

Capital Investment Incentives in the OEB's 2nd Generation Incentive Regulation Mechanism for Ontario Electricity Distributors

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1 INTRODUCTION

On July 25, 2006 the Ontario Energy Board (OEB or Board) released a paper entitled *Staff Discussion Paper on the Cost of Capital and 2nd Generation Incentive Regulation for Ontario Electricity Distributors* (Discussion Paper). The Discussion Paper “outlines Board staff’s current proposals and issues requiring further discussion for both the cost of capital and the 2nd Generation IRM.”¹

In a cover letter issued by the Board Secretary on the same date stakeholders were invited to submit their own comments and expert reports by August 14, 2006. This report has been prepared by Elenchus Research Associates Inc. (ERAI) at the request of Hydro One Networks Inc. (HONI) in response to this invitation. The comments address only the incentive regulation (IR) proposals contained in Staff’s Discussion Paper; the cost of capital proposals are beyond the scope of this paper.

In commenting on the Discussion Paper, ERAI notes that “the proposed 2nd Generation IRM is a transitional methodology, and not an end-state in itself” and consequently the approach suggested in the Discussion Paper “is independent of the development of 3rd Generation IRM.”² The evaluation criteria for the proposed 2nd Generation IRM, given that is intended only as a short-term, simple methodology, are necessarily different from the evaluation criteria that will be appropriate for a 3rd Generation IRM that is intended to be a robust and effective regime that can be retained for an extended period.

Recognizing the latitude that is due this stop-gap measure, the approach proposed by Staff appears to be reasonable in most respects. It is a pragmatic design that focuses on simplicity and minimizing harm to both ratepayers and shareholders. It must be recognized however that while it embeds an incentive to reduce costs, the incentive elements of the regime fail to address the critical need for investment in sustaining and renewing Ontario’s distribution infrastructure within the term of 2nd Generation IRM. This deficiency of the proposed 2nd Generation IRM is addressed in this paper.

¹ Ontario Energy Board (25 July 2006) *Staff Discussion Paper on the Cost of Capital and 2nd Generation Incentive Regulation for Ontario Electricity Distributors*, page 5.

² Ibid, page 19.

1.1 THE OBJECTIVES OF 2ND GENERATION IRM

The Introduction section of Staff's Discussion Paper sets out what are described as the "Guiding Objectives" for its proposed 2nd Generation IRM.

In formulating these proposals, staff has been guided by the Board's objective that distribution rates be just and reasonable and also by the following objectives:

- 1. Protect customers in relation to prices. ...**
- 2. Predictability and stability. ...**
- 3. Promote economic efficiency by providing the appropriate pricing signals and a system of incentives for distributors to maintain an appropriate level of reliability and quality of service. ...**
- 4. Ability to raise the financing necessary to invest in distribution infrastructure to enhance service quality and reliability. ...**
- 5. Minimize the time and cost of administering the framework. ...**
- 6. Establishing a common capital structure and incentive framework for all distributors. ...³**

Later, in the Incentive Regulation section of the Discussion Paper, Staff indicate that:

The objectives of the 2nd Generation IRM are to: provide regulatory certainty to distributors during the Rate Plan as several rate-related studies are carried out; drive efficiency improvements in the distribution sector; and lay a foundation for the 2nd Generation IRM.⁴

Given the stated objectives of the 2nd Generation IRM, it seems clear that the regime that is implemented should be more than administratively simple. It should also embed incentives that provide positive, if imperfect, incentives for distributors both to improve their operational efficiency during the regime and also to undertake the necessary capital investment to accommodate growth in their service areas and to "maintain appropriate level of reliability and quality of service."

As experience in other jurisdictions clearly shows, a challenging aspect of any incentive regime is to design incentives that encourage service providers to invest today so as to ensure that future reliability and service quality does not decline in the future.

³ Ibid, pages 5-6.

⁴ Ibid, page 19.

1.2 THE PROPOSED INCENTIVE REGULATION REGIME

Staff's proposed approach to 2nd Generation IR is summarized in section 5.2 of the Discussion Paper.

