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ATCO Gas AUSTRALIA

By email
Attention: Sebastian Roberts
General Manager
2012 Victorian Gas Access Arrangement Review
Australian Energy Regulator

RE: Submission in response to AER's Draft Decision on APA GasNet's Access Arrangement 2013-17

ATCO Gas Australia (**"ATCO"**) lodges this submission in response to the AER's invitation of 11 September 2012 in Part 1 of its Draft Decision.

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

APA GasNet sought to base its depreciation schedule on a historical capital base not indexed for inflation. The draft decision rejects this approach, based on various stated and unstated assumptions about what is efficient growth in the market for reference services, and how the choice of depreciation schedules might influence it.

These assumptions are relevant to other service providers including ATCO. As a result, ATCO commissioned Dr Jeff Makholm of NERA to prepare the **attached** Regulatory Policy Briefing Note.

Dr Makholm's Regulatory Policy Briefing Note highlights two clear benefits of historical cost depreciation.

The first is that capital investment markets prefer historical cost approaches to setting tariffs:

> *"... there is an institutional preference in the market for capital ... [for] historical methods for calculating permissible revenues."*[1]

The second is that the historical method will promote lower financing costs:

> *"A shift to the historical method ... will promote lower financing costs and save money for consumers".*

[1] Dr Makholm's Regulatory Policy Briefing Note, p. 8

Indeed, Dr Makholm indicates that in the context of promoting efficient growth, this lower financing cost *"dominates other practical concerns"*.[2]

Should you have any questions, please feel to contact me on 08 6218 1718 or Deborah Evans on 08 6218 1722.

Yours sincerely

Brian Hahn
President
ATCO Gas Australia

7 January 2012

[2] Dr Makholm's Regulatory Policy Briefing Note, p. 2

Attachment

Submission in response to AER's Draft Decision on APA GasNet's Access Arrangement 2013-17

Dr Makholm's Regulatory Policy Briefing Note

Regulatory Policy Briefing Note

Economic Efficiency: Does Inflation-Adjusted v. Historical Tariff Making Matter?

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1. Introduction

Economists have long discussed whether an "inflation-adjusted" or "historical" method for computing permissible revenues is the more appropriate regulatory policy. "Historical" permissible revenue computation involves applying a nominal weighted average cost of capital (WACC), inclusive of inflation, to a historical cost capital base ("rate base" or "regulatory asset base") to determine the return *on* capital and applying straight line depreciation to the historical cost capital base to determine the return *of* capital. In contrast, "inflation-adjusted" permissible revenue computation involves the application of a real WACC, exclusive of inflation, to an inflation-adjusted capital base to determine the return *on* capital and applying straight line depreciation to an inflation-indexed capital base to determine the return *of* capital.

The Australian Energy Regulator (AER) has recently issued a draft decision for the next Access Arrangement for APA GasNet (Draft Decision). In Section 5 of Part 2[1] of that decision the AER addresses a proposed change in APA GasNet's depreciation methodology. At page 115 of Part 2 of the Draft Decision, the AER sets out three alternatives for determining revenue profiles. It notes that its preferred method (PTRM) produces the same profile as the method typically referenced in Australia as the "Real Method." The third alternative is the methodology preferred by APA GasNet in this case. The underpinning logic used by the AER to reject the alternative preferred by APA GasNet appears to be based on the AER's view of what constitutes efficient market development. The AER takes issue with a historical asset base approach based on its view that such an approach is not economically efficient.

The AER has raised an interesting question: **how does employing an inflation-adjusted asset base versus a historical asset base to produce a revenue profile affect economically efficient growth?** The AER is bound under the National Gas Rules (NGR 89 (1) (a)) to fix the depreciation schedule so that "reference tariffs vary, over time, in a way that promotes *efficient growth* in the market for reference services" (my emphasis).[2] The AER has taken the position that the historical cost method for asset base accounting produces a profile for depreciation

[1] Different versions of the Draft Decision on the AER website have different page numbers. Page numbering in this briefing note refers to the pdf version, filename "AER-Draft decision-APA GasNet access arrangement proposal-11 September 2012", which is accessed by following the link "http://www.aer.gov.au/sites/default/files/APA%20GasNet%20-%20draft%20decision_0.pdf".

