

**ADDITIONAL NOTE ON  
FIXED PRINCIPLES  
AND THE DEFERRED RECOVERY ACCOUNT  
FOR THE DBNGP**

**AUGUST 2003**

*Prepared for*

**Epic Energy**

*by*

Paul R. Carpenter

*The Brattle Group*  
44 Brattle Street  
Cambridge, MA 02138 USA  
1 617 864-7900

August 2003

In this submission we review and comment, from an economic perspective, on which elements of the determination of the cost of capital (rate of return) for the DBNGP should be considered “fixed principles” within the meaning of the *National Third Party Access Code for Natural Gas Pipeline Systems (the “Code”)*. We also provide further justification for why the use of a deferred recovery account, recommended in our October 1999 paper *Proposed Regulatory Model for the Dampier to Bunbury Natural Gas Pipeline*, is fully consistent with the NPV methodology outlined in Section 8.4 of the Code.

### **Fixed Principles and Rate of Return Determination Under the Code**

1. Section 8.47 of the Code states that “the Reference Tariff Policy may provide that certain principles are fixed for a specified period and not subject to change when a Service Provider submits reviews to an Access Arrangement without the agreement of the Service Provider. A Fixed Principle is an element of the Reference Tariff Policy that cannot be changed without the agreement of the Service Provider (***Fixed Principle***). The period during which the Fixed Principle may not be changed is the Fixed Period (***Fixed Period***).”
2. There are good economic reasons for the establishment of Fixed Principles that extend beyond the short term of a single tariff review period. Such principles help reduce investment risk by assuring that regulated tariffs are consistently defined over time, and not subject to inconsistent and after-the-fact adjustment. This reduces regulatory risk and thus helps achieve General Principle 8.1(d) of the Code by “not distorting investment decisions in Pipeline transportation systems.”
3. It is also consistent with General Principles 8.1(a) and (b), in that Fixed Principles assist in “providing the Service Provider with the opportunity to earn a stream of revenue that covers the efficient costs of delivering the Reference Service over the expected life of the assets used in delivering that Service,” and, “replicating the

outcome of a competitive market.” In a competitive market, investments in long-lived assets are based on *ex ante* expectations of future returns, which themselves are based on expectations of demand, costs and other market conditions. There is no *a priori* reason to believe that the future outcomes will be biased one way or the other. Under regulation, however, there is an inherent asymmetry introduced into these expectations because the possible rates of return that might be earned are attenuated on the upside. The application of Fixed Principles, such as those contemplated under the Code, helps reduce the expectation of investors that *ex post* modifications to the Reference Tariff will be asymmetric. The result is a regime that more closely mimics that of a competitive market.

4. It is also for this same reason that most natural gas pipelines worldwide are financed and constructed/acquired on the basis of long-term contracts with shippers that typically extend well-beyond short-term regulatory tariff review periods. Such reduction in uncertainty is essential for pipelines financially, because once an initial investment in a pipeline is made, the physical assets in the ground cannot be easily or economically redeployed to other alternative uses.
5. Section 8.48 elaborates that “a Fixed Principle may include any Structural Element, but in assessing whether any Structural Element may be a Fixed Principle regard must be had to the interests of the Service Provider and the interests of Users and Prospective Users.” According to Section 10, “Structural Element means any principle or methodology that is used in the calculation of a Reference Tariff where that principle or methodology is not a Market Variable Element<sup>1</sup> and has been structured for Reference Tariff making purposes over a longer period than a single Access Arrangement Period, and includes the Depreciation Schedule, the financing structure that is assumed for the purposes of Section 8.30, and that part of the Rate of

---

<sup>1</sup> The Code defines a Market Variable Element as “a factor that has a value assumed in the calculation of a Reference Tariff, where the value of that factor will vary with changing market conditions during the Access Arrangement Period or in future Access Arrangement Periods, and includes the sales or forecast sales of Services, any index used to estimate the general price level, real interest rates, Non Capital Cost and any costs in the nature of capital costs.”

Return (calculated pursuant to section 8.30) that exceeds the return that could be earned on an asset that does not bear any market risk.”

6. Thus, it appears that the process envisaged by the Code is to determine which elements or methods of Reference Tariff determination are Structural, and then to assess whether those Structural Elements should be Fixed Principles, having regard to the interests of the Service Provider and Users.
7. The Code already suggests that two elements of rate of return determination are Structural in the examples it gives in the definition language above. The first is the element of the return in excess of the risk-free rate, and the second is the financing structure assumed (i.e., the gearing ratio or capital structure).
8. With respect to the element of the return in excess of the risk-free rate, under the Capital Asset Pricing Model (CAPM)<sup>2</sup> the factors which define that amount include:
  - the Market Risk Premium
  - the “beta” measure of systematic risk, and
  - gamma, the franking or tax imputation ratio
9. It is in the interests of both the Service Provider and Users for these components of the estimated rate of return in excess of the risk free rate to be treated as Fixed Principles. If the estimation is done properly, it ensures that the Service Provider is permitted the opportunity to earn a rate of return commensurate with the business risk underlying the investment. Users are protected because, if properly estimated, the return is fair, and would be equivalent to what the firm would earn in a competitive market (i.e., it does not include monopoly returns).

---

<sup>2</sup> The CAPM itself is a structural element and Fixed Principle in the sense that it is the underlying methodology that is being used to estimate the rate of return.

