

**UPDATING PRICE CONTROLS:
RATIONALE AND PRACTICALITIES**

A Report for Office of the Regulator General, Melbourne

Prepared by NERA

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EXECUTIVE SUMMARY

This paper is a critique of two papers. The first, an article by Clyde Wayne Crews Jr, was published in April 1998 by the Cato Policy Institute, Washington DC and is entitled “Why Open Access Can’t Compete”. The second, a report by Lawrence Kaufmann Ph.D. and Mark Newton Lowry Ph.D. of Laurits R. Christensen Associates (LCA), is entitled “Updating Price Controls for Victoria’s Power Distributors: Analysis and Options.” The LCA report was commissioned by the Victoria Distribution Businesses (DBs) and presented to the Office of the Regulator-General (ORG) in September 1997.

Summary of the Crews Article

The Crews article sets out some standard economic arguments against the regulation of monopoly franchises in electricity. The report maintains that regulation of natural monopolies is often designed to protect particular producers from bankruptcy, and argues that electricity networks do not have natural monopoly characteristics anyway. Crews suggests that the potential for competition in network industries is greater than is usually acknowledged, and that regulation of open access (ie mandatory separation of network businesses) is tantamount to an “uncompensated taking” of private property. Finally, he questions the justification for using regulated monopolies to pursue social policies. Crews's major recommendation therefore is the abolition of monopoly franchises and thus the removal of regulation altogether.

Relevance of the Crews Article

In many areas of economic life, the arguments extolled in the Crews article are valid. However, there are a number of equally valid economic arguments suggesting that monopoly franchises may still be appropriate for electricity distribution networks. Regulation is justified by economic benefits because electricity distribution networks (defined in a limited fashion) do in fact derive natural monopoly characteristics from access to public streets, as Crews acknowledges. Furthermore, the nature of investments in a distribution business means that, in a competitive environment, investors would want long-term agreements with groups of customers to secure cost recovery. However, the transactions costs of arranging such contracts without a degree of compulsion by government are prohibitive. Monopoly franchises may therefore provide an enabling legal framework which overcomes certain cost barriers.

None of these arguments provide a permanent reason for regulation, so it is appropriate from time to time to review the scope of monopoly franchises and to consider changing or abolishing them if the benefits outweigh the costs. However, there is nothing to suggest that the conditions for abolition apply to electricity distribution in Victoria.

Summary of the LCA Report

The LCA report contains detailed discussion of different regulatory approaches, with particular emphasis on the advantages of using Total Factor Productivity (TFP) as the basis for setting “X-factors” in regulatory price caps. The report defines X-factors implicitly, by reference to the following formula on page 25:

$$\Delta\text{PCI} = P - X + / - Z$$

where ΔPCI is the change in the price cap from one year to the next, P is a price index and X is the amount by which the allowed rate of change in PCI differs from the rate of change in P . (The LCA report does not discuss how the Z -factor is set, except to say that it handles “external factors that are not reflected in the inflation and X-factors.”)

The LCA report contrasts two different approaches to regulation: the US and the British. However, in practice, it is possible to argue that LCA overestimates the difference between these models, by failing to analyse the whole context of regulation. LCA's description of the two approaches therefore sets up a false dichotomy. Unfortunately, neither of the approaches is described in sufficient detail to allow identification of key differences between them. Hence, it is impossible to make a simple choice between two approaches.

Critique of the Report

The lack of attention to detailed definitions and to the practicalities of real regulation is a major short-coming of the report. The discussion of methods for setting X-factors appears to assume that X is the only major variable that has to be decided when setting maximum revenues for a regulated company. LCA recommends the use of some variant of TFP analysis and implies that this will solve a host of regulatory problems. In practice, TFP analysis may well be used to inform decisions about X , but does not remove the need for detailed investigation of the other building blocks of revenue allowances, particularly costs. The LCA report therefore overstates the case for TFP analysis and denies the importance of many other factors.

NERA would support the use of techniques such as TFP analysis within regulatory price reviews. In fact, NERA and LCA are among the few companies able to offer the service on a regular basis in US regulatory hearings. However, we believe that it is only possible to understand the relevance of TFP analysis within the whole context of a regulatory review. We do not think that TFP analysis is a substitute for other “models” of regulation.

Overall, therefore, the LCA report has only a limited amount to offer as practical recommendations for the conduct of a regulatory price review of Victoria Distribution Businesses.

Overview of This Paper

The following sections discuss the Crews report in section 2, as a way to establish the purpose and justification for continued regulation of natural monopolies, and the LCA report (in more detail) in sections 3-6. (The detailed examination of the LCA report is warranted on the grounds that it relates more closely to the decisions about regulatory method which the ORG is going to face in coming years.) Section 7 draws some conclusions about regulatory options in Victoria, taking into account the proposals made by Crews and LCA.

1. INTRODUCTION

In the run-up to its review of distribution company price controls, the Office of the Regulator-General (ORG) has been presented with two papers to consider. These papers offer alternative methods of dealing with electricity distribution companies, both of which seem to offer a simpler way of approaching regulation than is observed in many countries. This paper comments on those papers in the context of real decisions facing the ORG and other regulators.

The first paper, by Clyde Wayne Crews Jr, was published in April 1998 by the Cato Policy Institute, Washington DC.¹ The major recommendation of this article is to abolish monopoly franchises and hence to remove regulation altogether. Some of the arguments in the article are specific to the US context (such as interpretation of the constitutional rights of Federal and State governments), but many aspects of the article are sufficiently general to merit consideration in Victoria.

The second paper, by Laurits R. Christensen Associates, was submitted direct to the ORG by Citipower, one of the distribution companies under the ORG's jurisdiction.² It is a report about a particular method of setting price caps, by measuring "Total Factor Productivity" (TFP). The LCA report discusses the application of RPI-X price caps in the UK and the US and draws conclusions about the best method of applying them in Victoria.

In this response, we discuss the Crews article in section 2, as a way to establish the purpose and justification for continued regulation of natural monopolies. The LCA report is discussed in more detail over sections 3-6. This detailed examination is justified, because it relates more closely to the decisions about regulatory method which the ORG is going to face in coming years.

In both cases, our response to these papers rests on a simple foundation. Regulation of natural monopolies has been established and developed in many different countries as a practical solution to real problems. It is certainly legitimate to ask, like Crews, whether abolition of regulation is a better solution. However, we have identified a number of economic factors which suggest that regulation can be beneficial. The report by LCA asks whether regulation would be better if regulators adopted methods that depended less on information about the regulated company. Again, we have identified a number of practical concerns, which LCA overlook, and which suggest that the report's recommendations could not, by themselves, produce a better regulatory regime.

¹ Crews, C.W. Jr, *Why Open Access Can't Compete*, Cato Policy Report No. 301, 13 April 1998, Washington DC, USA.

² Kaufmann, L. and Lowry, M.N., *Updating Price Controls for Victoria's Power Distributors: Analysis and Options, Final Report*, Laurits R. Christensen Associates, September 1997, Madison, Wisconsin, USA.

In reaching our conclusions, we have had to make a number of assumptions about the motivations and powers of the regulators, and of the governments who create them on behalf of their electorates. These assumptions can be disputed, especially in the context of governments bound by constitutional constraints like those in the US. However, we believe that our assumptions are relevant to Victoria and, consequently, that the practical design of regulatory regimes for electricity distribution companies in Victoria must take them into account.

We therefore conclude that it is impractical to expect the government of Victoria (or ORG) either to abolish monopoly franchises altogether (as recommended by Crews) or to adopt a purely technical method of estimating TFP as the sole basis for setting price caps (as recommended by LCA).