[2] National Gas Rules, Version 14, Part 9 (Price and Revenue Regulation), p. 64.

charges that is somehow less conducive to efficient growth than depreciation profile attached to the inflation-adjusted method.[3] I do not agree with the AER's conclusion on this matter or the discussion that supports it. The AER's single-asset example of depreciation profiles does not generalize to mature utilities, and its discussion of the impact on efficient growth from the lower financing cost that historical cost accounting (and associated depreciation methods) permits is unsupported.

In this briefing note, I probe the differences between historical and inflation-adjusted asset base accounting methods and their implications for economic efficiency, including the efficient growth in the market for regulated services.

First, I examine how public policy makers and regulatory practitioners have traditionally addressed the goal of achieving economic efficiency for the provision of regulated services. The traditional tools for pursuing of economic efficiency are incentive-based regulatory methods and the wise design of end-user tariffs (for which many efficient pricing tools are available). The choice of accounting methods will affect depreciation profiles for individual assets, but the practical effect on reference tariffs is greatly muted for mature utilities with many overlapping asset vintages. To the extent that any depreciation method thus promotes efficient growth, the lower capital costs tied to historical cost depreciation methods dominates other practical concerns.

Second, I address a common fault in the analysis that typically accompanies discussions of historical versus inflation adjusted tariff approaches—and that indeed is contained in the Draft Decision. I demonstrate that, as a practical matter, the different methods for calculating returns and depreciation lead to very similar revenue profile streams for utilities with stable or growing portfolios of inventories of assets of different ages—meaning that the surface analysis in Figure 5.1 of Part 2 of the Draft Decision for a single asset is misleading. That example does not usefully respond to the direction of Rule 89 (1) (a) to consider reference tariffs—the result of the collection of large numbers of overlapping profiles like Figure 5.1 of Part 2 of the Draft Decision.

Third, I examine how the two methods fare when there are important issues associated with greenfield or quick-growing utility franchises, as opposed to mature utilities, when a great deal of immediate investment is needed for a user base that grows only over time. I find that historical tariff making performs better against this objective also.

Finally, I discuss the extra effort and cost that utility customers must bear for a method of asset base accounting that does not readily square with investor expectations and the evidence on reasonable returns available in the market (which are denominated in historical, not inflation-adjusted, terms).

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[3] AER, *Access arrangement draft decision, APA GasNet Australia (Operations) Pty Ltd, 2013-17, Part 2*, September 2012, p. 115.

2. Economic Efficiency Is Best Achieved Through Tariff Design, Not through the Definition of Permissible Requirements

When analysing economic efficiency of utilities, economists typically have two efficiency concerns: *productive efficiency* and *allocative efficiency*. Productive efficiency involves whether utility managements provide safe and adequate services *at the lowest reasonable production costs*. It is well known that regulation itself (as in some form of traditional rate-of-return regulation) *can* make utilities a "cost plus" business that encourages managements to pile on whatever costs arise. But modern methods of regulation battle such tendencies. Those methods include "price cap" (*RPI-X*) and other forms of incentive regulation that foster "regulatory lag" and profitable incentives to cut costs (consistent with maintaining service quality). Modern incentive-based regulation encourages the greatest productive efficiency within the confines of the investor-owned utility provision of public utility services.

Allocative efficiency looks to whether the actions of consumers reflect society's resource cost—or "social cost"—to serve them. As an extreme example, giving utility services away for free (or almost for free, as the Soviet Union used to do) encourages consumption at a level that requires the devotion of an excessive level of capital and operating cost resources. Such prices are *allocatively inefficient* as the wider social cost and private benefit of consumption are misaligned. Conversely, charging average-cost-based prices at the margin for services with very low marginal cost (as in the greater use of fixed local network utility costs) encourages the under-use of the services and is allocatively inefficient also. The task for the wise regulation of utility prices is to try to match prices for different types of customers and service levels to the social cost of providing those services *at the margin* where the decisions to consume more or less are relevant. As my late colleague at NERA, Professor Alfred Kahn, explained in his treatise *The Economics of Regulation*, "if consumers are to decide intelligently whether to take somewhat *more* or somewhat *less* of a particular item, the price they have to pay for it … must reflect the cost of supplying somewhat more or somewhat less – in short, *marginal* opportunity cost."[4]

Cost-of-service regulation involving investor-owned enterprises is, by its nature, unable to price services at such definitions of marginal cost, as investors devote capital to providing services to the public and those investors must be reliably and steadily repaid by its customers for prudent investments. Thus, *in the aggregate* and if the utility is to cover its costs (capital costs included), average revenue must equal average cost—not a prescription for either productive or allocative efficiency. This is where the modern principles of efficient tariff structures come into play. Grouping similar types of consumers (industrial, commercial, residential), charging multi-part or "block" prices and customer charges, separating incremental services (like line extensions) for incremental charges, all work to best align the incremental social cost with the incremental price that consumers see—within the confines of a "second-best" model where total cost must match total revenue and investors must be repaid for the opportunity cost of their capital.

