The Coalition of Large Distributors (CLD)

Part 4: IRM - Questions for Board Witness Dr. Mark Lowry

Q60 What is Dr. Lowry's view on the efficiency of Ontario distribution utilities relative to those found in other jurisdictions? Has Dr. Lowry performed any analyses to determine whether Ontario distribution utilities are more or less efficient than privately owned utilities in the U.S., the U.K. or elsewhere? If so, please provide the analyses.

A60 I have not performed any studies of this type for Staff. However, my best guess is that the operating efficiency of Ontario LDCs is broadly similar to that of LDCs in the United States.

Q61 At Slide 62, of the presentation on June 21, 2006, Dr. Lowry suggests that the incentive power of performance based regulation is not always stronger than cost-of-service regulation, for example if the plan is of short duration. Has Dr. Lowry assessed the incentive power of cost-of-service regulation as an alternative to the proposed price-cap rule or was the proposal based largely on considerations of regulatory expediency? What additional incentives are created by the proposed price-cap-rule that are not already in place?

A61 I believe that the incentive properties of the proposed IRM2 are broadly similar to those of COSR with a comparable (*i.e.* 1-3 year) rate case cycle. However, COSR would not provide utilities with the valuable inflation relief of the proposed IRM2.

Q62 At Tr. p.4, September 21, 2006, Dr. Lowry states "We are doing a lot of incentive power research for the Board right now, using some really state-of-the-art techniques,…". Please provide details of the state-of-the art techniques being employed. Are they principally simulation based, or are they based upon empirical data from Ontario and/or elsewhere? Please provide details on the specific incentive mechanisms that are under consideration.

A62 Our incentive power research is being supported by the work we are doing for staff and we hope it will be valuable to staff when it considers IRM3 and gas distribution IRM.

The focus of this research is a model of the cost containment behavior of a hypothetical company subject to rate regulation. The company has opportunities to reduce its cost through cost reduction effort. We call this model an incentive power model.

Two categories of cost reduction projects are available. Projects of the first type involve a net cost increase in the first year in exchange for sustained net reductions in future costs. Projects in this category can differ in their payback periods. The payback periods that we considered in this study were one year, three years, and five years, respectively. For projects of each kind, there are diminishing returns to additional cost reduction effort in a given year. The company is also supposed to incur psychic and other unaccountable costs when pursuing cost containment efforts. These are also assumed to occur up front. The other type of project considered is one-off projects. These are projects that lead to temporary (specifically, one year) cost reductions. We considered in total 8 kinds of projects, 4 for cutting O&M expenditure, and 4 for cutting capital expenditure. Regarding each of these 4, one project is of one-off character and the other three involve up-front costs and different payback periods.

We are interested in examining how the company's cost containment strategy differs under alternative regulatory systems. The company's managers are assumed to choose the cost containment strategy that maximizes the net present value of the company's earnings less the unaccountable costs of its effort. For each system considered, we calculate the net present value of cost savings that result. We use this to measure of the incentive power of the system. We also consider the benefits to the company and customers that result from the plan. The benefit to customers is measured by the NPV of the change in their bills. We have two measures of the benefit to the companies. One is the NPV of incremental earnings from cost reductions. The other is the change in its operating risk.

Regarding the regulatory systems considered, we first developed a set of three reference systems that constitute useful comparators for the PBR plans. One is "cost plus" regulation, in which a company's revenue is exactly equal to its cost. Another is a full externalization of future rates such as might obtain if the company were to embark on a permanent price cap regime, with no prospect for future cost-based rate true-ups.

The third reference regime is COSR. Under this regime, a company's rates are updated periodically to recover its current cost of service. The number of years between rate cases varies across jurisdictions. We provide results here for COSR with rate case cycles of two and three years.

A variety of different approaches to PBR can be considered using our research method. In this report we have focused on three kinds of plan provisions. One is the term of the plan. The second is provisions for updating rates upon a plan's conclusion. We also consider the impact of various earnings sharing mechanisms.

Our characterization of the rate case is important to the modeling of both COSR and the alternative PBR regimes. We assume that rates in the initial year of the new regulatory cycle are with one exception set to reflect the cost of service in that year. The exception is that any up front accountable costs of cost containment initiatives undertaken in a given year are amortized over the term of the plan. This reduces the incentive for the utility to time cost reduction projects to occur in the test year. This specification

resembles the forward test year approach to rate cases.

