + sv*.

DCF-derived ROE figures. Surveys such as these are less available in Canada or Australia since there are fewer investor-owned utilities. That said, individual and consensus analyst growth rate estimates are available for Canadian and Australian utilities whose equities trade on a stock exchange. Combining such available growth rate estimates with the availability of a number of similar-risk companies, in benchmark "proxy groups," allows regulators to enjoy the stabilizing influence of the law of large numbers in setting the ROE.[32] For practical-minded regulators looking for stable, understandable and objective evidence, its popularity is no surprise.

DCF analysis involves making selections at two key stages: first, the analyst selects a specific benchmark "proxy group" of utilities facing similar risks and then selects the several inputs such as the growth rate. Many of the practical concerns of regulators over these selections have been addressed in Canadian and US jurisdictions, and the regulatory burden of case-by-case ratemaking has been lightened by establishing consistent selection criteria at each stage. One concern unique to Canadian jurisdictions, however, has been applicability of proxy groups that contain US utilities. Given the degree of capital market integration, the degree of cross-border gas trade, and the international presence of utility investors, it has generally been accepted that US utility experience is useful in Canada as well.

5. Common Capital Markets in North America and Beyond

Canada and the United States have almost hundred-year histories of regulating investor-owned utilities. Given the commonality of the institutional foundation for utility regulation in Canada and the United States, represented by Figure 1, the former has long

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[32] In practical terms, the "law" describes the stability of a random variable, with repeated sampling. That is, given a sample of independent and identically distributed random variables, the sample average will approach and stay close to the true population average as the size of the sample increases. This is a long way of saying that the ROE results from a "proxy group" sample of similar utilities are more representative of the actual ROE than the ROE for a single company alone.

recognized that much about the regulation of the latter is useful—from citations to US case law to the use of data for US utilities in the determination of elements of the reasonable treatment of Canadian utilities. It is common for Canadian utilities to file, and Canadian regulators to rely upon, consistent US operating and financial data in preference—or at least in conjunction—with information on local Canadian utilities.

Canadian Regulators use US as well as Canadian Data

The normal use of US data by regulated gas network companies in Canada is evidenced by the preponderance of US proxy group data by TransCanada Pipeline Company in its current rate case before the National Energy Board. In that case, TransCanada uses three proxy groups to determine the fair rate of return: Canadian regulated utilities, US gas distribution companies and US gas pipeline companies.[33]

This experience is not to say that Canadian utilities and regulators do not look closely at the source and usefulness of data for their own companies in making decision on reasonable rates. Local data is of course useful for many of the elements of reasonable ratemaking, including capital and operating expenses, depreciation and other such items. But when it comes to ratemaking parameters that are hard to discern (like the market's unobservable verdict of the cost of equity capital) regulators prefer to use broad and reliable sources that work rather than to make do with relatively sparse or inconsistent local data.

Beyond North America

The prior section of this note explains how Canada has recognized that the use of data from the United States, where similar utilities operate under similar regulatory institutions, is appropriate. The existence of cross-border financial information that can be reliably used in regulatory proceedings need not, however, be limited to Canada.

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[33] See TransCanada Pipelines Limited, Mainline Business and Services Restructuring and Mainline 2012 – 2013 Tolls Application, September 1, 2011.

I am aware of other jurisdictions outside of North American that have looked to capital markets data in the United States to establish appropriate returns. Australia would also benefit from such an exercise. Although a country that has evolved new regulatory institutions, Australia does have many of the same accounting, legal protection and administrative procedures common to Canada and the United States. It is thus in my opinion quite suitable to rely upon North American data in the determination of reasonable returns for Australian firms—either directly by using US or Canadian proxy companies, or indirectly as a sense check on the reasonableness of the results that are developed from purely Australian data.

The operation of capital markets on a global scale with direct competition among infrastructure firms for available capital tends to drive the opportunity cost of capital for utility investors to a common level. Pension funds, mutual funds, hedge funds and institutional investors look not only to local investment opportunities; they scour the globe for higher risk-adjusted returns. The opportunity cost for the capital that is committed to Australian utilities can thus reasonably be found in the returns required by similar firms operating in North America. This is particularly the case given the comparability of the institutional and regulatory frameworks in these jurisdictions.

As a practical matter, would it be difficult to rely upon data from North America? The answer is no. The cross-border financial data required to perform the DCF analyses described in this report are readily available to practitioners across the globe. In modern capital markets, analysts' ratings and market information can be accessed at any time of day via the internet or via direct subscription services like Bloomberg Finance LP (Bloomberg). Credit rating agencies and investment banks are global institutions. They cover multiple continents in order to respond to the needs of their global client base: the same reports that are available in New York are available in Melbourne, and they cover both local and international firms.

Would certain adjustments need to be made? Depending on how the North American data is employed, yes. The measureable differences in Australian practice,

such as exchange rates and risk-free rates can reasonably be adjusted to make returns comparable between the two jurisdictions.