[4] Kahn, A.E., *The Economics of Regulation: Principles and Institutions*, Vol. 1, John Wiley & Sons, New York (1970), p. 66.

Working within this second-best framework, the way tariff practitioners improve economic efficiency is not by changing how the revenue profile is defined for individual assets but by adjusting the price signals, service terms, and ancillary charges (like line extension charges) that end-users see through the tariffs. Examples of changes that help to achieve better economic efficiency within the overall cost-of-service framework include rebalancing the fixed versus variable component of tariffs, instituting time-of-use pricing, or instituting rate class allocations that are based on varying shares of permissible revenues related to their respective marginal costs.

The AER's references to "efficient growth" in its evaluation of APA GasNet's proposal to utilize a historical asset base when determining its revenue profile generally confuse the responsibility of revenue adequacy (to signal to investors that they will be reliably repaid) with the responsibility of efficient prices (which is the pursuit of allocative efficiency). For example, the AER states:

> There are several reasons to expect APA GasNet's proposal will inhibit efficient growth of the market. These include: … Inefficient asset utilisation—Depreciation schedules which provide for price paths that encourage inefficient utilisation of assets, that is, under or over utilisation of the asset at different times in its life cycle.[5]

The problem with this statement (besides its misplaced focus on individual assets) is that there is no necessary connection between depreciation schedules (for any asset, let alone all of them collectively) and the consumer prices that are geared to promoting productive efficiency. We do not set consumer prices at simple average cost. And even then, the AER's presumption that average cost-based prices are materially affected by the choice of inflation-adjusted or historical computation for permissible revenues is incorrect. The next section will show that such a presumption, proceeding from Figure 5.1 of Part 2 of the Draft Decision (p.116) is largely incorrect.

Another problem with the Draft Decision, confusing depreciation and the overall level of pricing, occurs on page 117 of Part 2, when in considering APA GasNet's claim that capital costs are lower with historical computations for permissible revenues (a true claim as I describe in Section 4, below):

> Even if the additional revenues from the change of approach are offset by falls in other building block components, such as the rate of return and consequently the return on capital, the price impact cannot be ignored. Customers would expect prices to fall if the rate of return and other cost components are reduced.[6]

This statement does not reflect long term interest of consumers. First, as I stated, in the pursuit of allocative efficiency there is no necessary connection between depreciation and economically

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[5] AER, *Access arrangement draft decision, APA GasNet Australia (Operations) Pty Ltd, 2013-17, Part 2*, September 2012, p. 115.

[6] ibid, p. 117.