2. CREWS' ARGUMENTS AGAINST MONOPOLY FRANCHISES

The Crews article is in a long tradition of arguments against regulation, questioning whether government intervention actually improves outcomes. In the past, such articles have precipitated de-regulation of industrial and commercial sectors and the results have been judged to be beneficial. The onus is now on governments and regulators to justify their interventions in the economy and some long-standing arguments have been shown to be questionable. In this section, therefore, we take the arguments presented by Crews and consider the specific conditions of electricity distribution in Victoria. In responding, we have tried to identify economic factors which provide a justification for regulation, or clearly identifiable matters of policy for which regulation is a useful tool.

Crews sometimes disputes whether governments in the US have the right to pursue certain policies, but we have not commented on the equivalent rights of the government of Victoria, since such questions lie outside our competence. However, Crews does sometimes examine the analytical arguments behind policy choices and, where economic matters are discussed, we have commented on his line of reasoning.

The arguments raised in Crews' article are, in summary:

- 1) regulation of natural monopolies is often designed to protect particular producers from bankruptcy, rather than to pursue more justifiable social objectives;
- 2) electricity networks do not have natural monopoly characteristics and so can operate efficiently in a competitive environment;
- 3) the potential for competition in network industries is greater than is usually acknowledged;
- 4) the use of regulated monopolies to pursue social policies is unjustified;
- 5) regulation of open access (ie separate network businesses) is tantamount to an "uncompensated taking" of private property.

These arguments are of greater or lesser significance to Victoria, but each has role in identifying the purpose and role of regulation- and hence in setting the background for the discussion of the LCA report on regulatory methods. The following sections discuss each argument in turn.

2.1. Argument 1: Regulation Protects Producer Interests

This argument emerges from Crews' discussion of the history of regulation in the US. He quotes evidence that monopoly franchises were most likely to be introduced in places where prices (and hence profits) were low, at the instigation of the producers. He argues that monopoly franchises are therefore the result of special pleading, not of economic or social policy, and should be abolished.

We do not take issue with the suggestion that monopoly franchises were introduced at the request of producers, having no evidence to the contrary. However, in the context of Victoria, the appropriate question is whether maintenance of the existing distribution franchises (which, it should be noted, are much more limited in scope than those discussed by Crews) will be beneficial in terms of economic welfare and other legitimate concerns of government. The answer to this question depends partly upon whether distribution is a natural monopoly.

2.2. Argument 2: Electricity Networks Are Not Natural Monopolies

Crews comments that electricity networks do not have natural monopoly characteristics, and that any element of natural monopoly lies in access to public streets.³ Crews's proposed solution is to define property rights in access to public streets, so that they can be bought, sold and used efficiently like any other property. He also provides evidence of successful and efficient investment in competing (or at least parallel) electricity grids. This evidence is not, however, conclusive.

Taking the latter argument first, there are indeed reasons to believe that parts of the electricity grid do not display natural monopoly characteristics. However, these areas often fall outside the scope of monopoly franchises already. Of the examples quoted by Crews to show competitive network provision, none relate to electricity distribution. Most relate to "wholesale" networks such as long-distance telephone lines and high-voltage power lines. None of these networks require access to public rights of way in cramped city areas. Crews quotes evidence from the late nineteenth century and early twentieth century to indicate that competition between distribution networks did exist, but does not provide any modern day examples. The lack of modern day examples would suggest either that producers have been uncommonly successful in persuading every regulator (in the world) to protect their interests, or that there is some persistent advantage in providing a monopoly franchise over limited parts of the electricity grid.

The nature of that advantage is suggested by Crews' discussion of the natural monopoly inherent in access to public streets, (1) because monopoly franchises are increasingly being limited to networks which use public rights of way and (2) because his proposed alternatives pose a number of problems.

³ Crews quotes Demsetz, H, *Why Regulate Utilities?* Journal of Law and Economics, 11, No. 1, April 1968, p55-66.

2.2.1. The Scope of Monopoly Franchises

Many of the cases discussed by Crews concern monopoly franchises for the electricity supply business which cover generation (or procurement of electricity), retail supply, system operation, transmission wires, distribution networks and individual connections to network users (generators and consumers). Increasingly, competition has been allowed into nearly all of these businesses.

Competition in generation, wholesale trade and retail supply of electricity is the focus of much regulatory debate. Furthermore, as Crews indicates, many regulators have extended the scope for competition into the construction of transmission lines, although some form of regulation is usually required to manage the network externalities which arise from connecting new lines to existing networks (even when the arrangement is a purely voluntary agreement). As liberalisation proceeds, regulators are finding that electricity businesses can be split into ever smaller parts and that competition is often possible where none occurred before. Individual connections to generators and consumers usually create few, if any, network externalities and often cross private rather than public land; consequently, many regulatory regimes have already opened up new connections to competition in one form or another. In the UK, attention is now turning to the metering, data aggregation and billing services which have so far been an integrated part of the distribution business.

Hence, the remaining scope of the monopoly franchise is gradually being whittled down. Since a franchise is only appropriate for natural monopolies, concern for efficiency may well reduce most monopoly franchises eventually to those aspects which depend upon the natural monopoly (ie the economies of scale and scope) inherent in access to public streets. At the current time, the list of such activities seems to be limited to the general distribution network, plus those businesses which exhibit strong economies of scope with distribution. The question facing public authorities is whether there is any other way to manage the natural monopoly of public street access and the associated utilities.

2.2.2. Bargaining Over Street Access

Crews suggests that the need for monopoly franchises would disappear if property rights in access to public streets could be defined and auctioned. To paraphrase his argument, regulation of monopoly franchises is only an inferior substitute for clear definition of property rights. In fact, there are many aspects of this proposal which help to explain why regulation persists.

There is a well regarded literature which suggests that defining and auctioning property rights in public assets is always simple or even necessarily efficient. For example, Williamson shows how franchises - in the sense of rights to civic amenities - can run into

problems due to the difficulty of defining exactly what the franchise entails.⁴ Furthermore, the same study considers the implications of the “winner’s curse”, whereby the company which bids most for a property right is most likely to run into financial difficulties when trying to use it, given the uncertainty over its future value. If use of the franchise entails durable and irreversible investments in assets specific to the use of the property right (like distribution wires), it is inefficient simply to replace one underperforming provider with another. Both these factors suggest that anyone selling a complex property right might need to be on hand at a later date to renegotiate the terms of access. This renegotiation is effectively the business of a regulator.

Many regulatory regimes actually derive their powers explicitly from the right to allocate public access. For example, German distribution companies receive a “concession” of 25 years or so from the local municipality. The concession allows them access to the streets in return for a fee. Occasionally, concessions are transferred to a different company. However, this approach has not spared the German municipalities and other authorities from the need to maintain a regulatory role.

Of course, not all regimes have the power to extract a fee for public access in this manner. Many communities interpret public access as meaning access at no charge. In this case, it would be impossible to allocate the rights of access on the basis of an auction. A system based on first-come first-served would offer a major windfall to one producer, at the expense of local consumers (who are also the residents and voters). Offering a long-term monopoly franchise in return for agreement that prices will only cover costs and a reasonable cost of capital may be one way for the local authority to assign the property rights over street access without local consumers (residents) losing out.

2.2.3. Conclusion

The discussion above suggests that Crews may be right to argue that the natural monopoly lies in street access, rather than in electricity distribution. Competition has indeed been allowed in other parts of the electricity industry, where there are no significant economies of scope with distribution. However, trying to sell off rights of access to public streets runs into predictable problems which entail continual renegotiation of terms. The regulatory bargain over the monopoly franchise can be viewed as a way of extracting some value for the community from the right to access public streets, in a situation where (a) it may be impossible to extract a fee or (b) relying on a one-off auction is unlikely to be efficient. Whether (a) or (b) applies (or both), one would expect the rights of access to public streets to be allocated to only one party (because it is a natural monopoly) and then to be continually modified in the light of changing conditions (because it is difficult to make any contract last indefinitely). In other words, one would expect a monopoly franchise subject to regulation.

⁴ Williamson. O. E. (1985), *The Economic Institutions of Capitalism*, Chapter 13, “Franchise Bidding for Natural Monopoly”, The Free Press, New York.