The following [price cap] formula will be used to adjust each electricity distributor's distribution rates in the years 2007, 2008, and 2009 (as applicable depending on which tranche the distributor is in):

$$\% \Delta P = K + \% \Delta \text{GDPIPI} - X + Z$$

Where:

- *ΔP is the annual percentage change in price;*
- *K is the adjustment for cost of capital in 2007 (ROE) and in 2008 (structure);*
- *$\Delta \text{GDP-IPI}$ is the percentage change in the Canada GDP-IPI for final domestic demand; and*
- *X is the 1% adjustment with implicit input price differential, productivity differential, and stretch factor; and*
- *Z may allow for adjustment due to unusual events and additional Board-approved costs outside of the formula.*

The theoretical basis of the proposed approach is discussed in section 3.1, in which Staff state:

Staff was informed by the advice of Dr. Mark Newton Lowry, of the Pacific Economics Group ("PEG") in developing this proposal. Dr. Lowry's report entitled "Second Generation Incentive Regulation for Ontario Power Distributors" ("PEG Report") provides a comprehensive discussion of the criteria for the design of regulatory systems, the advantages of incentive regulation over traditional cost of service regulation, the major issues in the design of an incentive plan, and a discussion of plan options for Ontario.

In order to assess the Staff proposal, it is therefore informative to consider the evaluation of rate caps that is contained in the PEG Report. Dr. Lowry's comments on rate caps commences with the following paragraph.

Rate caps can generate utility performance incentives much stronger than those obtained under typical cost of service regulation. One reason is that incentives are comprehensive so that a wide range of cost containment, product development, and marketing initiatives are encouraged. Another is that indexing can facilitate an extension of the period between rate cases. To the extent that this is true, improved unit cost performance does not reduce allowed price escalation during the term of the plan. The benefits of improved performance can thus go straight to the bottom line. The potential impact on productive and allocative efficiency is substantial. The

actual incentive effects of rate caps depend greatly on plan details. For example, incentives increase with the length of the indexing period and with the introduction of post plan sharing provisions.⁵

As Dr. Lowry notes, “the actual incentive effects of rate caps depend greatly on plan details.” One noteworthy “detail” of Staff’s price (or rate) cap proposal is that it explicitly precludes marketing flexibility, which in the PEG Report is advanced as a significant advantage of rate cap regimes. The Discussion Paper states in section 4.3.5:

Staff proposes that its proposed price cap index be applied uniformly across all customer classes and to both the monthly fixed rate and volumetric rate, including taxes.

It therefore appears that the incentives in the proposed 2nd Generation IR focus on “cost containment” and do not address either “product development or marketing initiatives”. In this regard, the incentives are clear: because rates will be determined by a formula that is de-linked from the cost actually incurred by the distributor for the duration of the 2nd Generation IR regime, there is a strong incentive to minimize all spending. As Dr. Lowry notes in the preceding quote: “The benefits of improved performance can thus go straight to the bottom line.” Of course, minimizing spending is not always the same thing as improving performance with respect to productivity or operational efficiency.

A common concern with price cap regimes is that there is an incentive for companies to reduce costs excessively, in that they may reduce customer service, delay maintenance thereby putting reliability at risk, etc. This concern can be mitigated in two ways.

- In an environment such as telecommunications with competitive alternatives, companies have a strong incentive to optimize service levels. Service providers must balance their cost of service against the value of their service to customers.
- In a monopoly environment, where competitive alternatives do not provide this discipline, strong service quality standards with effective financial incentives and/or penalties are commonly used to protect against inefficiency in the form of excessive deterioration in service quality. The staff proposal addresses this concern in section 3.3.8 of the Discussion Paper which concludes as follows:

⁵ Lowry, Mark Newton, Pacific Economics Group (13 June 2006) “Second Generation Incentive Regulation for Ontario Power Distributors” prepared for the Ontario Energy Board, pages 29 – 30.

Staff believes that making the SQR regime mandatory through the Distribution System Code will effectively discourage distributors from short-term reductions in maintenance expenditures and capital investments that will affect quality of service.

In the context of the proposed 2nd Generation IR a further, and perhaps more important, protection against excessive cost cutting is that distributors will be rebased on the basis of their future test year rate applications. Their forecast operating costs are likely to be examined in light of their actual operating costs incurred during the term of the 2nd Generation IRM. Hence, excessive cost-cutting risks having the operating cost base for future rate applications and 3rd Generation IRM being set at a lower level.

While the risk of excessive reductions in operating costs is likely to be minimal in practice under the proposed 2nd Generation IR, these factors are less likely to counter-balance the incentive to minimize capital expenditures that are needed to accommodate growth, and sustain the reliability and service quality of the existing infrastructure.

The level of capital expenditures recognized and included in rate base for the Board's 3rd Generation IRM is unlikely to be based on a distributor's previous level of capital investment (see section 3 below and the Appendix). Hence, future rebasing does not provide an incentive for distributors to maintain appropriate levels of capital investment. The only consequence of reducing non-revenue generating capital expenditures (e.g., sustainment capital) during the term of the 2nd Generation IRM under the proposed design is the risk that some of the service quality indicators (SQIs)⁶ may decline.