In my opinion, the most important benefit of analyzing the North American data is that it is likely to help the regulator find an efficient level of investor compensation. I believe most ROE analysts would agree that whether an allowed ROE produces an economically-efficient result depends on how well it reflects the true opportunity cost of capital faced by investors. Since North America offers a veritable treasure chest of financial information—available because so many firms are investor-owned and because the institutions and market transparency have existed for so long—the analysis of such data can only be beneficial in a regulatory inquiry designed to establish what the true cost of capital is for utilities who tap global financial markets to be able to provide safe and reliable service to their local customers in Australia.

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Dr. Makholm concentrates on the issues surrounding the privatization, regulation and deregulation of energy and transportation industries—those that operate networks (such as oil and gas pipelines, electricity transmission and gas distribution systems, telecommunications and water utility systems) and those operating infrastructure business at specific sites, such as airports, electricity generation plants, oil refineries, gas treatment plants and sewage treatment plants. These issues include the broad categories of efficient pricing, market definition and the components of reasonable regulatory practices. Specific pricing issues include tariff design, incentive ratemaking, and the unbundling of prices and services. Issues of market definition include assessments of mergers, including the identification and measurement of market power. Issues of reasonable regulatory practices include the creation of credible and sustainable accounting rules for ratemaking as well as the establishment of administrative procedures for regulatory rulemaking and adjudication. On such issues among others, Dr. Makholm has prepared expert testimony, reports and statements, and has appeared as an expert witness in many states, federal and U.S. district court proceedings as well as before regulatory bodies and Parliamentary panels abroad.

Dr. Makholm's clients in the United States include privately held utility corporations, public corporations and government agencies. He has represented dozens of gas and electric distribution utilities, as well as both intrastate and interstate gas pipeline companies and gas and electricity producers. Dr. Makholm has also worked with many leading law firms engaged in issues pertaining to the local and interstate regulation of energy utilities.

Internationally, Dr. Makholm has directed an extensive number of projects in the utility and transportation businesses in 20 countries on six continents. These projects have involved work for investor-owned and regulated business as well as for governments and the World Bank. These projects have included advance pricing and regulatory work prior to major gas, railroad and toll highway privatizations (Poland, Argentina, Bolivia, Mexico, Chile and Australia), gas industry restructuring and/or pricing studies (Canada, China, Spain, Morocco, Mexico and the United Kingdom), utility mergers and market power analyses (New Zealand), gas development and and/or contract and financing studies (Tanzania, Egypt, Israel and Peru), regulatory studies (Chile, Argentina), and oil pipeline transport financing and regulation (Russia). As part of this work, Dr. Makholm has prepared reports, drafted regulations and conducted training sessions for many government, industry and regulatory personnel.

Dr. Makholm has published a number of articles in various peer-reviewed and editor-reviewed publications (*Public Utilities Fortnightly*, *Natural Gas*, *The Electricity Journal*, *The Energy Law Journal*, *Competition and Regulation in Network Industries*, and *Economics of Energy & Environmental Policy*)—many involving emerging issues of wholesale and retail competition in gas and electricity, including the issues of unbundled and competitive transport, secondary markets and stranded costs. He is a frequent speaker in the U.S., Europe and elsewhere at conferences and seminars addressing market, pricing and regulatory issues for the energy and transportation sectors. His book, *The Political Economy of Pipelines: A Century of Comparative Institutional Development*, published by the University of Chicago Press, was published in 2012.

EDUCATION

UNIVERSITY OF WISCONSIN-MADISON,
MADISON, WISCONSIN
Ph.D., Economics, 1986
Dissertation: Sources of Total Factor Productivity in the Electric Utility Industry
M.A., Economics, 1985

BROWN UNIVERSITY
PROVIDENCE, RHODE ISLAND
Graduate Study, 1980-1981

UNIVERSITY OF WISCONSIN-MILWAUKEE
MILWAUKEE, WISCONSIN
M.A., Economics, 1980
B.A., Economics, 1978

EMPLOYMENT

1996-present	Senior Vice President. National Economic Research Associates, Inc., (NERA) Boston, Massachusetts.
1986-1996	Vice President/Senior Consultant. National Economic Research Associates, Inc., (NERA) Boston, Massachusetts.
1987-1989	Adjunct Professor. College of Business Administration, Northeastern University, Boston, Massachusetts
1984-1986	Consulting Economist. National Economic Research Associates, Inc., (NERA) Madison, Wisconsin.
1983-1984	Consulting Economist. Madison Consulting Group, Madison, Wisconsin.
1981-1983	Staff Economist. Associated Utility Services, Inc., Moorestown, New Jersey.

RECENT TESTIMONY (SINCE 2000)

Before the National Energy Board, Written Evidence on behalf of FortisBC Energy Inc., Hearing Order GH-001-2012, May 29, 2012. Subject: Tariff treatment for pipeline extensions to new Canadian gas production regions.

Before the National Energy Board, Expert Report and Direct Testimony on behalf of Market Area Shippers Group, Hearing Order RH-003-2011, March 2012. Subject: Assessment of TransCanada's omnibus restructuring proposal and commentary on Market Area Shippers Group's alternative solution.

Before the Alberta Public Utility Commission (with Agustin J. Ros). Reply Expert Report. Application No. 1606029, AUC Proceeding 566. February 22, 2012. Subject: Update to TFP analysis and review of PBR plans for the Commission's performance-based regulation initiative.