2.3. Argument 3: There Is More Potential for Competition

As we have discussed above, we agree that there is potential for competition in many areas of the electricity industry which were previously covered by monopoly franchises. However, there remain some areas where private agreements will not be efficient by themselves, due to externalities (as in connections between networks) or economies of scale or scope (as in system operation). Electricity distribution is a natural monopoly because of economies of scale and scope in access to public streets: primarily, users wish to avoid the disruption caused by many companies digging channels for separate networks.

2.3.1. Non-Contestability

Crews' article has a short section entitled "Contestability: The Ghost in the Monopoly Machine", which sets out the basic argument that "potential competition" can restrict any incumbent monopolist. A reliance on contestability has underpinned light-handed regulation in New Zealand until recently, when various events led to demands for substantial reform. In some businesses, contestability might act as a continuous constraint on prices which removes the need for regulation. However, as Crews notes, the strict conditions needed for contestability to provide an effective constraint do not apply in electricity distribution, except perhaps at a very high level of prices, or in very long-term games of strategic competition. Crews recognises these problems, even in the sphere of electricity transmission (which offers more potential for competition than distribution), so he does not actually advocate a reliance on contestability instead of regulation. Instead, he considers the more practical prospects for long-term competition.

2.3.2. Externalities and Economies of Scale and Scope

Crews argues that competition for monopoly electricity franchises is provided by the possibility of small generators feeding off the gas network. Crews is correct in supposing that one energy source can act as competition against another one, even if both require networks. In his paper on regulation of town gas companies in the London of the nineteenth and early twentieth centuries,⁵ Professor Ralph Turvey studied the performance of gas companies. In the later part of the period, he found that gas companies were often unable to raise dividends up to the allowed levels owing to competition from electricity networks. Hence, regulation became redundant, since it imposed no real constraint on the activities of the gas companies.

A similar fate may await the electricity distribution networks, but the evidence is not yet conclusive. In most regimes, there is already little to stop consumers from fitting gas-fired generators, if their demand is sufficient to accommodate a generator of the minimum

⁵ Turvey, R. (1995) "The Sliding Scale: Price and Dividend Regulation in the Nineteenth Century Gas Industry", NERA Topics Paper 16.

economic size. The widespread absence of such generation suggests that it is held back more by economic concerns than by regulatory constraints.

However, considering what would be the likely commercial framework under a purely competitive regime leads to a further insight into the causes of regulation. Indeed, Crews gives a clue as to the reason in certain references to the possibility of “user-owned grids” or “buyer coalitions”.⁶ He suggests that buyers of power would club together to bargain with network companies, in order to ensure that they receive a good deal. There are many good reasons to suspect that this is a viable outcome for large transmission projects (whose users include distribution companies), but there are equally good reasons to foresee problems with attempts to apply the same approach to distribution projects.

Distribution networks consist of a number of *irreversible* investments in *durable* assets with a *specific* function. These investments constitute *sunk* costs. *Avoidable* operating costs are relatively low. This combination of features makes them prime candidates for vertical integration, either by (user-)ownership or by long-term contract (between provider and user). It is simply too risky for investors to commit funds to investment without the buyer making a long-term commitment to cost recovery, since the buyer of its output can always refuse to pay off sunk costs without removing the investor's incentive to provide the service. This implies that an efficient competitive outcome might require long-term contracts between distribution company and consumer.

Distribution networks also possess *economies of scope and scale*. The exact source of the economies is not important: it may rest only in the efficiency of giving street access to one firm, but there are also technological factors in line construction and network operation.⁷ Whatever their source, economies of scale can only be captured if enough users join together in a coalition to aggregate their demand above the minimum economic level. However, forming such coalitions imposes costs of time and effort which may render the entire project uneconomic.

2.3.3. Conclusion

Together, the characteristics of electricity distribution networks suggest that an efficient, competitive outcome would entail vertical integration between providers and users (by ownership or by contract) and horizontal integration between a coalition of users located close to one another.

⁶ Crews refers to articles by H.Demsetz and D.Houston.

⁷ Crews makes many references to the possibility of using thyristors to control flows and hence to avoid the need to coordinate multiple users. It is true that thyristors offer this facility. It is a different matter as to whether the cost of thyristors outweighs the economies of scale of integrated operation.

However, forming such a coalition and agreeing the basis for cost allocation takes time and money, as anyone who has ever tried to organise a neighbourhood event will testify. Trying to maintain membership of a coalition when members can move away from the neighbourhood and may wish to transfer their rights and obligations adds a further problem. The efficiency of forming and maintaining coalitions is therefore reduced by the associated transactions costs. The lack of such coalitions is possibly evidence that they are not the most efficient solution to the problem.

Instead, one observes two basic alternative methods of forming and maintaining a coalition of users. The first is the monopoly franchise issued by government authorities on behalf of the consumers (in this case as voters). The second is the co-operative distribution company, which is formally owned and controlled by its customers; of course, the co-op needs rules to enforce membership requirements, which may include a monopoly franchise. There is no guarantee that one of these methods is superior to the other in all cases. Regulation by a government body may be inefficient compared with direct representation of consumer interests in a co-operative; on the other hand, co-ops lack clear incentives for efficiency, whilst regulation of a privately owned utility can make good use of the profit motive inherent in privately owned utilities.

It is therefore possible to view the monopoly franchise as the means by which consumers, acting jointly through representatives appointed by voting, reach long-term agreements with potential investors. Those appointed representatives are the regulators. Changing circumstances make it impossible to specify every term of such agreements in advance, and so the regulators engage in occasional re-negotiation - otherwise known as regulatory reviews.

Obviously, it would be wrong to claim that every instance of regulation is a considered solution to the requirements of vertical integration with a coalition of consumers. In many cases, consumers are able to manage such negotiations by themselves and such pressures lie behind many recent efforts at de-regulation. However, it remains likely that electricity distribution networks possess the characteristics which make them a suitable case for a regulated monopoly franchise.

2.4. Argument 4: Use of Regulation for Social Purposes is Unjustified

Crews argues that regulation is often used by the state to pursue social policies which are unjustifiable. Many of these points relate to the powers of Federal and State governments in the US. In other countries, it is a matter for the local government, working within the terms of its own constitution, to decide how regulation should be used. It may be that monopoly franchises are used for purposes other than those originally intended, but we do not feel able to comment on such matters, which relate more to control of governments than to control of utilities.

We should point out, however, that some of Crews' arguments are debatable. For example, on the question of cross-subsidising rural consumers, Crews says that such policies are not only undesirable, but also unnecessary. One reason why they are unnecessary is that cross-subsidies simply affect land values, but this point is irrelevant if the purpose of the policy is distributional and is achieved by affecting land values (eg by allowing poor rural farmers to sell their land at a positive price).⁸ Furthermore, Crews suggests that the expense of rural energy supplies is overstated, given the possibility of decentralised generation; however, if decentralised generation relies on natural gas as a fuel, the high cost of rural electricity networks will simply be replaced by the high cost of a rural gas distribution network.

2.5. Argument 5: Open Access is an “Uncompensated Taking”

The Crews article is aimed at a US audience and makes much of the legal argument that mandated open access takes away or diminishes the property rights of network owners without offering compensation. We are not competent to decide whether this judgement is correct, nor whether it is relevant to Victoria.

However, there are economic (as well as legal) arguments against such actions by government, including the effects of undermining both contract law and the credibility of future government commitments. These effects would include a reduction in economic efficiency. We would therefore note in passing that we have defined the monopoly franchise of a distribution business in terms of a bargain or contract with a regulator acting on behalf of consumers to minimise transactions costs. If this view is accepted, then simply abolishing the retail franchise would deny the utility the right to cost recovery associated with the franchise. If this right is worth something to the utility, it seems odd not to class its abolition as a similar “uncompensated taking”, with associated disadvantages in terms of economic efficiency.