10. The gearing ratio assumption is also defined by the Code as a Structural Element. It should be considered a Fixed Principle because it is in the interests of the Service Provider and Users for this ratio to reflect a reasonable range of observed gearing levels for comparable firms. As we stated in our original October 1999 report *The Cost of Capital for the Dampier to Bunbury Natural Gas Pipeline*, within a reasonable range the exact gearing level should not be a matter of great importance because economic theory and empirical analysis suggests that the cost of capital is relatively insensitive to gearing levels. For example, it is common to observe a wide range of capital structures within a single industry, even when the level of competition is such that one would expect firms with inefficient capital structures to be driven out. Thus, for theoretical and practical reasons, it makes great sense to treat the gearing ratio as a Fixed Principle.
11. In addition to the two elements discussed above that are mentioned directly in the Code's definition of Structural Element, we would recommend that two other methodological features of rate of return determination be considered as Fixed Principles. The first is the pre-tax, real approach to the total revenue calculation. The second is the point in time at which the rate of return is to be assessed – namely, as at the date the investment decision is made and the tariff is first applied for.
12. The use of a pre-tax, real rate of return is a Fixed Principle because it is a methodological feature of the calculations that does not vary with market conditions. Thus it qualifies as a Structural Element. Changing this approach midstream would introduce an inconsistency in the calculation of revenues that would simply be incorrect, and not in the interests of the Service Provider or Users.<sup>3</sup> For example, a change to an after-tax measure of rate of return would produce a resulting revenue stream that would be methodologically inconsistent with the way taxes were previously treated in cash flows under the pre-tax return method. Consequently, the pre-tax, real rate of return specification should be a Fixed Principle.

---

<sup>3</sup> This consistency requirement in the use of real versus nominal returns is explicitly recognized in Section 8.5A of the Code.

13. In his Final Decision dated 24 May 2003, the Regulator at paragraph 324 states that “I take the view that the latest information should be used in estimating the cost of capital. The use of new information is consistent with the requirement of section 8.2(e) of the Code that the estimate of the cost of capital be a best estimate. I consider it appropriate that an estimate be used of the current risk free rate.” In this context, however, later information is not better information, it is simply irrelevant information, because it tells you nothing about the market value of the investment at the time that the investment/tariff pricing decision was made.<sup>4</sup>
14. In making this decision to incorporate information into the cost of capital determination that only becomes available after the date at which the Access Arrangement was filed also violates the expectations principle of economics. Unbiased, forward-looking prices should be based on all information available (and only available) at the time that decisions to invest are made. In this case, the use of late-arriving information risks the introduction of an asymmetric bias into regulatory decisions. If this approach was codified into regulatory practice, investors in future pipeline projects or acquisitions would recognize this additional regulatory risk, and their investment decisions would be distorted. Consequently, the point in time at which the cost of capital should be assessed – at the time the investment decision is made and tariffs established – should be considered a Fixed Principle under the Code.

### **Consistency of the Deferred Recovery Account with the Code’s NPV Method**

15. Section 8.4 of the Code permits Total Revenue to be determined via one of three methodologies for Reference Tariff Purposes: 1) Cost of Service, 2) Internal Rate of Return (IRR), or 3) Net Present Value (NPV). Section 8.5 provides that other methodologies may be used provided the Total Revenue can be expressed in terms of one of these three methods.

---

<sup>4</sup> For example, if one were attempting to compute the value of a long-term bond at the time of its purchase, it would be irrelevant to know how interest rates may have changed at a later date.

16. Under the Cost of Service approach, Total Revenue for each year is calculated by summing the return on capital, depreciation (return of capital) and non-capital costs. The return on capital is computed by multiplying the rate of return times the Capital Base.
17. The NPV method establishes a forecast Total Revenue stream over the entire Access Arrangement Period such that the NPV of this revenue stream is equal to zero (i.e., the PV of the revenue stream is equal to the PV of the initial capital base plus the PV of capital additions). In this method, the discount rate that is employed to compute the NPV of the revenue stream is equal to the cost of capital.
18. Our October 1999 submission *Proposed Regulatory Model for the Dampier to Bunbury Natural Gas Pipeline* outlines an approach to the forecast of Total Revenue that is fully consistent with the NPV approach described under the Code. What is different about our proposed method is simply that instead of calculating a Total Revenue stream that produces an NPV equal to zero with respect to the \$2.4 billion acquisition investment in the pipeline, it produces a result wherein the NPV is *less than or equal* to the acquisition price. As we explain in that submission, and our additional submission dated November 2002, this permits Epic Energy the opportunity to recover its full capital costs if market conditions warrant, but puts it fully at risk for under-recovery if demand falls short of expectations at the time the acquisition was made (as now seems likely).
19. The mechanism that permits this assignment of risk in this way is the deferred recovery account. In the early years of this regime, the Reference Tariff will likely provide less than a fair return (as measured by the cost of capital) on the regulatory asset base. This shortfall would be “rolled over” into the deferred recovery account under our method. If, and only if, future volume increases materialize, then this account would be depreciated, providing for increased (but never more than full) capital cost recovery.

20. The method continues to preserve a Physical Asset Account for purposes of the application of the rate of return as under the Cost of Service method. But in order for the method to ensure that no more than the initial investment is recovered over its lifetime (i.e., that NPV is at most equal to zero), the method tracks the deferred recovery account. As is the case with all NPV methods, including those that simply apply economic depreciation over the life of the asset, the deferred recovery account earns the regulated return and is recovered through depreciation in the future – but in this case only if market conditions warrant. If the deferred recovery account did not earn the regulated return on assets, it would fail the NPV equals (at most) zero criterion that defines the NPV method under the Code.