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Before the United States Federal Energy Regulatory Commission, Prepared Direct Testimony in Public Utilities Commission of Nevada and Sierra Pacific Power Company v Tuscarora Gas Transmission Company, Docket No. RP11-1823-000. October 17, 2011. Subject: Reasonable interstate gas pipeline tariff levels.

Before the Public Utilities Commission of Nevada, Pre-filed Rebuttal Testimony on behalf of Nevada Power Company and Sierra Pacific Power Company d/b/a NV Energy. Docket Nos. 11-03003, 11-03004 & 11-03005. August 3, 2011. Subject: Prudence of hedging practices.

Before the United States Federal Energy Regulatory Commission, Affidavit in Public Utilities Commission of Nevada and Sierra Pacific Power Company v Tuscarora Gas Transmission Company, Docket No. RP11-1823-000. February 28, 2011. Subject: Reasonable interstate gas pipeline tariff levels.

Before the Public Utilities Commission of Nevada, Prepared Direct on behalf of Nevada Power Company d/b/a NV Energy, 2011 Gas and Electric Deferred Energy Proceeding, Docket No. 11-03___. February 24, 2011. Subject: Prudence of hedging practices.

Before the Public Utilities Commission of Nevada, Prepared Direct on behalf of Sierra Pacific Power Company d/b/a NV Energy, 2011 Gas Deferred Energy Proceeding, Docket No. 11-03___. February 24, 2011. Subject: Prudence of gas hedging practices.

Before the Federal Energy Regulatory Commission and the State of Alaska Regulatory Commission, Prepared Direct Testimony on behalf of Trans Alaska Pipeline System. Docket No. IS09-348-004, *et al*. January 21, 2011. Subject: Prudence of capital rehabilitation costs.

Expert report filed before the Alberta Public Utility Commission (with Agustin J. Ros). Application No. 1606029, AUC Proceeding 566. December 30, 2010. Subject: Total factor productivity study for use in the Commission's performance-based regulation initiative.

Before the Commonwealth of Kentucky, Edmonson Circuit Court. Opinion on behalf of plaintiff in Honeycutt vs. Atmos Energy Corporation. Docket No. 09-CI-00198 and 10-CI-00040. September 10, 2010. Subject: Valuation of Natural Gas Commodity.

RECENT TESTIMONY (SINCE 2000 CONTINUED)

Before the Régie de l'Energie, Direct Testimony on behalf of Hydro-Québec TransÉnergie. Demande R-3738-2010. August 2, 2010. Subject: Economic analysis of issues related to the regulatory policies for network upgrades.

Before the Public Utilities Commission of Nevada, Pre-Filed Supplemental Direct Testimony on behalf of Nevada Power Company, Sierra Pacific Power Company d/b/a NV Energy (electric and gas departments), Docket No: 10-03003, 10-03004, 10-03005. May 5, 2010. Subject: Gas hedging.

Before the Arkansas Public Service Commission, Rebuttal Testimony on behalf of Entergy Arkansas, Inc., Docket No. 09-084-U. March 24, 2010. Subject: Justification of the operation of a multi-year formula rate plan.

Before the Public Utilities Commission of Nevada, Pre-Filed Direct on behalf of Nevada Power Company, Docket No. 10-03003. February 26, 2010. Subject: Prudence of gas purchase costs.

Before the New York State Public Service Commission, Rebuttal Testimony on behalf of Rochester Gas and Electric Corporation, Case 09-E--07717 Case 09-G-0718 and New York State Electric & Gas Corporation, Case 09-E-0715, Case 09-E-0716. February 12, 2010. Subject: Cost of equity capital.

Before the Public Utilities Commission of Nevada, Pre-Filed Direct Testimony on behalf of Sierra Pacific Power Company , Docket No. 09-09001. December 15, 2009. Subject: Gas hedging plan.

Before the Public Utilities Commission of Nevada, Pre-Filed Direct Testimony on behalf of Nevada Power Company , Docket No. 09-07003. December 15, 2009. Subject: Gas hedging plan.

Before the New York State Public Service Commission, Direct Testimony on behalf of Rochester Gas and Electric Corporation, Case 09-E--07717 Case 09-G-0718. September 17, 2009. Subject: Cost of capital and capital structure.

Before the New York State Public Service Commission, Direct Testimony on behalf of New York State Electric & Gas Corporation, Case 09-E-0715, Case 09-E-0716. September 17, 2009. Subject: Cost of capital and capital structure.

Before the Arkansas Public Service Commission, Direct Testimony on behalf of Entergy Arkansas, Inc., Docket No. 09-084-U. September 4, 2009. Subject: Justification of the operation of a multi-year formula rate plan.

Submission before the New Zealand Commerce Commission, on behalf of Orion New Zealand Limited, July 31, 2009. Subject: Theory and practice of price cap regulation.

Before the Hawaii Public Utilities Commission, Testimony on behalf of Hawaiian Electric Company Inc., Docket No. 2008-0083. July 2009. Subject: Energy cost adjustment clause.

Before the Public Utilities Commission of Nevada, Pre-Filed Direct Testimony on behalf of Nevada Power Company , Docket No. 09-02____. February 27, 2009. Subject: Prudence of gas purchase costs.