Under the proposed 2nd Generation IRM, distributors face a very powerful incentive to avoid capital investments to the greatest extent possible. For the duration of the 2nd Generation IRM, the incremental return on capital (both debt and equity) on incremental capital expenditures is nil. In addition, the distributor recovers no depreciation expense until rates are rebased. Clearly, a financially prudent distributor has a strong incentive to defer all capital spending for as long as possible unless it is likely to generate increased revenue that is at least equal to the cost of capital and depreciation expense.

⁶ SQIs are discussed in section 3.3.8 of the Discussion Paper. Staff recommend reporting on SQI results, but there are no specific financial implications (rewards or penalties) are proposed.

It is therefore clear that if the simplified approach to 2nd Generation IRM is adopted without the inclusion of a mechanism that mitigates or reverses this financial penalty for capital spending, distributors will be rewarded inappropriately for deferring investments that may be required to maintain reliability and service quality as well as growth-related investments that do not generate sufficient immediate payback. While the impact of this shortcoming may not be large for distributors in the first tranche to file their rebasing reviews, the impact will be more significant for those in the second and third tranches.

The focus of this paper is to recommend refinements to the proposed 2nd Generation IRM that would mitigate or reverse this capital investment penalty. Even an interim incentive regulation mechanism that is pragmatically simple should ensure that the embedded incentives do not seriously misalign the interests of shareholders and ratepayers.

1.3 STRUCTURE OF THE REPORT

The comments contained in this paper address the deficiency of the proposed approach with respect to capital investment incentives. The issue is addressed in two additional sections. Section 2 provides a brief overview of insights gained from ERAI's review of capital investment incentives that are used in other jurisdictions that have adopted multi-year regimes. Section 3 presents recommended refinements to the proposed 2nd Generation IRM that would provide an effective short-term capital investment incentive without compromising the simplicity of the proposed regime.

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CAPITAL INVESTMENT INCENTIVES IN OTHER REGIMES

In Canada, the regulator that has relied most heavily on multi-year incentive regimes in the past is the British Columbia Utilities Commission (BCUC). The BCUC has relied primarily on performance based ratemaking for both FortisBC and Terasen Gas for more than 10 years, although it has also used conventional cost of service hearing to rebase rates when costs appeared to become misaligned with rates.

The BCUC performance based regulation regimes have always included features that were specifically designed to address the concern that the incentive to minimize both operating and capital expenditures would result in inadequate capital investment to ensure that the infrastructure would remain safe and reliable and to ensure that needed growth in system capacity would not be avoided. The key features have been:

- Certain categories of capital investment have been subject to an incentive mechanism that allows the companies to include in rate base a pre-set unit cost (e.g., cost per customer additions; cost per kilometre of main). Hence, variances from the target costs are included in the earnings sharing mechanism.
- Categories of costs that were not suited to the incentive mechanism, such as capital projects intended to improve the safety or reliability of the system have been treated as an adder within the rate-setting formula. Hence, these costs have been treated in the same manner as a Z-factor.

ERAJ conducted a review of several U.S. jurisdictions that currently have some form of multi-year incentive ratemaking (IR) or performance based ratemaking (PBR) in place for electricity distributors to identify mechanisms that are used to provide capital investment incentives. Several observations are relevant to the discussion in this report.

The Connecticut Department of Public Utility Control implemented a five-year rate plan (2004 – 2007) for Connecticut Light & Power that explicitly included the costs associated with the company's capital program for the rate period. Concern that the company could over-earn by reducing its capital spending was addressed by requiring the company to

file its details of its actual capital spending. In the event of a significant variance, the Department reserved the right to reopen its Decision and conduct an investigation.

The Massachusetts Department of Telecommunications and Energy has approved a settlement agreement for a seven-year performance based plan (Simplified Incentive Plan or SIP) effective January 1, 2007 for NSTAR Electric that is similar in many respects to the 2nd Generation IRM proposed by Staff. It is a price cap regime that escalates rates based on the GDP-PI minus an offset factor. The plan includes an explicit commitment for the company to spend no less than \$10 million for specified capital projects in the base year (2006). Capital investment that is incremental to the base year level is to be recoverable as an exogenous factor. In addition, NSTAR Electric must meet certain performance standards (SAIDI and SAIFI) and is subject to penalties for poorly performing circuits.

The California PUC approved a three year regime (2005 – 2007) for San Diego Gas and Electric. This PBR mechanism does not include explicit capital investment adjustments but instead relies on performance indices to ensure that the level of capital investment is adequate. The plan includes rewards and penalties for performance indicators related to employee safety, service quality and system reliability. The maximum reward/penalty in any year is \$13,780,000.