2.6. Conclusion

Crews applies the standard economic arguments against regulation to the case of monopoly franchises in electricity. To a large extent, his arguments are valid. However, in this section we have tried to set out equally valid economic arguments which suggest that monopoly franchises may still be appropriate for electricity distribution networks. In summary, those arguments are:

- 1) regulation of electricity distribution may well be justified by economic benefits *because:*

⁸ Of course, this effect can only be achieved once, but that does not mean that the policy has not achieved its purpose.

- 2) electricity distribution networks possess natural monopoly characteristics *which mean that*:
- 3) investors need long-term agreements on cost-recovery with groups of customers, *but*
- 4) the transactions costs of arranging such contracts without a degree of compulsion by government are prohibitive.

Consequently, in some circumstances, regulation can be a lower cost substitute for multi-lateral negotiations. Of course, this is only true so long as regulation is low cost. Crews is correct that governments may use regulation to achieve social policy aims. In this context, we cannot comment on any government's decision to use regulation in this way; we can only advise whether there are other, less expensive methods of achieving the same aims. Finally, if we recognise a monopoly franchise as any kind of bargain between state and utility, we must also acknowledge that there are costs involved in simply abolishing it without compensation.

All of these arguments imply that regulation of monopoly franchises is likely to persist for some time, at least in relation to electricity distribution companies. None of the arguments set out above provide a permanent reason for regulation, so it is appropriate from time to time to review the scope of monopoly franchises and to consider changing or abolishing them if the benefits outweigh the costs. However, no-one has suggested that conditions in Victoria clearly indicate a need for abolition of monopoly franchises and, in any case, the necessary power may not lie with the Office of the Regulator-General. We therefore assume that the ORG will continue to regulate electricity distribution companies in Victoria for the foreseeable future. In the following sections, therefore, we turn our attention to methods of regulating distribution companies, and the proposals made by Laurits Christensen Associates.

3. OVERVIEW OF THE LCA REPORT

Section 1 of the LCA report provides a brief statement of the regulatory situation in Victoria. The statement is rather selective and highlights those elements which promote some form of incentive regulation, that is regulation which allows regulated companies to earn higher returns when they beat some target level of efficiency. The report does not refer to other elements of the current situation which also affect the possible forms of regulation that can be accepted in Victoria. For example, it would be worthwhile reviewing the complete list of objectives set out for the Office of the Regulator-General (ORG) in the Office of the Regulator-General Act 1994 (the ORG Act):

1. to promote competitive market conduct;
2. to prevent misuse of monopoly or market power;
3. to facilitate entry into the relevant market;
4. to facilitate efficiency in regulated industries;
5. to ensure that users and consumers benefit from competition and efficiency.

Similarly, ORG has responsibilities under the Electricity Industry Act 1993 (the EIA):

- (A) to promote competition in generation, supply and sale;
- (B) to ensure the maintenance of an efficient and economic system for generation, transmission, distribution, supply and sale;
- (C) to protect the interests of consumers with respect to prices, safety, reliability and quality of supply;
- (D) to facilitate the maintenance of a financially viable electricity supply industry.

The report appears to focus on the need for incentive regulation to promote efficiency, which may be an adequate reflection of items (1) and (4) in the ORG Act and item (B) in the EIA. However, the report does not consider the need to prevent misuse of monopoly power (2), or to ensure that users and consumers benefit from efficiency (5), or to protect the interests of consumers (C).⁹

The literature on price caps deals extensively with all the duties relating to consumers' interests and they have also been discussed in regulatory hearings in the US and elsewhere. It is therefore possible to assess the importance of these objectives in the light of international experience. However, the LCA report largely omits any reference to these consumer-related objectives. As a result, it does not provide any insights into the exact

⁹ References to competition and market entry in (1), (3) and (A) are irrelevant in the context of a regulated monopoly. Financial viability (D) seems to be a necessary condition for achieving the other aims.

meaning of incentive regulation in the real world, or how efficiency objectives conflict with the other concerns. In particular, it does not mention the difficulty the ORG will face in deciding how fast to pass efficiency gains through to consumers, given the desire to prevent “misuse” of monopoly power (which translates most likely into excessively high prices or profits) and to ensure customer benefits (which may be short- or long-term).

3.1. Criteria for Assessment

Section 2 of the LCA report sets out a short list of criteria by which regulatory systems should be compared, viz: efficiency and “fairness.” Both discussions exclude essential elements of the regulatory process in Victoria, and it would be worth bearing the following concerns in mind when assessing LCA’s proposals.

- **Efficiency**

The discussion of efficiency adopts the general convention of dividing it into “productive efficiency” and “allocative efficiency.” Productive efficiency is interpreted as the extent to which “[regulation] induces the subject utility to meet the demand for its products at minimum cost.” Allocative efficiency means, “meeting every customer demand with a value equal to or greater than the cost of providing the service.” The report also recognises “regulatory costs,” meaning the time and effort spent on the regulatory process.

Omitted from this discussion is the concept of regulatory risk - that is, the extent to which the regulatory process may affect the minimum cost of providing services. The key consideration is the extent to which uncertainty over future regulatory procedures causes investors to reduce or delay investment, which is equivalent to an increase in the cost of capital. The LCA report does not discuss the implications of regulatory risk, and consequently overlooks recent regulatory developments in the US and the UK, as discussed in later sections.

- **Fairness**

The report notes that while some definition of fairness may be important, economic analysis has little to add on the subject and all such decisions should be assigned to the Government of Victoria. In practice, it is impossible to isolate economic analysis of regulation from considerations of fairness. Attempts to change the rules to make them “fairer” may affect economic variables, such as the firm’s cost of capital. Indeed, many attempts to re-open regulatory bargains have been driven by predictable concerns about excess profitability, regardless of the implications for efficiency. Any regulatory regime must anticipate such pressures, if it is to offer commitments that are credible, because they are sustainable. Otherwise, even the best incentive regime will be undermined by regulatory risk.

In fact, the Government has already given ORG clear instructions, via the ORG Act, to ensure that users and consumers benefit from efficiency gains. Thus, ORG cannot ignore

considerations of fairness, even if it would choose to and economic analysis must take account of this fact.

3.2. Effective Regulation and Competitive Market Outcomes

The remainder of section 2 endeavours to establish the price path that one might see in a competitive market as the standard by which to measure efficiency and, implicitly, fairness. Although the earlier section explicitly stated that fairness concerns lie outside economic analysis, the LCA report posits that competitive market processes provide a universal standard for the sharing of efficiency gains and other benefits. Unfortunately, the discussion of competitive markets does not add a great deal to the analysis of regulation.

ORG is engaged in regulating monopoly businesses. The extent of efficiency incentives depends on ORG's long-run commitment to let DBs recover their costs and to earn additional returns if they exceed efficiency targets. These commitments can only be monitored over many years and through a number of regulatory reviews. The exact nature of the price path from one year to the next is less important than the real value of revenues over a long period.

3.3. Missing Principles

The main point that the report does not address is that regulation of businesses engaged in long-term irreversible investment is likely to be driven largely by analysis of costs. The regulator may allow regulated businesses to profit for some time by "beating a price cap." However, regulated companies will refuse to undertake efficient investments if they do not have a reasonable assurance of cost recovery. On the other side, regulators cannot tolerate for long any price cap that allows regulated companies to earn unnecessarily high profits.

Since no indexed price cap can ever hope to track costs indefinitely, there will always be a need for regulatory reviews to reset price caps unless the regulator is committed to deregulation at the end of the period. (This does not currently appear to be an option for electricity distribution in Victoria). The report mentions briefly on page 28 in the next section that "unexpected windfalls" can create regulatory risk, by leading to demands for plan terms to be revised. However, the report maintains that this problem "can be mitigated through careful plan design and empirical research supporting key plan parameters." This may be true, but the report includes no analysis of the pressures that lead to reviews, or of the principles that should apply at them. The interpretation of US and British regulatory practices is therefore incomplete and the recommendations that follow from it lack practicality.