Before the Public Utilities Commission of Nevada, Pre-Filed Direct Testimony on behalf of Sierra Pacific Power Company, Docket No. 09-02_____. February 27, 2009. Subject: Prudence of gas purchase costs.

RECENT TESTIMONY (SINCE 2000 CONTINUED)

Before the Department of Public Utility Control of Connecticut, Direct Testimony on behalf of Connecticut Natural Gas Corporation. Docket No. 08-12-06. January 11, 2009. Subject: Cost of capital.

Before the Department of Public Utility Control of Connecticut, Direct Testimony on behalf of Southern Connecticut Gas Corporation. Docket No. 08-12-06. January 11, 2009. Subject: Cost of capital.

Before the Public Utility Commission of Texas, Rebuttal Testimony on behalf of Lone Star Transmission, LLC. Docket No. 35665. November 14, 2008. Subject: Licensing of new electricity transmission projects.

Before the Public Utilities Commission of Ohio, Direct Testimony on behalf of The Dayton Power and Light Company. Case No. 08-1094-EL-SSO. October 10, 2008. Subject: Cost of capital.

Before the Illinois Commerce Commission, Rebuttal Testimony on behalf of Northern Illinois Gas Company, Case No. 08-0363. September 25, 2008. Subject: Cost of capital.

Before the Illinois Commerce Commission, Testimony on behalf of Northern Illinois Gas Company, Case No. 08-0363. April 29, 2008. Subject: Cost of equity.

Before the Illinois Commerce Commission, Rebuttal Testimony on behalf of Shelby Coal Holdings, LLC, Christian Coal Holdings, LLC and Marion Coal Holdings, LLC. Docket No. 07-0446. April 7, 2008. Subject: Pipeline certification and competition in pipeline transport market.

Before the New York State Public Service Commission, Rebuttal Testimony on behalf of Iberdrola, S.A., Energy East Corporation, RGS Energy Group, Inc., Green Acquisition Capital, Inc., New York State Electric & Gas Corporation and Rochester Gas and Electric Corporation, Case No. 07-M-0906. January 31, 2008. Subject: Regulatory philosophy/ merger issues.

Before the Public Utilities Commission of Nevada, Rebuttal Testimony on behalf of Sierra Pacific Power Company, Docket No. 07-09016. January 14, 2008. Subject: Stand-alone costs and cost allocation issues.

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Before the Illinois Commerce Commission, Testimony on behalf of Shelby Coal Holdings, LLC, Christian Coal Holdings, LLC and Marion Coal Holdings, LLC. Docket No. 07-0446. January 7, 2008. Subject: Pipeline certification and competition in pipeline transport market.

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Before the Public Utilities Commission of Nevada, Direct Testimony on behalf of Sierra Pacific Power Company, Docket No. 07-09016. December 14, 2007. Subject: Stand-alone costs and cost allocation issues.

Before the New Hampshire Public Service Commission, Docket No. DE 07-064, invited appearance on an expert panel to present perspectives and answer questions on policies and practices regarding retail gas and electric distribution rate "decoupling," November 7, 2007.

RECENT TESTIMONY (SINCE 2000 CONTINUED)

Before the Public Utilities Commission of Nevada, Prefiled Direct Testimony on behalf of Sierra Pacific Power Company, Docket No. 07-05019. May 15, 2007. Subject: Prudence of gas purchase costs.

Before the United States Bankruptcy Court, Southern District of New York, Supplemental Report on behalf of Solutia, Inc., *et al*., Debtors, Case No. 03-17949 (PCB) (Jointly Administered), April 20, 2007. Subject: Discount rate for contract rejection damages.

Before the Public Utilities Commission of Nevada, Rebuttal Testimony on behalf of Sierra Pacific Power Company, Docket No. 06-12001. April 19, 2007. Subject: Stand-alone costs and cost allocation issues.

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Before the Public Utilities Commission of Nevada, Prefiled Direct Testimony on behalf of Nevada Power Company, Docket No. 07-01022. January 16, 2007. Subject: Prudence of gas purchase costs.

Before the Public Utilities Commission of the State of Hawaii, Supplemental Testimony on behalf of Hawaii Electric Light Company, Inc., Docket No. 05-0135. December 29, 2006. Subject: Energy cost adjustment clause.

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Before the Public Utilities Commission of Nevada, Pre-filed Direct Testimony on behalf of Sierra Pacific Power Company, Docket No. 06-12001. December 1, 2006. Subject: Stand-alone costs and cost allocation issues.

Before the State of New Jersey Board of Public Utilities, Prepared Reply Testimony on behalf of Public Service Electric & Gas, OAL Docket No. PUC1191-06 and BPU Docket No. EO05111005. November 3, 2006. Subject: Unregulated contract prices for telecommunication conduit rental contracts.

Before the State of New Jersey Board of Public Utilities, Rebuttal Testimony on behalf of the New Jersey American Water Company, Case No. WR06030257, October 10, 2006. Subject: Cost of Capital.

Before the Public Utilities Commission of Nevada, Rebuttal Testimony on behalf of Sierra Pacific Power Company, Docket No. 06-05016. October 2, 2006. Subject: Prudence of gas purchase costs.