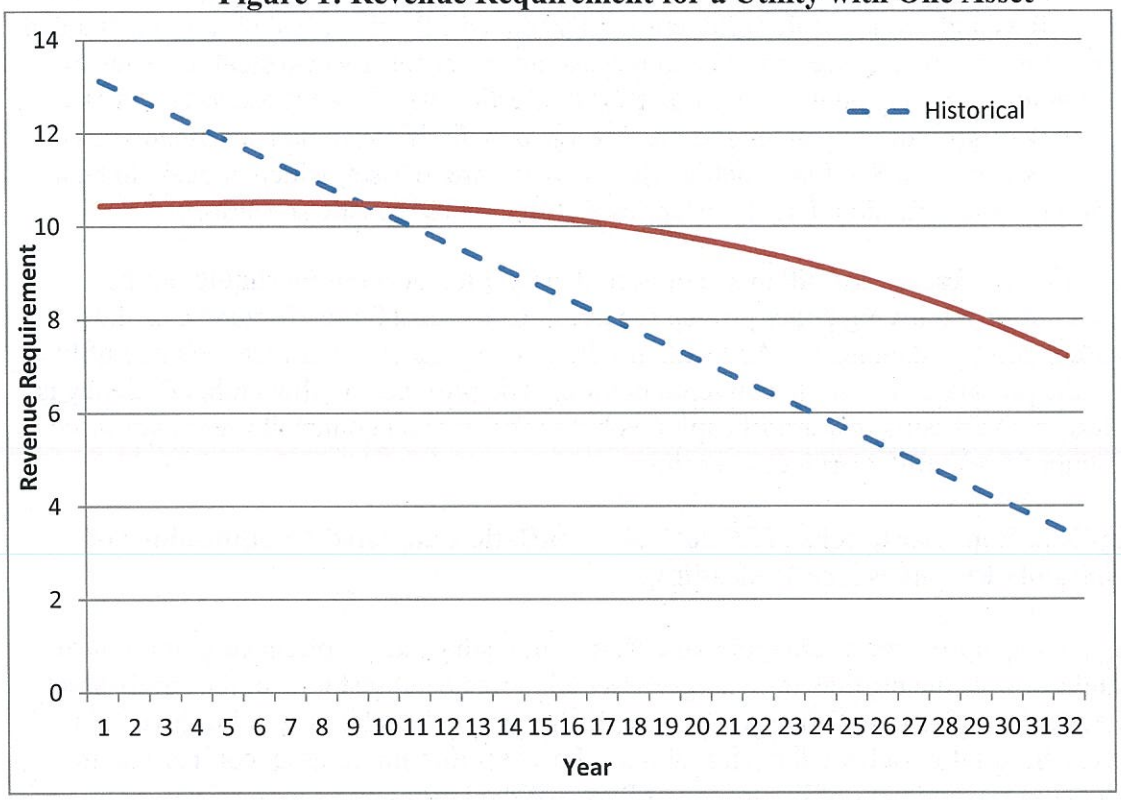
efficient price schedules *at the margin*. Certainly, there is no justification in a false tie between depreciation profiles and economically efficient final prices and the dismissal of a move that can lower total cost for customers. Second, if capital costs are lower for the historical methods of asset base accounting—surely another important form of efficiency—then those lower costs will promote the efficient growth of services and inure to the benefit of consumers across the board and over time. As I show in Section 3, below, the case of a single asset, which appears to be a component of the AER's opinion, largely disappears with a more realistic scenario.

In sum, the AER's preference for inflation-adjusted depreciation accounting should not be viewed as a means of improving either productive or allocative economic efficiency, as those terms are understood by economists. As I said, productive efficiency for investor-owned utility enterprises is the province of wise incentive regulation. The province of allocative efficiency is wise tariff design. Accessing lower cost capital is both efficient and contributes to lower priced (and more competitive) utility services over time.

3. Simplistic Representations of Historical vs. Inflation-adjusted Computations of Permissible Revenues Are Misleading

Often enough, comparative representations of inflation-adjusted and historical computations of the time pattern of revenue profiles for a single asset tell a misleading story. In the single asset analysis, historical tariff making is known to provide the return of and on capital to investors more quickly than inflation-adjusted tariff making. I present this single-asset comparison in Figure 1 below—a re-statement of Figure 5.1 of Part 2 of the Draft Decision (p. 116):