4. LCA'S TWO REGULATORY MODELS

Because the report does not consider the nature of long-term regulation, it divides short-term regulatory models into two polar extremes. On the one hand, it describes “cost of service regulation,” in which prices are derived from the costs of each company. On the other hand, it discusses “price cap regulation” as a system in which price caps are set by reference to “external data,” i.e. without reference to the costs of the regulated company. In introducing the concepts on pages 20 and 21, the report recognises that it is possible to use a combination of the two data sources. In practice, the choice of hybrid on the continuum between the polar extremes defines the real task of regulation. However, the report rejects this practical view in favour of a polarised review of US and UK regulation. US regulation is appraised as if it were “price cap regulation” with minor exceptions, whilst UK regulation is described as “indexed cost of service regulation.” Neither of these categorisations appears to be supported by the facts and the dichotomy that LCA sets up therefore leads to impractical conclusions.

4.1. Comparison of the Models

Sections 3.2 and 3.3 of the LCA report set out the two models in some detail. The descriptions appear rather abstract and contain general statements about regulatory policy, which do not strictly apply to one model rather than the other. For example, the text on pages 23-25 about the effect of regulatory restrictions on performance could apply to any regulatory scheme and the report does not explain why price cap regulation should be immune from similar difficulties. On page 27, LCA states simply:

“Price caps may further enhance performance [in comparison with cost of service regulation] by allowing many operating restrictions to be relaxed. This is especially true of marketing flexibility. When utility rates are based on external indexes rather than revenue requirements, prices of monopoly services will not depend on revenues earned in competitive markets. This reduces concerns about cross subsidies and the impact of uncertain competitive market initiatives on core customer rates. Light handed regulation of non-core services is then possible. A company can also have more leeway in its purchases from affiliates and in its depreciation policies.”

This simple statement does not accord with the experience of regulation using price caps. It is by no means clear that simply adopting price caps “reduces concerns” about cross-subsidies. At every regulatory review of price caps in the UK, the potential for cross-subsidies continues to demand detailed attention. The only solution to such problems is to develop detailed regulatory accounting standards that clearly define what costs can be attributed to the core business. The report assumes that these standards have been agreed *and* that adoption of price caps will isolate profits in unregulated businesses from revenue requirements in the core regulated business. In practice, both assumptions depend on prior

regulatory commitments; without those commitments, price caps will be subject to exactly the same defects as cost of service regulation. It is therefore misleading to attribute any improvement in performance to adoption of price caps, and instead more appropriate to focus on the underpinnings for successful adoption of price caps. Implementation of price caps in the US has been more successful, precisely because a number of necessary pre-conditions have already been established.

The next paragraph on page 27 of the LCA report contains a statement which is at odds with ORG's own experience in Victoria:

“Price cap regulation also facilitates rate redesign. A wide range of rate element adjustments can be consistent with an allowed rate of average price increases. A company will typically use rate design freedom to move volumetric rates downward in the direction of marginal cost. This should boost delivery volumes and capacity utilization.”

ORG is familiar with the interaction of the Maximum Uniform Tariff with the DBs' existing price cap. The ORG has expressed concern that the DBs are adjusting tariffs in a way which is not consistent with moves towards marginal costs, but which instead exploits minor inconsistencies between two separate price caps. It is therefore untrue that adopting a price cap is *sufficient* to allow the regulator to step back from determining individual tariffs.

Furthermore, it is not *necessary* for regulators to adopt a price cap, even if they did wish to avoid regulating individual tariffs. In Norway, for example, each DB's total revenue was fixed (until recently) by reference to actual costs, ie a pure form of cost of service regulation. However, given that there are over 200 DBs in Norway, the national regulatory agency could not hope to scrutinise individual tariffs, except in instances where some direct complaint was raised by a consumer. Hence, price caps are not a necessary condition for withdrawing from tariff regulation.

Overall, therefore, the report seems to be discussing important regulatory choices, but to be offering simple suggestions by assuming that the choices are linked directly to a basic choice between “cost of service” and “price cap” regulation. In practice, regulators face a matrix of choices which are much more complex and which do not fall into this simple pattern.

4.2. Coverage of Price Caps

Page 25 of the report sets out the basic price cap formula as an equation:

$$\Delta \text{PCI} = P - X \pm Z$$

where P is the growth rate in an external inflation measure and X is a measure of the extent to which growth in unit production costs should be expected to differ from P. (The primary reason for the difference is technical progress, but the scale of the difference depends on the

range of phenomena already captured in the index P.) The LCA report simply states that the Z-factor covers those external developments not covered by P or X, “primarily [those which] result from changes in government policy,” such as changes in accounting rules, taxes, social programmes and environmental measures. In fact, many price cap regimes have limited coverage, meaning that discussion of the Z-factor may be more important than the report suggests.

Technical analysis of TFP can be extremely useful in removing controversy over the X-factor to be applied to costs where the room for error is limited. Adoption of an agreed and objective approach can serve as an efficient means of dispute resolution, which allows attention to be focused on other, more important and less predictable matters. Hence, TFP analysis may be applied to operating costs and to forms of capital expenditure that are relatively stable over time. However, the same method is unlikely to be applicable to unpredictable “big ticket” items, such as capital expenditure on major expansions of a distribution system.

Most price caps in the US and the UK alike have been set after the regulator has analysed investment programmes in detail, in order to ascertain whether past revenues matched costs, and what revenues are required to do the same in future. In the US telecommunications sector, regulators have often used existing prices as the basis for an RPI-X regime, on the grounds that prices were already deemed to be “fair and reasonable.” However, in other sectors few regulators are prepared to let exogenous price caps set implicit investment budgets, in case the revenue is not required; few, if any, utilities are prepared to accept revenue controls which do not recognise their own investment needs.

Hence, at some interval varying between annually and quinquennially, all regulators review actual investment and reset revenue totals accordingly. Since investments in energy utilities last for several quinquennia, and will be reviewed several times over, the process for setting total revenue allowances is of far more importance than the technical procedure used to index price caps between reviews.

The LCA report drastically underestimates the importance of long-term investments in utilities and the difficulty of linking revenues to costs over long periods. This oversight may derive from the focus on telecommunications and railroads, especially the former, where many investments have shorter lives than in energy networks (so that cost recovery is subject to fewer reviews). As a result, the report overstates the role and importance of using TFP analysis as a component of the revenue setting process.

4.3. Appraisal of Models

Because the report sets up a false dichotomy between two extreme models, the appraisal set out subsequently is likely to be of limited relevance to real world decisions. However, it is worth contrasting the report with other writings on the subject. From page 26:

“Compared with cost of service regulation, price cap regulation can simultaneously enhance performance incentives, facilitate market flexibility, and reduce regulatory cost. *Price caps can then be said to represent progress in ‘regulatory technology’.* [(Our italics)] There are several fundamental sources of this technological progress.”

The report then lists the sources of this deemed technological progress and the deemed benefits. However, it is debatable whether price caps in themselves represent any form of technological progress.

The problems with application of price caps have been widely documented but the report does not consider most criticisms. It is therefore useful to contrast the LCA report with an article by Dennis L. Weisman in the *Journal of Regulatory Economics* (1993).¹⁰ Weisman analyses three different models:

1. cost based;
2. pure price cap; and
3. modified price cap .

The first two are broadly the same as those described in the report. “Cost based” regulation ties revenues for the company as a whole to its own total costs. “Pure price cap” sets an external measure for the total revenues of the core business and allows the company to keep 100% of any cost savings. The third model allows for a price cap which is reset at regulatory reviews, at which time some benefits are passed to consumers; Weisman also assumes that shared or common costs are reallocated between core and non-core businesses, in a proportion related to their relative output levels.

The most interesting conclusion of this paper is that the modified price cap regime may actually turn out to be less efficient (ie achieve lower social welfare) than the cost based model. Some of the efficiency losses derive from the reallocation of shared costs. However, Weisman also produces a model in which efficiency is harmed by the possibility of “recontracting,” i.e. reopening a regulatory hearing when the utility performs “too well” against a target, in order to capture some of the benefits for consumers. Weisman shows that such a regime will encourage some utilities to waste resources (ie to hide a profit) because they have an incentive to operate inefficiently which applies neither under pure price cap regulation, nor under cost based (“cost of service”) regulation.