ERAI's survey of other jurisdictions in Canada and the United States shows that while regulators have adopted a range of approaches to dealing with the perverse capital investment incentive that is inherent in cost of service incentive mechanisms, the problem is widely recognized and is considered to be serious enough to warrant the inclusion of a mechanisms for mitigating the problem.

The OEB's 2nd Generation IRM, which will be in place for a period of 1-3 years for distributors in different tranches, will be out of step with the standard practice of other regulators if it does not build into the regime a mechanism that removes the implicit penalty borne by distributors that undertake the capital investment need to accommodate system growth and sustain the reliability and service quality of the existing infrastructure.

CONCLUSIONS AND RECOMMENDATIONS

The proposed 2nd Generation IRM set out in the Discussion Paper embeds a strong, and presumably unintended, financial incentive to defer capital investment for as long as possible within the term of the regime. Distributors can be expected to respond to this incentive by deferring all but the most critical capital investments until immediately before their rebasing reviews and entry into the 3rd Generation IRM (2008, 2009 or 2010 as determined by each distributor's tranche).

This incentive is contrary to the stated objectives of the 2nd Generation IRM in that it discourages distributors from making the necessary investments to accommodate growth and to sustain appropriate standards of reliability and service quality as the expenditures must be funded out of the shareholder profit resulting in below market returns. Financially prudent distributors will be rewarded for deferring investments that increase the risk of future problems, even if the long term cost justifies preventive action. Given the weakness of the incentives associated with the reporting of SQIs, it should not be surprising if some distributors choose to allow reliability and service quality to decline rather to make investments that will generate no return or recovery of depreciation expense during the term of the 2nd Generation IRM.

Mechanisms that allow for the explicit recovery of costs associated with capital investments are a common feature of multi-year regimes in other jurisdictions, whether they are cost of service regimes or IR/PBR regimes. The types of mechanism used in other jurisdictions could be incorporated into the proposed 2nd Generation IRM without increasing its complexity or compromising other features of the regime.

The approach that would best reflect the principles of incentive regulation would be for the Board to establish appropriate SQIs and targets for each SQI and put in place financial rewards and penalties for meeting or failing to meet the established targets that provide an effective incentive to maintain standards that are economically efficient. While it may be appropriate and practical to implement this approach for 3rd Generation IRM, it is unlikely to be a suitable approach for the transitional 2nd Generation IRM.

In the absence of an explicit capital investment incentive linked to SQIs, it would be appropriate to incorporate into the 2nd Generation IRM a simple capital investment mechanism that removes the incentive to under-invest. This could be accomplished by adding an additional factor (a capital investment, or CI, factor) to the proposed price cap formula, as outlined below.

3.1 A CAPITAL INVESTMENT FACTOR (CI)

The proposed price cap formula implicitly includes for an increase in fixed assets that is equal to the inflation rate ($\Delta\text{GDP-IP}$) minus the productivity factor (X). This increase in fixed assets is implicitly included in the formula because the price cap escalator is applied to the full price, which includes costs related to embedded capital (cost of capital and depreciation) that are not affected by either inflation or productivity. The cost associated with any capital investment in excess of the implicitly recognized amount will be unfunded in that it will flow directly to the distributor's bottom line, reducing its return on equity. This is a strong incentive to defer capital projects.

This problem can be remedied by adding a capital investment factor (denoted CI) to the price cap formula proposed in the Discussion Paper. The formula would become:

$$\% \Delta P = K + \% \Delta \text{GDPIPI} - X + Z + CI$$

Where

CI is the percentage increase in rates required to recover the costs (capital cost plus depreciation) associated with the distributors unfunded capital investment forecast. An illustrative example will be provided at the Technical Conference.

The CI -factor would be handled in a manner that is similar to a Z -factor in that each distributor would have the option of requesting the inclusion of the CI -factor for purposes of determining its rates under the 2nd Generation IRM. If a distributor expected to incur unfunded capital investment in order to maintain the reliability of its system, maintain services standards and meet its other customer obligations it would file the

required calculation in support of the inclusion of the CI-factor for purposes of determining its rates.

The actual capital spending could be reviewed by the Board as part of the rebasing filings to be submitted for 2008, 2009 and 2010 and adjustments could be made to future through a variance account that captures differences between the forecast and actual levels of unfunded capital investment.

Recommendation

ERAI recommends modifying the Staff proposal for the 2nd Generation IRM as set out in the Discussion Paper so as to remove the incentive to defer capital investments by incorporating a CI-factor, as described above, into the proposed price cap formula.

The recommended CI-factor would eliminate the strong financial incentive to defer capital projects during the term of the 2nd Generation IRM by allowing for the recovery of unfunded capital investment.