Another decision that must be made in comparing alternative regulatory systems is what occurs at the conclusion of a plan. Our view is that the best way to compare the merits of plans is to have them repeat themselves numerous times. Thus, for example, we examine the incentive impact of five-year plan terms by examining the cost containment strategy of a company faced with the prospect of a lengthy series of five-year plans.

Numerical analysis was used to predict the utility's response to its situation. Under this approach we considered, for each regulatory system and each kind of cost containment initiative, thousands of different possible responses by the company. We chose as the predicted strategy the one yielding the highest value for the utility's objective function. Recall that this function considers profits and other, unaccountable costs of efforts.

One advantage of numerical analysis in this application is that it permits us to consider regulatory systems of considerable realism. Another is that it facilitates review of our research by stakeholders. The numerical analysis is intuitively appealing, and verification can focus less on how results are derived and more on how sensible and thorough is our characterization of cost containment opportunities and alternative regulatory systems.

Q63 At Tr. p.4, September 21, 2006, Dr. Lowry states "another study was done by another consultant to the Ontario Energy Board for a similar sample period, and found that over a similar type of 10-year period that the productivity trend was 0.86 percent." Please identify the study to which Dr. Lowry is referring. Please provide an estimate of the precision with which the productivity value of .86 was calculated, (such as a standard error or a confidence interval).

A63 I refer to the research discussed by the Board in the *Rates Handbook* that covered IRM1. The requested confidence interval is beyond the scope of the current project. Confidence intervals are not, in any event, customarily provided for TFP trend estimates.

Q64 At Tr. p.12, September 21, 2006, Dr. Lowry, in speaking of the price-cap rule states "And this is just essentially an attrition mechanism, anyways, to get us over a two- or three year period." Although this terminology is used in some other jurisdictions, please explain what is being attritted in the Ontario distribution industry during this period.

A64 I use the term as it is used in California to describe a mechanism that provides utilities with relief from unit cost pressures between rate cases.

Q65 At Tr. p.12, September 21, 2006, Dr. Lowry states "On the other hand, the way things

have worked out in Ontario, utilities have been subject to incentive regulation now for a number of years and without an earnings sharing mechanism. So one would say that the incentive environment in the province has probably been pretty good over the last few years." Are the rate moratoria and similar government interventions which constrain distributor ability to achieve approved rates of return not a *de facto* earnings sharing mechanism? In which case, would not the opposite conclusion – that the incentive environment in the province has not been especially good – be more realistic?

A65 No. Prior to the round of rate cases, Ontario LDCs had operated for several years under a regulatory system under which they expected to keep a high percentage of any gains from efforts to slow unit cost growth. Earnings sharing mechanisms reduce the utility's share of performance gains.

Q66 At Tr. p.22, September 21, 2006, Dr. Lowry states "But we're probably not going be doing that kind of a British-style approach." Please provide the basis upon which Dr. Lowry has come to the conclusion that the British-style approach to incentive regulation will not likely be implemented in Ontario? In the process of arriving at this view, did Dr. Lowry consult with Ontario distribution utilities?

A66 My White Paper and June presentation to stakeholders both encouraged consideration of the British option in IRM3. My comment in the September Technical conference was simply an allusion to the fact that the Board has to date used North American methods to develop rate adjustment indexes. I think that the pros and cons of the British option and of noteworthy variants from Victoria (Ausralia) and California should be examined in the proceeding for IRM3.

Q67 Has Dr. Lowry given any consideration to improving the incentive properties of the price-cap rule that has been proposed for the interim period? If so, please provide specific details. Have any mechanisms for ensuring that realized savings are retained for a reasonable period of time been considered? If such mechanisms were considered, please provide specific details.

A67 Efficiency carryover mechanisms are being examined in our incentive power research. However, mechanisms of this kind are novel and are probably best considered in the proceeding for IRM3.