Hence, although price caps may provide another tool in the armoury of the regulator, it is not true that their introduction *necessarily* represents “technological progress.” As with many new technologies, the potential benefits can only be secured if price caps are

¹⁰ Weisman, D L (1993), “Superior Regulatory Regimes in Theory and Practice,” *Journal of Regulatory Economics*, Vol 5, p335-366.

implemented within a regulatory regime that already has in place a number of other institutions and safeguards. For example, many of the problems arising in the UK derive from the absence of agreed cost allocation principles or of any effective constraints on “recontracting” by the regulators. This problem will not be solved by focusing attention on different methods for setting X at any review, but instead by setting up institutions which prevent regulators from overturning previous agreements about X (and any other aspect of the revenue requirement). Without these institutions, price caps can be positively damaging, even compared with cost of service regulation.

4.4. Conclusion

The LCA report sets up a rather simple dichotomy between price caps and cost of service regulation, which makes complete analysis difficult. Real world situations tend to fall between the two models. Many of the benefits attributed to price cap regulation are, in fact, independent of the choice of regulatory model.¹¹

Moreover the report does not give sufficient weight to the importance of each business's own costs at regulatory reviews, when all price caps are reset. In the US telecommunications sector, regulators are usually prepared to accept that RPI-X price caps follow costs adequately. In other sectors, variations in long-term investment cause total costs to vary around trend lines. The report overlooks the tendency of regulators to adjust prices to these variations in cost. As a result, the report does not discuss what institutional arrangements and safeguards are needed to secure the potential benefits of price cap regulation.

Instead of listing the basic principles of regulation, the report concentrates on a purely technical matter, the setting of X by reference to data external to the company concerned. In practice, the scope for using external data is limited by the universal need to ensure that revenues do not deviate too much from costs in order to keep 'monopoly' profits within certain bounds. When costs vary unpredictably, price caps cease to provide that assurance and must be replaced by some other mechanism. As a result, price caps set by reference to external data usually cover only operating costs, or a similar subset of the utilities' costs which follow a relatively stable trend.

In the telecommunications sector, continuous investment and rapid rates of depreciation mean that unit costs often follow a steady downward trend. Industries with cycles of long-term investment can see costs rise and fall over several years at a time. Many regulatory disputes in these sectors concern the treatment of unpredictable cost items, such as investment allowances. Sometimes the path of revenues is adjusted to allow for investment by changing X. The report contends that X should be set exogenously and other factors

¹¹ Support for this view is provided by the fact that the report characterises the regulatory regime in the UK, where price caps abound, as simple “indexed cost of service” (p66).

should be captured in a Z-factor, but the difference in terminology is immaterial. The point is that technical analysis of productivity growth can only be applied in limited circumstances and regulators will always face difficult choices over the recovery of major cost items.

Furthermore, the deemed beneficial effects of using price caps will only be captured if the regulatory treatment of the other items is sufficiently clear (over the long-run) to allow the regulated utility to understand and identify the incentives offered by the price cap. A major problem arises if regulators are prone to “recontracting,” that is to redefining revenue allowances in the light of later information about profitability. In these circumstances, price caps may even turn out to be less efficient than “cost of service” regulation. Hence, the choice between price cap and cost of service regulation is subordinate to the creation of a regime that supports credible long-term regulatory commitments. A key element of a credible regime is one which is expected to share the benefits of efficiency gains in a way which is acceptable to all (or which at least does not lead to the regime being overturned).

The LCA report does not acknowledge these principles, and hence may overestimate the potential usefulness of price cap methodologies.

5. LCA'S DISCUSSION OF US REGULATION¹²

We reviewed the section of LCA's report on price caps in the US on the basis of our own experience, especially in the telecommunications sector. In general, the description is accurate.¹³ We therefore focus our comments on issues that affect the significance of the report's findings.

5.1. Overview

The LCA report distinguishes between two major types of price indices in the US: the "railroad model" and the "telco model." The distinction between the two is summarised as follows.

- The "railroad model" uses an index consisting of two components:
 - an index of input prices *for that industry*; and
 - TFP for that industry.
- The "telco model" uses an index consisting of
 - an *output* price index for the overall economy (e.g. a price index for GDP); and
 - a productivity *differential*.¹⁴

In the latter case, the productivity differential is, in turn, the sum of:

- the difference in TFP between the industry and the economy; and
- the difference in input price inflation between the economy and the industry.¹⁵

¹² This section benefited immeasurably from the comments and advice of Tim Tardiff, of NERA's Boston office. However, responsibility for the final text rests with the author.

¹³ This assessment is based primarily on the telecommunications industry. The project team has no direct knowledge of price cap regulation in the railroads, but we are familiar with the relevant debates. The report by LCA also focuses mainly on examples from telecommunications.

¹⁴ The "telco model" index can also contain adjustments for exogenous cost changes (Z-factors).

¹⁵ Because a measure of industry input inflation is needed to calculate the productivity differential, it appears at first glance that the "railroad model" is a more direct and straightforward way to calculate the price cap index. In practice, however, the input price differential is an average over a long historical period (which is taken as a forecast for the expected differential during the price cap period), rather than an annual measure. Therefore, because economy-wide output inflation measures are readily available and not controversial, they are more practical to implement than an annual measure of industry-specific input price inflation.

Appendix Two of the report gives a description of how an industry-specific input price index and TFP are measured. However, this discussion does not mention the controversy that such measurement has generated, at least in US telecommunications. In particular, the input price index has often been the by product of a TFP study. While price trends for two of the input components (labour and materials) are directly available and reasonably stable, a capital price index is calculated indirectly, based on a formula that includes depreciation, return, inflation, and taxes.¹⁶ Each of the components in the formula (except, perhaps, taxes) is at best an estimate and subject to controversy. In addition, the calculated capital price indices have been very volatile. For example, capital prices have been shown to increase at a double-digit rate in one year, followed by a double-digit decline in the following year.

In general, the “railroad model” is a more technocratic approach, with explicitly defined indices calculated each year. However, the technocratic approach can lead to technical disputes that are hard to resolve. While motivated by the same underlying theory, the “telco model” can be implemented in a more practical fashion. The economy-wide output price index is readily available and the productivity offset (X) can be (and often is) the result of a more qualitative (and political) determination, rather than an annual measure of TFP (or a TFP differential).

The report omits a number of important factors in the analysis of US regulation and provides limited discussion of the practicalities of implementing its recommendations. For example, there is no recognition of the controversy surrounding Z factors, or that an initial downward price adjustment, as well as resulting in consumer benefits, involves an offsetting impact on producer benefits.

5.2. Specific Comments

We will illustrate our views with some specific comments on the contents of the report. Whilst they may not be important *per se*, they indicate the extent to which the LCA report overlooks significant factors or the practicalities of implementation.

Page 26, first paragraph. The examples of Z-factors are not necessarily correct. For example, when taxes, accounting rules changes, etc affect the regulated industry and the average firm in the economy the same way, Z-factor treatment should not be (and generally is not) allowed. Determining such a differential impact has made Z-factor treatment quite controversial. As a result, *as a practical measure*, some plans are limiting Z-factor treatment to jurisdictional changes (a regulatory phenomenon peculiar to US telecommunications, where some services are regulated by the federal government and others by state governments).

¹⁶ Alternatively, by assuming cost equals revenue in each year, capital expenditure has been estimated as the difference between revenue and expenditure on labour and materials. The capital price then becomes capital expenditure divided by capital input quantity (from the TFP study).

Page 27, third and fourth paragraphs. The regulatory cost savings can be more theoretical than practical. Some regulators have had the tendency to superimpose the new price cap regime on the existing reporting and monitoring requirements of the old regime. In addition, reviews can be more frequent and / or contentious than anticipated.