Before the Federal Energy Regulatory Commission, Reply Testimony on behalf of the State of Alaska, Docket No. OR05-2-001, August 11, 2006. Subject: Relative risk and capital structure for the Trans Alaska Pipeline System (TAPS).

RECENT TESTIMONY (SINCE 2000 CONTINUED)

Before the Maine Public Utilities Commission, Response to the Bench Analysis on behalf of Central Maine Power Company, Docket 2005-729. May 19, 2006. Subject: Specification of productivity offset for price cap formula.

Before the Public Utilities Commission of Nevada, Rebuttal Testimony on behalf of Sierra Pacific Power Company, Docket No. 05-12001. May 17, 2006. Subject: Prudence of the company's gas hedging strategy.

Before the Public Utilities Commission of Nevada, Prefiled Direct Testimony on behalf of Sierra Pacific Power Company (Gas Division, WestPac Gas), Docket No. 06-0516. May 15, 2006. Subject: Prudence of the company's gas hedging strategy.

Before the State of New Jersey Board of Public Utilities, Testimony on behalf of the New Jersey American Water Company, Case No. WR06030257, March 29, 2006. Subject: Cost of Capital.

Before the Public Utilities Commission of Nevada, Direct Testimony on behalf of Nevada Power Company, Docket No.06-01016. January 17, 2006. Subject: Prudence of the company's gas hedging costs.

Before the New Brunswick Board of Commissioners of Public Utilities, Rebuttal Testimony on behalf of the Public Intervenor, Board Reference 2005-002. December 30, 2005 (original filing), January 23, 2006 (updated filing). Subject: Cost of capital.

Before the Public Utilities Commission of Nevada, Pre-Filed Direct Testimony on behalf of Sierra Pacific Power Company, Docket No.05-12001. December 1, 2005. Subject: Prudence of the company's gas hedging costs.

Before the Public Utilities Commission of Nevada, Pre-Filed Rebuttal Testimony on behalf of Sierra Pacific Power Company, Docket No.05-9016. December 2, 2005. Subject: Prudence of the company's energy supply plan.

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Before the Public Utilities Commission of Ohio, Supplemental Testimony on behalf of The Dayton Power and Light Company. Case No. 05-276-EL-AIR. September 26, 2005. Subject: Cost of capital.

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Before the United States Bankruptcy Court, Northern District of Texas, Fort Worth Division, Reply Report on behalf of Mirant Corporation, et al, Debtors. Case No. 03-46590 (Jointly Administered). April 12, 2005. Subject: Pipeline capacity valuation.

Before the Public Utilities Commission of Nevada, Rebuttal Testimony on behalf of Sierra Pacific Power Company. Docket No 05-1028. April 12, 2005. Subject: Prudence of gas purchase costs.

Before the Illinois Commerce Commission, Rebuttal Testimony on behalf of Northern Illinois Gas Company d/b/a Nicor Gas Company. Case No. 04-0779. April 5, 2005. Subject: Cost of capital.

RECENT TESTIMONY (SINCE 2000 CONTINUED)

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Before the Public Utilities Commission of Nevada, Testimony and Exhibits on behalf of Sierra Pacific Power Company. Docket No 05-1028. January 5, 2005. Subject: Prudence of gas purchase costs.

Before the Public Utility commission of Oregon, Direct Testimony on behalf of Portland General Electric. Docket No. UE-165. November 17, 2004. Subject: Power supply risk related to PGE's hydroelectric generation sources.

Before the Public Utilities Commission of Nevada, Testimony on behalf of Nevada Power Company. Docket No. 04-11028. November 10, 2004. Subject: Examination of the prudence of gas purchase and hedging decision in the Company's 2004 deferral case.

Before the Illinois Commerce Commission, Testimony on behalf of Nicor Gas Company. Docket No. 04-0779. November 1, 2004. Subject: Cost of Capital.

Rebuttal Report for an ad-hoc arbitration on behalf of CITIBANK, N.A. in their case against NEW HAMPSHIRE INSURANCE COMPANY. Policy No. 576/ MF5113500. October 15, 2004. Subject: Claimants right to collect on a political risk insurance policy as a result of the expropriation of a toll-road concession's assets in Argentina.

Before the International Center for the Settlement of Investment Disputes, Testimony on behalf of Azurix Corp., in the case of Azurix Corp v. Government of Argentina in Paris, France, October 11th, 2004. Subject: Expropriation of a water utility concession in the province of Buenos Aires.

Before the Circuit Court of Fairfax, Virginia, Testimony on behalf of Upper Occoquan Sewage Authority in the case against Blake Construction Co., Inc., Poole and Kent, a Joint Venture. Case No. 206595. October 1, 2004. Subject: Valuation of capacity expansion project.

Expert Report for an ad-hoc arbitration on behalf of CITIBANK, N.A. in their case against NEW HAMPSHIRE INSURANCE COMPANY. Policy No. 576/ MF5113500. October 1, 2004. Subject: Claimants right to collect on a political risk insurance policy as a result of the expropriation of a toll-road concession's assets in Argentina.