Q68 At Tr. p.16, September 21, 2006, Dr. Lowry states that "the risk of non-recovery of a power distribution investment is relatively low." To which costs is Dr. Lowry referring? Are there any other costs that a distribution utility incurs associated with a new investment that may not be recovered if they are brought into service before they are recognized and approved by the regulator?

In the absence of a mechanism for incorporating additional capital expenditures into rates on an on-going basis, is there risk of rate shock once the Board approves such costs?

A68 There is a possibility that a company making an investment during IRM2 may not recover, for a year or two, the entire annual net increase in cost that results from capital expenditures. Net cost is the cost of capex less any O&M savings that result from it. The risk of this partial nonrecovery is greater to the extent that a utility's capex exceeds the pace that is reflected in the supportive research on industry productivity trends. However, a company with this problem may find in other years that the price cap index *over*compensates it for its unusually slow capex. In fact, this outcome is especially likely for utilities that experience periodic capex surges rather than the more even pattern of capex that typifies most distributors in North America. Furthermore, in any year in which some companies are under compensated, *other* companies may be overcompensated.

With regard to second question, in general, yes, but this seems unlikely under IRM2 due to its short duration.

Q69 At Tr. p.15, September 21, 2006, Dr. Lowry refers to "input price hyperinflation insurance between rate cases". Please define what Dr. Lowry means by "hyperinflation" and the extent to which the proposed price-cap mechanism provides protection against such hyperinflation.

A69 I will define hyperinflation as input price inflation in excess of 5%. The proposed PCI provides far more protection to LDCs against such an eventuality than a rate adjustment moratorium, which the Board might otherwise impose for the brief period in question.

Q70 At Tr. p.12, September 21, 2006, Dr. Lowry states: "It is true that most utilities are public, and that is a point which Dr. Yatchew has mentioned, and that might speak to the idea that they will not be that responsive to the performance incentives generated by any plan." Has Dr. Yatchew indicated anywhere in his submissions that publicly-owned distribution utilities "will not be that responsive to the performance incentives generated by any plan"? Or, has Dr. Yatchew taken the position that conventional price-cap may not be as effective and that additional attention needs to be devoted to incentive creation?

A70 Dr. Yatchew is better positioned to answer this question. However, I interpret his paper as saying that public utilities may be less responsive to a *wide range* of regulatory systems than investor—owned utilities.

Q71 Dr. Lowry's September 21, 2006 power point presentation indicates that a source of TFP growth is volume / customer growth. You also indicated that this volume / customer growth is typically higher in the gas industry than in the electricity industry.

At Tr. pp. 15, 16 (September 21, 2006), Dr. Lowry states: "Now, another dimension of productivity growth that you may not think of is volume per customer growth, because very often electric utilities have delivery volumes that are growing at a more rapid rate than their customer growth, and this creates a certain financial benefit to them that is material. And it's important for the regulators here in Ontario to know that the gas industry is a whole different kettle of fish, and they often have declining volume per customer growth. So there's a tendency for the appropriate X factors to be somewhat higher for power distributors than they are for gas distributors."

This seems to be contrary to the experience of some LDC's. As an example, the kilowatt hour sales per customer for Hydro Ottawa are illustrated below.

Hydro Ottawa Volume Sales and Customers

	2005	2004	2003	2002	2001	1994
Total customers	278,596	274,040	269,205	264,535	258,755	230,055
kWh Sales	7,663,197,036	7,514,934,346	7,483,288,325	7,470,558,035	7,351,475,971	6,857,852,786
Average kWh per customer	27,506	27,423	27,798	28,240	28,411	29,810

Have you examined the volume / customer growth in Ontario? Can you think of reasons why this might be declining, rather than increasing, as experienced by Hydro Ottawa? If volume per growth is actually declining, would you agree that this would typically lead to a lower X factor?

A71 I have not yet had the occasion to examine volume per customer trends in Ontario. In general, volume per customer may decline under circumstances that include

- Slow growth in local income per household
- Aggressive conservation programs
- A downturn in demand from large-volume customers

Where declines are occurring, a lower X factor could be indicated.

The evidence for Hydro Ottawa does not prove the existence of volume per customer growth, as it is not broken down by customer class. The numbers presented could result from a large decline in use by large volume customers, notwithstanding growth in average system use by the residential and commercial customers that account for the bulk of distribution revenue.