Figure 1: Revenue Requirement for a Utility with One Asset

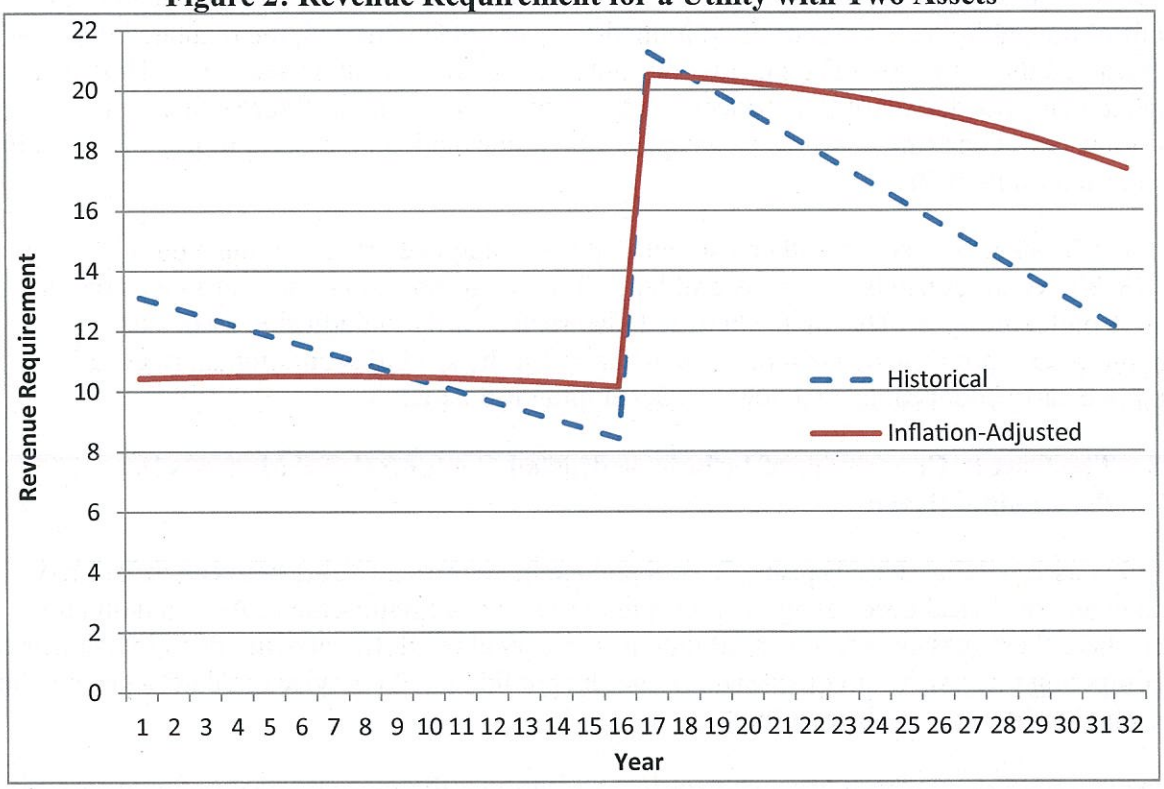


The problem is that this figure does not translate to reference tariffs. A utility's capital base comprises what economists (who study productivity) call a "perpetual inventory" of overlapping assets—some brand new, and some in the last years of their depreciable lives.[7] Ultimately, investors are compensated for the opportunity cost of capital in reference tariffs, including the return of capital through aggregate depreciation charges for the whole inventory of assets.

Focusing on the difference in recovery patterns for a single asset has the potential to mislead public policy makers with regard to the true difference between historical and inflation-adjusted tariff making. In practice, the differences in recovery patterns are muted when a utility is stable or growing and continuously adding assets. Take a simple example where a utility starts off with the asset in Figure 1, then adds an identical asset in year 17—halfway through the useful life of the first asset—resulting in Figure 2. Adding more assets this way produces a smaller and smaller saw-toothed pattern. Ultimately, for stable or growing utilities with myriads of assets, such an example produces lines for the two depreciation methods that are materially the same.

[7] See: Makholm, J.D., *Sources of Total Factor Productivity in the Electric Utility Industry*, Dissertation at the University of Wisconsin, May 1986, pp. 53-54.

Figure 2: Revenue Requirement for a Utility with Two Assets



The single picture presented on p. 116 of Part 2 of the Draft Decision is misleading. Simply adding another asset dramatically changes the recovery pattern. This is closer to a "perpetual inventory" model of asset acquisition and retirement, in which the seeming push of asset recovery into the future associated with inflation-adjusted computations versus historical computations averages out and goes away. Which is to say, even if the conclusions of the AER related to efficient growth were somehow related to efficient tariff designs and prices, they are based on a faulty premise anyway and ultimately do not support the long-term interests of customers if there are other economies (like lower capital costs) for one type of capital recovery for investors versus another.

4. **Deferrals of Costs and Greenfield or Quickly Growing Franchises**

The AER's discussion of depreciation profiles, proceeding as it does from pictures like Figure 1, above, prompts the question of what to do *not with mature utilities* for whom that figure presents a misleading picture, *but for new utilities*. For new utilities, initial reference tariffs would reflect a great introductory investment and a genuine difference between how asset base accounting methods (and thus the depreciation profile) would affect initial reference tariffs.

There are practical examples of such utility pricing problems owing to the new penetration of gas distribution into areas not theretofore served with natural gas. New Brunswick in Canada had such a problem with the entry of Enbridge Gas New Brunswick's distribution system into the territory, as did Northern Ireland when Phoenix Gas developed a greenfield natural gas

distribution network there. In both jurisdictions, the full costs of building out the network for the benefit of the public were not recovered immediately in tariffs. Instead, the regulated utilities were granted the ability to defer considerable amounts of cost for future recovery. This then triggered concerns that all of the burdens were just being passed on to future generations of network users. The same considerations apply when new markets for gas compete with existing propane and oil markets.

The New Brunswick case, and others, shows that the "intergenerational" collection of permissible revenues can be a serious problem. But it also shows that those problems require purpose-built solutions. The choice between historical or inflation-adjusted asset base accounting does not in such cases provide the basis for the kind of promotional prices that encourage early connections to a new and developing infrastructure.