Before the London Courts of International Arbitration, Rebuttal Report on behalf of CITIBANK, N.A. AND DRESDNER BANK AG in their case against AIG EUROPE (UK) LTD. AND SOVEREIGN RISK INSURANCE. Arbitration No. 3473. September 17, 2004. Subject: Claimants right to collect on a political risk insurance policy as a result of the expropriation of electric utility assets in Argentina.

Before the London Courts of International Arbitration, Expert Report on behalf of CITIBANK, N.A. AND DRESDNER BANK AG in their case against AIG EUROPE (UK) LTD. AND SOVEREIGN RISK INSURANCE. Arbitration No. 3473. August 6, 2004. Subject: Claimants right to collect on a political risk insurance policy as a result of the expropriation of electric utility assets in Argentina.

RECENT TESTIMONY (SINCE 2000 CONTINUED)

Before International Center for the Settlement of Investment Disputes, Rebuttal Report on behalf of Azurix Corp., in the case of Azurix Corp v. Government of Argentina, April 15th, 2004. Subject: Expropriation of a water utility concession in the province of Buenos Aires.

Before the Public Utilities Commission of Nevada, Rebuttal Testimony on behalf of Sierra Pacific Power Company. Case No: 03-12002. March 29, 2004. Subject: Rebutted argument that there was a link between the merger and the cost of electricity in the post-merger period.

Before the Public Utilities Commission of Nevada, Rebuttal Testimony on behalf of Nevada Power Company. Case No: 03-10001 and 03-10002. February 5, 2004. Subject: Rebutted argument that there was a link between the merger and the cost of electricity in the post-merger period.

Before the New Zealand Commerce Commission, Testimony on behalf of Orion New Zealand. November 5, 2003. Subject: Productivity measures used in resetting the price path thresholds for electricity distributors in New Zealand.

Before the Public Utilities Commission of Nevada, Rebuttal Testimony on behalf of Sierra Pacific Power Company. Case No: 03-5021. September 2, 2003. Subject: Structure in place for governing and overseeing hedging/risk management process at Westpac Utilities, an operating division of Sierra Pacific Power Company.

Before the State of Maine Public Utilities Commission, Rebuttal Testimony on behalf of FairPoint New England Telephone Companies. July 11, 2003. Subject: Cost of capital.

Before the Public Utilities Commission of Nevada, Testimony on behalf of Sierra Pacific Power Company. Case No: 03-5021. May 14, 2003. Subject: Structure in place for governing and overseeing hedging/risk management process at Westpac Utilities, an operating division of Sierra Pacific Power Company.

Before the Public Utilities Commission of Nevada, Rebuttal Testimony on behalf of Sierra Pacific Power Company. Case No: 03-1014. May 5, 2003. Subject: Prudence of gas procurement and hedging program.

Before the State of Maine Public Utilities Commission, Direct Testimony on behalf of FairPoint New England Telephone Companies. April 7, 2003. Subject: Cost of capital.

Before the Public Utilities Commission of Nevada, Rebuttal Testimony on behalf of Nevada Power Company. Case No: 02-11021. March 31, 2003. Subject: Prudence of gas procurement and hedging program.

Before Federal Communications Commission, Testimony on behalf of Iowa Telecommunications Services, Inc. Case No. March 25, 2003. Subject: Cost of capital.

Before Federal Energy Regulatory Commission, Testimony on behalf of PPL Wallingford Energy LLC. Case No: ERO3-421-000. January 9, 2003. Subject: Cost of equity.

Before the State of New Hampshire Public Utilities Commission, Rebuttal Testimony on behalf of Kearsarge Telephone Company. Case No. DT 01-221. December 20, 2002. Subject: Rebuttal on cost of equity.

RECENT TESTIMONY (SINCE 2000 CONTINUED)

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"CEG Privatization: Comments to the Regulatory Framework," prepared for Capitaltec Consultoria Economica SA describing our comments with respect to the regulatory framework and the license proposed in the privatization of Riogas and CEG in Rio de Janeiro, Brazil; March 7, 1997.

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"Determination of Costs and Prices for Natural Gas Transmission," prepared for Pemex Gas y Petroquímica Básica, México, December 19, 1996.

"Regulating Argentina's Gas Industry," a report prepared for The Ministry of Economy and The World Bank, November 26, 1996.

"Open Access and Regulation," prepared for Gascor, in the State of Victoria, Australia; (October 2, 1996).

"A Review and Critique of Russian Oil Transportation Tariffs (Russian Oil Transportation & Export Study; Commercial, Contractual & Regulatory Component)," prepared for The World Bank, June 13, 1996.

"Tariff Options for Transneft (Russian Oil Transportation & Export Study; Commercial, Contractual & Regulatory Component)," prepared for The World Bank, June 6, 1996.

"Comments on the Proposed Amendments to the Regulation of Airports in New Zealand," prepared for the New Zealand Parliament Select Committee hearings on the regulation of monopolies, March 13, 1996.

"Evaluating the Shell Camisea Project," prepared for Perupetro S.A., Government of Peru, December 8, 1995.

"Towards a Permanent Pricing and Services Regime," prepared for British Gas, London, England, November, 1995.

"Final Report: Gas Competition in Victoria," prepared for Gas Industry Reform Unit, Office of State Owned Enterprises, June 1995.