Page 41, last paragraph. For the AT&T price cap plan, the 2.5% is the *difference* between telecommunications and economy-wide productivity growth. Since the latter figure is in the range 1.0% to 1.5%, industry TFP is in the range 3.5% to 4%.¹⁷

Page 42, bottom. Accounting for labour price differences may make sense if (1) the rates of inflation (rather than the levels) were different and (2) an input price inflation differential in a “telco model” plan were part of the productivity differential. Otherwise, labour price differences would not obviously have an impact on productivity.¹⁸

Page 44, last paragraph. The statement that an X-factor based on the company’s own TFP is fairer creates a tension with the report’s earlier conclusion that company-specific measures attenuate efficiency incentives. The report makes no effort to explain how regulators should reconcile these conflicting aims.

Page 45, section 4.3.3. The benefits referred to here are consumer benefits. An initial downward price adjustment has an offsetting impact on producer benefits.

Page 46, second paragraph. The statement that there are no precedents for price adjustments upon plan review is incorrect. There are at least two examples. First, when the FCC changed the plan for LECs in 1995, it retroactively reduced rates for those companies that had opted for the lower productivity target in previous years. Although the FCC’s rationale was that they corrected a “mistake” in setting the X factor in the initial plan, the effect of this rate reduction was similar to an explicit rate adjustment. Second, when GTE-California changed its price cap plan in 1993 (as part of a Commission-approved settlement with intervening parties), rates were reduced.

Page 46, third paragraph. Because an immediate rate reduction would give customers benefits that they would otherwise receive more gradually, it seems that an offsetting reduction in the productivity factor should accompany such a scheme.

5.3. General Comments on Sharing

The report notes that telco price caps have generally abandoned earnings sharing. This reflects a general belief that (1) sharing was predominantly a safeguard against excessive earnings, given the uncertainty as to how price caps would work and whether the

¹⁷ As the authors mentioned earlier, the input price differential was implicitly assumed to be zero.

¹⁸ Unless the effect were indirect, in that high labour prices caused a shift to a more capital-intensive cost structure.

productivity target had been set properly, and (2) that the disincentives (and perverse competitive incentives) of sharing as a last vestige of rate of return regulation outweigh any possible remaining benefits (once regulators became convinced that the plan was unlikely to create large windfall profits). However, both these beliefs reflect lessons that have been learnt from *experience* of regulation using price caps, not from *a priori* analysis. It is therefore useful to draw two principles from this analysis:

1. regulators care as much about “windfall gains” as about efficiency, when setting price caps; and
2. regulators have often required actual experience with price caps (either in their own jurisdictions or elsewhere) before being willing to remove the safeguard against windfall (or inadequate) earnings that earnings sharing schemes provide.

The LCA report demonstrates little recognition of these factors in advocating a particular approach for the DBs in Victoria.

5.4. Conclusion

The LCA report describes price cap regimes in the US and demonstrates how advanced US methods are in some sectors. However, the report does not discuss in detail a number of the issues that remain controversial, such as the definition of Z-factors and concern over the risk of windfall gains. These issues are rapidly being resolved, but the controversies are based on real concerns and are only abating as regulators gather experience of new regulatory methods.

US experience therefore lends support to the notion that price caps can be useful tools in encouraging efficiency, and that TFP and similar analysis can help to make such tools operate in an objective and uncontroversial manner. However, even in the US, where regulatory institutions for promoting long-term investment are highly developed, implementation of price caps has not been trouble-free. Before trying to apply US methods in Victoria, it would be useful to establish what problems have been encountered and why, and also what institutions are necessary to support a successful price cap regime. The LCA report takes the answers to these questions as given. It therefore proposes a technical solution to regulatory problems, which overlooks the practical difficulties faced by practitioners in a new regulatory regime.

6. LCA'S DISCUSSION OF UK REGULATION

As with the chapter on US regulation, the chapter in LCA's report on the UK is broadly, though not completely, accurate. Our assessment of the procedures benefits from direct involvement in the discussions and, in some cases, from access to information which is not in the public domain.

6.1. Overview

The report maintains that price cap regulation is superior to cost of service regulation and more open to technical solutions. The UK experience is described as "indexed cost of service regulation,"¹⁹ with the use of price caps in the UK dismissed by the conclusion that "[t]he primary difference between the British approach to price caps and US cost of service regulation is that the former uses indexing methods to extend the period between rate cases."²⁰

However, US price cap regulation may also be described as "indexed cost of service regulation," as regulatory reviews offer an opportunity to re-open the discussion of costs. The UK regime is also far less systematic than "indexed cost of service" with the main problem being not the adoption of one regulatory regime or another, but the lack of commitment to any particular procedure or method.

The report argues against resetting the initial price at each review and in favour of continuously updating X by way of TFP and price index analysis. However, it is not for lack of understanding about the technicalities of price cap regulation that British regulation is currently under review. Most regulators in the UK are well aware of the incentives provided by a price cap and use them where possible. The recent Green Paper on Utility Regulation continues to support the use of RPI-X methods, but also recognises the need for increased transparency, consistency and predictability in the system of regulation the UK.²¹

A number of the problems and issues associated with UK regulation identified in the report reflect this lack of attention to the review process in general. Examples include the absence of evidence linking price reductions to real efficiency gains, the tendency of regulators to pass on achieved efficiency gains, and the inadequate explanation of assumptions about labour costs or the rationale behind asset valuation (eg Offer's use of a 50% mark-up on flotation price and its subsequent revision to 15%). We illustrate these views in the next section.

¹⁹ Page 65, paragraph 3.

²⁰ Ibid.

²¹ DTI (March 1998), *A Fair Deal for Consumers: Modernising the Framework for Utility Regulation*, e.g. paragraph 1.25

6.2. Specific Comments

There are a few points in the LCA report which deserve comment, either because they illustrate a misunderstanding by LCA, or to correct a misrepresentation of the situation in Britain.

Page 54, third paragraph. LCA claims that little attention was given at privatisation to the sharing of efficiency gains. In fact, the problems arise from the lack of attention to conduct of a review process in general. Few of the regulatory disputes have concerned the sharing of proven efficiency gains; most have concerned the (re)valuation of past investments.

Page 57, first (full) paragraph. In changing the basis upon which the costs of redundancy were treated, neither the MMC nor Offer bothered to spell out what assumptions had originally been made about labour costs. It is therefore possible that the RECs had already been awarded an allowance which assumed forecast redundancies. Without agreement on regulatory methods, the impact of such decisions is impossible to gauge, and so the impact on incentives is to make them unclear.

Page 57, third (full) paragraph. It is not correct to say that the 50% mark-up on the flotation price reflected the effects of inflation and net investment during the previous price control. The mark-up was added to the flotation price *before* rolling forward the asset value to allow for inflation and net investment. The mark-up was intended to allow for returns which shareholders might legitimately have expected during the first review period.²² However, Offer never provided a convincing explanation as to why the appropriate mark-up was 50%, nor of the later revision to 15%.

Page 61, bottom. Given the games that regulators in Britain have played with asset values and the cost of capital, it is fundamentally wrong to assert that "...[i]n these plans, initial rate cuts can be seen as a form of benefit-sharing that transfer efficiency gains to customers at the start of a new price cap plan." There is no evidence that the large cumulative price cuts imposed on regulated utilities bear any relation to real efficiency gains. Instead, they are mostly a reflection of wealth transfers, from shareholders to consumers. The extent of these wealth transfers is difficult to gauge, as some may have been anticipated by investors and were hence discounted in the original share prices.

The report also refers to UK regulators' statements about their policies.²³ However, given the lack of clarity over UK regulatory methods, it is impossible to check whether their

²² One example which NERA debated with Offer was the effect of allowing revenues to rise with a "negative X." To the extent that the rise in revenues increased the companies' rate of return, they would be expected to become more valuable, as the years of low return dropped out of shareholders' expectations. Hence, share prices would be expected at privatisation to increase over time. Part of the rationale for the mark-up was to provide shareholders with the return they would have expected. However, the magnitude of this and other such returns was hotly debated.