5. The Cost to Consumers of Inflation-adjusted Computational Methods for Permissible Revenues

It is often asserted that there is a simple equivalence in net present value between inflation-adjusted and historical accounting in determining the revenue requirement. As in a number of areas where there may be a tendency to look past practical institutional difficulties in balancing the competing interests of investor-owners and the public in making wise regulatory policy, the issue involves more than abstract logic.

The capital markets that feed gas and electric distribution utilities are made up of investors who have choices regarding where to place their funds. Investors in infrastructure, for their part, are extraordinarily sensitive to risk of all varieties, including business, financial and regulatory risk. Utilities have traditionally been a favorite of those infrastructure investors (over other such investments such as highways, ports, etc.) because of the institutions that have arisen to regulate and largely protect infrastructure from market uncertainties (in the case of public utility natural monopoly franchises) and to carefully account for prudent invested capital that will be returned to investors over the useful life of their infrastructure capital assets. Where the institutions needed to assure investors of the safety of their investments are weak, capital is expensive. Where those institutions are solidly based in longstanding regulatory accounting institutions, long-term infrastructure capital flows freely.

As implied by the AER itself in the passage I quoted from page 117 of Part 2 of the Draft Decision ("offset by falls in other … components, such as the rate of return"), there is an institutional preference in the market for capital to secure more traditional and regular capital recovery associated with historical methods for calculating permissible revenues. This preference is partly due to the fact that deriving the fair rate of return requires fewer assumptions; there is no clear figure for the relevant inflation rate subsumed in observed capital costs for utility capital assets and for inflating the asset base. The preference is also based on investors' use of nominal returns when they compare investments in utilities. Historical accounting is more consistent with capital market expectations, particularly where regulatory institutions are new and regulatory risk is perceived to be high. In this sense, it is more efficient than inflation-adjusted accounting in delivering what investors expect. This in turn contributes to lower reference tariffs over time, promoting the efficient expansion of regulated services.

6. Summary

The grounds upon which the AER reject the APA GasNet proposal to transition to historical methods for asset base accounting are largely based on simplistic or errant notions of how the resulting depreciation schedules relate to economic efficiency or economic growth in utility services. As I described, economists and regulators define the relevant efficiency goals two ways: (1) *productive efficiency*, which is the province of wise incentive regulation, and (2) *allocative efficiency*, which is the province of wise customer classifications, tariff designs, and the designs and pricing of ancillary services (such as new line connections). In this context, the choice of historical or inflation-adjusted methods for asset base accounting has very little—if anything in a practical sense—to do with the regulatory pursuit of economic efficiency.

The example given by the AER to support its premise—that inflation-adjusted accounting methods flatten the collection of the costs of assets over time in reference tariffs—is largely a function of an excessively simplistic example. Expanding the analysis to include more assets in a "perpetual inventory" model of capital accumulation effectively dampens and effectively eliminates the differences seen in the one asset example for mature utilities. Such is a good example where the examination of an individual case cannot be generalized to a portfolio of assets.

A shift to the historical method for asset base accounting better squares with investor expectations. Such a shift moves away from more complicated and uncertain inflation-adjusted methods. The change will promote lower financing costs and save money for consumers (a point that the AER seems tacitly to concede). It is thus my ultimate conclusion that there is nothing in the pursuit of the principles or practices of economic efficiency (of either the productive or allocative variety) in the wise regulation of investor-owned utilities that would counterbalance the usefulness of such a move in the interest of consumers.

In light of my conclusions, what would be my recommendation to the AER for addressing the requirements of Rule 89 (1) (a), that the "depreciation schedule should be designed so that reference tariffs will vary, over time, in a way that promotes efficient growth in the market for reference services"? As I have stated above, depreciation profiles for single assets, as such, cannot themselves reasonably affect economic efficiency for a stable or growing utility franchise with a portfolio of assets of different ages. However, the use of historical costing methods does portend better results for consumers through lower capital costs. Such lower capital financing will itself result in better conditions for promoting market growth over time when compared to inflation-indexed asset base accounting. As such, I conclude the Rule has a more useful interpretation than would be apparent if read only with the single-asset Figure 1 in mind. That is, the depreciation schedule consistent with historical methods for asset base accounting and capital recovery by investors will better promote efficient growth through lower overall reference tariffs, and better address the requirement set out in Rule 89 (1) (a).