"Natural Gas Tariff Study," prepared for the World Bank, May 1995, consisting of:

Principles and Tariffs of Open-Access Gas Transportation and Distribution Tariffs
Handbook for Calculating Open-Access Gas Transportation and Distribution Tariffs

RECENT INTERNATIONAL REPORTS (CONTINUED)

"Economic Implications of the Proposed Enerco/Capital Merger," prepared for Natural Gas Corporation of New Zealand, December 1994.

"Contract Terms and Prices for Transportation and Distribution of Gas in the United States," prepared for British Gas TransCo, November 1994.

"Economic Issues in Transport Facing British Gas," prepared for British Gas plc, December 1993.

"Overview of Natural Gas Corporation's Open-Access Gas Tariffs and Contract Proposals," prepared for Natural Gas Corporation of New Zealand, October 1993.

PARTIAL LIST OF CLIENTS SERVED WORLDWIDE

ELECTRIC UTILITY

AEP Energy Services, Inc
Alberta Power Limited
American Electric Power Company
Atlantic Electric Company
Boston Edison Company
Central Hudson Gas and Electric
Central Maine Power Company
Central Power & Light Company
Commonwealth Edison Company (Unicom/Exelon)
Commonwealth Energy System
Consolidated Edison Company of New York, Inc
Conowingo Power Company
Duquesne Light Company
Edison Electric Institute
Entergy Gulf States, Inc
Florida Power and Light Company
Green Mountain Power Company
Long Island Lighting Company
Massachusetts Municipal Wholesale Electric Company
Massachusetts Electric Company
Nantahala Power Company
New York State Electric & Gas Corporation
Niagara Mohawk Power
Ohio Power Company
Orange & Rockland Utilities
Pennsylvania Power and Light Company
Pennsylvania Power Company
Philadelphia Electric Company
PJM electricity transmission owners
Public Service Company of New Hampshire
Public Service Company of New Mexico
Public Service Electric and Gas Company
Portland General Electric Company
Reliant Energy HL&P
Rochester Gas and Electric Corp.
Sierra Pacific Power Corporation
Southwest Electric Power Company
Southwestern Public Service Company
Tampa Electric Company
Texas-New Mexico Power Company
TXU Electric Company
United Illuminating Company
UtiliCorp Networks Canada
Virginia Electric and Power Company
West Penn Power Company
West Texas Utilities Company
Western Massachusetts Electric Co.

GAS UTILITY

ARKLA, Inc.
Atlanta Gas Light Company
Bay State Gas Company
Berkshire Gas Company
Blackstone Gas Company
Boston Gas Company
Bristol & Warren Gas Company
British Gas plc
Brooklyn Union Gas Company
Canadian Western Natural Gas
Chattanooga Gas Company
Colonial Gas Company
Commonwealth Gas Company
Connecticut Natural Gas Corp.
Consolidated Gas Supply Corp.
Elizabethtown Gas Company
Empire State Pipeline Company
ENAGAS (Spain)
EnergyNorth, Inc.
Essex County Gas Company
Fall River Gas Company
Fitchburg Gas & Electric Light Company
Gas and Fuel Corporation of Victoria
Gateway Pipeline Company
Granite State Gas Transmission, Inc.
Great Falls Gas Company
Holyoke, Mass. Gas & Electric Dept.
ICG Utilities (Ontario) Ltd.
KN Energy, Inc.
Middleborough Municipal Gas & Electric
National Fuel Gas Distribution Corp.
Natural Gas Corporation of New Zealand
Natural Gas Pipeline of America
Norwich Department of Public Utilities
Pacific Gas Transmission
Pemex Gas y Petroquímica Básica
Pennsylvania Gas and Water Company
Peoples Gas Light and Coke Company
Providence Gas Company
Southern Connecticut Gas Company
Southwest Gas Corporation
Transwestern Pipeline Company
Valley Gas Company
Washington Gas Light Company
Westfield Gas & Electric Light Dept.
Wisconsin Gas Company
Yankee Gas Services Company

PARTIAL LIST OF CLIENTS SERVED WORLDWIDE (CONT.)

TELEPHONE UTILITY

Centel Corporation
Chichester Telephone Company
Community Service Telephone Company
Continental Telephone Company of Illinois
General Telephone of Pennsylvania
General Telephone Company of Ohio
Kearsarge Telephone Company
Meriden Telephone Company
Pacific Bell Telephone Company
Tipton Telephone Company

PARTIAL LIST OF CLIENTS SERVED WORLDWIDE (CONT.)

REGULATORY AND GOVERNMENT

Delaware Public Service Commission
re: Delmarva Power & Light Company

District of Columbia Public Service Commission
re: Potomac Electric Power Company
Washington Gas Light Company

Massachusetts Municipal Wholesale Electric Company

The Government of Chile
Gas industry regulations

The Government of Argentina
Plan for privatized rail freight industry regulation

The Government of Tanzania
Natural gas development and regulation plan for Songo Songo Island gas reserves.
Financing the development of gas reserves on Songo Songo Island with emphasis on payment guarantee mechanisms for foreign exchange.