²³ Offer, page 62 and OFWAT, page 64.

decisions matched these statements in practice, or whether they will continue to do so in future.

6.3. General Comment on Regulatory Methods

Pages 64 and 65 list some of the problems that regulation has encountered in the UK: high administrative costs; a reliance on contentious forecasts; arguments over cost allocation; and difficulties with capital costs. The report implies that the problems would be avoided if ORG used price caps with X-factors based on technical analysis unrelated to the DB's own costs. However, UK regulators have tried to apply this principle, and failed (according to LCA). Any failure must be due to other aspects of the regulatory system. Since the LCA report does not identify what other factors are required to make price caps work successfully, nor whether these factors are present in Victoria, it is impossible to conclude that simple adoption of the principle of technical analysis will succeed in Victoria.

All of the problems described in the LCA report spring from the regulators' attempts to cut prices to the minimum possible level in the short-term, to eliminate perceived excess profits. They can adopt such approaches for two reasons. First, there are no agreed accounting standards that allow utilities to demonstrate their actual level of profitability, so regulators can base policy on perceptions and press reports. Second, until now, regulators have not been required to agree and adopt consistent methods or principles at successive reviews. (The DTI Green Paper suggests that greater consistency might be required in future.)

As a result, each regulator is free to respond to unsupported reports of excessive profits by finding new ways to write off sunk costs. Such opportunism has effectively been declared illegal in the US (if it can be identified), because regulators are not allowed to pursue short-term price cuts at the expense of long-term costs for consumers. Long experience has taught the American legal profession that regulatory opportunism causes an increase in the cost of capital, which harms consumers' interests. American legal safeguards are intended to prevent regulators (who have short-term objectives) from "playing to the crowd." Such safeguards are almost completely lacking in the UK (and are only present in part in Victoria). As yet, UK policy makers remain ambivalent on the subject of retrospective regulation to recoup past profits. Indeed, on coming to power, the current UK Government levied a Windfall Tax of around £5.2 billion on privatised utilities, in their view to "address concern about past excessive profits."²⁴ The Green Paper on Utility Regulation invites views on whether greater use could be made of Error Correction Mechanisms as a supplement to RPI-X as a "clear and in-built means of sharing unearned benefits promptly between consumers and shareholders."²⁵

²⁴ DTI (March 1998), *A Fair Deal for Consumers; Modernising the Framework for Utility Regulation*, paragraph 1.12

²⁵ Ibid, paragraph 2.12

Consequently, the problems identified in the report would not be solved by advocating the use of technical analysis, or a “roof truss” approach, without some recognition of the continuing desire to link revenues to actual costs. The problems are real ones and will not be solved by imposing arbitrary rules on price movements between years. As long as regulators are able to depress allowances for the cost of capital, or to redefine depreciation retrospectively, it will always be possible to demonstrate that costs are lower than before and that prices should be cut. No technical method of setting X will overcome this pressure and it is misleading to imply otherwise.

6.4. Conclusion

The report maintains that a price cap can operate indefinitely without reference to the costs of the regulated company, if it is set by a technically sound method. However, the report does not expand on the nature of a sound method and the propositions in the report are open to question. Regulation is too complex and too political to be reduced to a completely technical matter. In selecting a regulatory method, regulators must be aware of these difficulties and ensure that the method they choose will be sustainable in the light of future pressures.

The report describes the history of UK regulation but reaches an incomplete conclusion about its problems. UK methods can be criticised for their lack of scientific basis, but the problem resides less in the choice of method, than in the absence of a rule which requires regulators to choose a method and then to stick with it. Until such fundamental principles are established, discussion of individual methods is not particularly informative.

The report attributes the focus of British regulators on costs to some intrinsic feature of the UK system. In fact, it is universal. As the discussion of US regulation showed in the previous section, it is extremely difficult to divorce revenues from costs entirely in a regulated industry. Recognition of this fact would help to put the report's recommendations into a proper context.

7. REGULATORY OPTIONS IN VICTORIA

It is unlikely that options for the regulation of electricity distribution in Victoria will be dominated by demands for abolition of monopoly franchises, even if the scope of franchises is reviewed and narrowed. Some kind of regulation will still be required.

The final section of the LCA report sets out its recommendations for Victoria. On page 68, LCA advocates an “American style” approach, meaning the use of external data, rather than the DBs’ own costs. For reasons set out above, we believe this to be an impracticable recommendation, based on a misrepresentation of other regulatory systems. However, NERA also advises on the use of TFP and similar methods of indexation, when it is put into the proper context. The following comments therefore critique the LCA report by putting its recommendations into the context of practical methods of regulation for electricity distribution businesses in Victoria.

We agree that TFP analysis is preferable to benchmarking. However, we feel the main point of the debate is that providing an allowance for future costs is an issue impossible to resolve by objective means, and that the rational solution is to agree a replicable method that will not create controversy in the future. TFP analysis fits this description (at least in the US) as the methodology is agreed and applied on the same basis by all practitioners thus, reducing the scope for disputes.

7.1. The Appropriate Role for TFP

NERA is an advocate of price caps, and of the use of external data at price reviews, and of TFP analysis for setting X. However, we believe that all of these tools must be looked at in the context of a general regulatory system, in which the regulator is forever driven to keep revenues in line with costs, either for political reasons, or because of legal obligations to prevent regulated companies from benefiting from their monopoly. In the US telecommunications sector, indexed price caps and TFP analysis are apparently sufficient to meet these concerns. However, in other sectors, where costs trends are less stable, occasional price reviews are inevitable and the actual costs of the regulated businesses will inevitably be subject to examination at such reviews.

The decisions facing regulators concern what mixture of methods and data will provide a sustainable revenue allowance, which encourages efficiency without allowing excessive profits. Regulators have to make difficult compromises between all these objectives and no single method is a perfect solution. The major error of the LCA report is to assume that these difficult problems can be dealt with by a purely technical solution.

7.2. The Appropriate Role for Economic Analysis

Our appreciation of the difficulties of regulation leads us to propose a pragmatic, but thoroughly analytical approach to regulation. In particular, to avoid discouraging

investment, we advocate the adoption of clearly defined rules for setting prices. If fixed allowances create fears about excessive profits (as was the case with early price caps in US telecommunications), we believe it is right to make a trade-off between reducing incentives and sharing earnings to capture “windfall gains.” The reason we approve of such methods is not because NERA has any position on the allocation of windfall gains. We believe it is unwise and inefficient to adopt any revenue formula that might be overturned in the future due to foreseeable problems. Overturning previously agreed methods and formulae simply creates unnecessary regulatory risk and discourages efficient investment. In the long run, this is not beneficial to either the regulated company or its customers.

We therefore advocate using rules to define the basic building blocks of a revenue allowance. With regard to asset values (ie depreciation and the allowed return), we support the use of tightly defined accounting standards - and a process of change which limits the ability of company or regulator to reallocate costs at whim. For the cost of capital, we support any method that can be repeated at successive reviews without the need for protracted debate. For capital expenditure, we recognise many difficulties, but believe that dividing the total budget into its constituent components and analysing each in detail best solves them. Where possible, allowances should be based on firm commitments to spend money; if any uncertainty remains over future expenditure, it is a prime candidate for an automatic error correction mechanism (such as profit sharing).

This leaves operating costs. As explained above, it is impossible to derive an unbiased estimate of future operating costs. Instead, TFP should be adopted as an internationally recognised method of deriving a target by objective means - i.e. is with an observable data set and an agreed methodology. Such objective analysis does not, as the report implies, provide the magic bullet that solves all regulatory problems at a stroke. However, it can contribute to making regulatory reviews a less controversial, and hence more stable process. In the long run, this can only be good for DB shareholders and electricity consumers alike.