The World Bank
re: Natural gas tariffs for Polskie Gornictwo Naftowe i Gazownictwo
(The Polish Oil and Gas Company)

re: Natural gas transport and distribution tariffs for Gas del Estado
(The Argentine State-owned gas utility)

re: Natural gas development for the Moroccan Gas System.

re: Natural gas transport and distribution tariffs for the Bolivian Gas Industry.

re: Natural gas development plan for Sichuan province of China.

OTHER

Air New Zealand
BHP Petroleum Pty Ltd
Centel Corporation
General Electric Company
Intel Corporation
Jamaica Water Supply Company
Nucor Steel Corporation
Parsons Brinckerhoff Development Group

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

The American Economic Association

ATCO
GROUP

26 February, 2013

Office of the Chairman

Lyndon Rowe
Chairman
Economic Regulation Authority
Level 4
Albert Facey House
469 Wellington Street
PERTH WA 6000

Dear Lyndon,

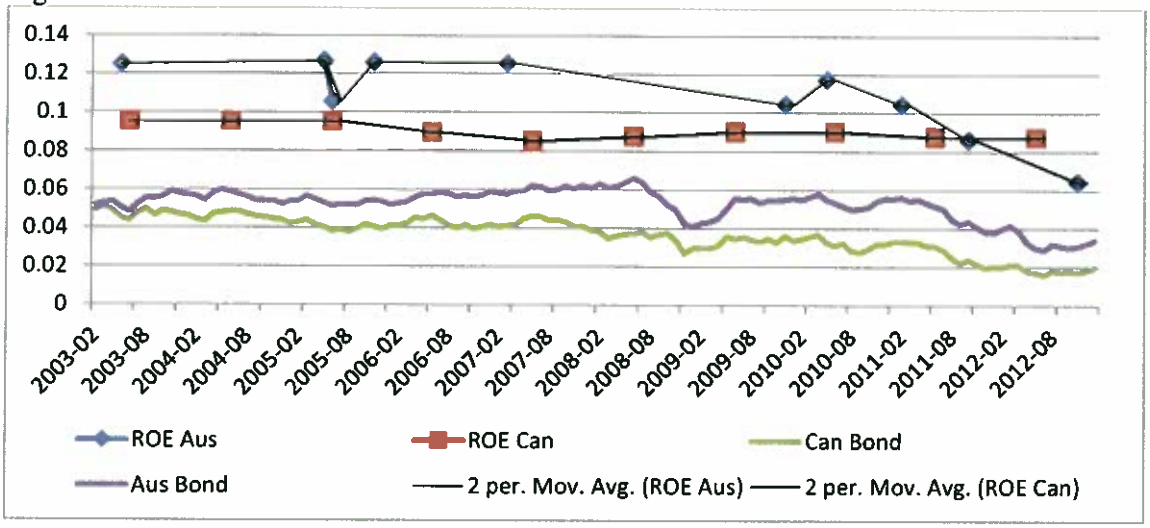
Guidelines for Rate of Return for Gas Transmission and Distribution Networks

On 21 December, 2013 the Economic Regulation Authority (ERA) issued its Consultation Paper for Guidelines for the Rate of Return for Gas Transmission and Distribution Networks. As an owner of a Gas Distribution Network in Western Australia, ATCO Ltd is very much interested in the outcome of this process.

In 2011 ATCO purchased the natural gas utility currently named ATCO Gas Australia. This purchase was made after considerable review of the company. This review included the regulatory environment in Australia in general and in Western Australia in particular. The acquisition was made with the full understanding that any regulatory regime will evolve. ATCO has a long experience with ownership of regulated assets, and therefore was able to appreciate the strengths and weaknesses of the regulatory regime in Western Australia. ATCO owns and operates major natural gas and electric distribution and transmission utilities in the Alberta, Canada.

To put some context around the assessment made by ATCO, Figure 1 shows the awarded ROE's within Alberta and within Western Australia since 2000, as well as the 10 year bond rates.

Figure 1



As is shown there has been a marked change in the relationship of the returns, even though the relationship in bond rates has essentially remained unchanged. This information appears to show that in the last year there has been a significant deterioration in the awarded return on equity in WA. Within this context ATCO notes that ATCO Gas Australia is providing its comments regarding the Guidelines that the ERA is preparing. ATCO notes that at the time of the acquisition there were no indications that significant changes in the Rules or in the process impacting the regulation of natural gas utilities in Western Australia were being contemplated.

ATCO has operations in Canada, the United States, the United Kingdom, Chile, Australia, and other countries. The opportunities to invest in new projects around the world generally exceed the available financial capacity. Decisions to make specific investments depend upon a variety of factors, not the least of which is, the stability of the investment climate in the particular country where the opportunity arises. It goes without saying that in 2011 ATCO considered that the regulatory climate in Western Australia was stable, and that ATCO would be fairly compensated for investing in the infrastructure of the State.

ATCO welcomes the ERA's Guideline Process as an opportunity to receive confirmation that the ERA will continue to provide the regulatory environment ATCO saw in 2011, where there was support of the notion that owners of critical state infrastructure will be fairly compensated for the public use of owners' assets.

Yours sincerely,

Brian Bale
Senior Vice President &
Chief Financial Officer