RETHINKING UTILITY REGULATION IN AUSTRALIA

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EXECUTIVE SUMMARY
This paper discusses Australia’s current approach to public utilities regulation and highlights the cracks that have emerged since the embryonic ‘Hilmer era’ reforms of the early 1990s.
While these reforms have been highly successful problems have emerged in the regulatory approach that underpins the introduction of competition in the provision of utility services. These include an arms race between the regulated and the regulator leading to a huge growth in regulatory transaction costs, a one-sided appeals process and evidence of large overinvestment in these networks.

To address these cracks, this paper advocates an approach to public utilities regulation that relies less on up front regulator decision making and more on stakeholders to determine access terms for essential network infrastructure with regulatory backup as necessary.

The provision of some essential network infrastructure should be regulated. Such infrastructure is often characterised by natural monopoly characteristics and allowing competition – that is, duplicating the infrastructure – is not economical. If unchecked, the monopolist can exploit this market power by withholding or limiting access to the infrastructure. This is the well-known ‘access problem’.

Given the ‘access problem’ regulation is sometimes necessary. Utilities regulation is required to curb market power and support competition in related markets. It should also aim to provide certainty to investors in and users of essential network infrastructure.

Reforms in the 1980s and 1990s including the reforms that followed the ‘Hilmer Report’ led to the structural separation on many previously integrated utilities and the development of independent utility regulation in Australia. These reforms successfully liberalized those markets that relied on essential infrastructure, introducing competition in areas like retail electricity and retail telecommunications.

Independent regulation was introduced to support the development of related markets. This included sector-specific regulation in some sectors, in particular energy and telecommunications.

The typical method of regulation used to support liberalisation has been the use of a highly prescriptive ‘top-down’ system of public utilities regulation. The regulator has typically used a ‘cost-of-service’ method to calculate the allowable revenues a firm may earn, and impose the “efficient price” it can charge.

Despite the benefits of liberalisation, the prescriptive approach of setting allowable revenues and prescribing “efficient prices” has in many cases led to large waste. The process of determining these prices can take years, and final decisions can run in the thousands of pages. Further, the decision does not necessarily reflect the preferences of the users and the regulated firms. This paper proposes a shift towards a model that puts greater emphasis on negotiating access terms directly between stakeholders conducted under a regulatory umbrella.

Such a method which developed in parts of North America in response to the demands of complex rate cases is delivering benefits in the U.S. and Canada. Evidence from North America suggests that prices are lower, service quality is higher, processing time is quicker and contracts tend to last longer. This is all achieved with less expense to the regulator and
the regulated, and ensures terms that better reflect the individual preferences of the stakeholders. This kind of approach, which is consistent with the original Hilmer proposal, can also be seen operating in the rail and airport sectors in Australia. This paper argues that the information asymmetry which exists between regulator and the regulated utility will inevitably results in regulatory error and regulatory complexity. Utility regulation should place greater emphasis on negotiated outcomes between users and regulated businesses with regulatory backup as necessary. This is consistent with the negotiate/arbitrate approach proposed for Australia.
1. INTRODUCTION
Since the National Competition Policy (NCP) reforms of the mid-1990s, Australian regulators have entrenched a ‘cost-of-service’ regulatory environment. These NCP reforms were a watershed moment in our nation’s recent economic history and provided a boost to productivity. Despite this, twenty years on, the regulatory model supporting these reforms is showing some serious problems.

The regulatory approach in some sectors has become an ‘arms race.’ Both the regulator and regulated firms are deploying increasingly greater amounts of resources, expert analysis, and time to determine regulatory decisions, without clear benefits to either customers or the regulated businesses.

The size of regulatory decisions is growing at an exponential rate. The length (in pages) of final determinations published by the Australian Energy Regulator (AER) are more than twenty times that of comparable determinations regulating the same entities back in the late nineties (Graph 1).

The time taken to reach these determinations has also been increasing. Queensland’s distribution sector has seen a 6.5 fold increase in time taken to arrive at a final decision. Victoria’s distribution sector saw the time taken roughly double after each five year regulatory period from 2000 to 2010. The most recent NSW/ACT decisions governing a five-year period took three years four months to complete. Appeals extend these timelines further.

A greater concern is that the regulatory approach appears to be contributing to a misallocation of resources in some sectors, particularly in energy and telecommunications. For example Figure 2 shows that electricity generation peaked in 2008 and has fallen by around 6% since. At the same, the asset base of transmission and distribution companies has grown by 45% and 120% respectively. The total increase in the asset base sits at around $35 billion dollars in under a decade. Some tightening of the reliability standards may have contributed to this expenditure but can hardly explain increased expenditure of this magnitude. Which begs the question – what was the purpose and what is the benefit of this huge investment?

This paper discusses Australia’s experience under a cost-of-service (CoS) regulatory framework. It is also an endorsement for shifting toward an alternative approach to public utilities regulation that relies more prominently on negotiated settlements. Moving to a ‘negotiate-arbitrate’ model is consistent with the original framework laid out by the Hilmer

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1 The Review of National Competition Policy Reforms states that the NCP “improved Australia’s productivity performance and delivered significant benefits to the community”. (Productivity Commissions, 2005)


3 The value of the Asset Base are as reported in the AER’s State of the Market reports.
Relying more on negotiations between the parties - backed up by the ability of the regulator to intervene - has led to a range of economic benefits in other jurisdictions, especially in North America. Even domestically the use of negotiations as a regulatory instrument has been successful in managing access to rail and airport infrastructure.

Such an alternative approach would place greater reliance on negotiations between users and owners of monopoly facilities with regulatory backup available as required. In contrast to an upfront regulatory determination, giving primacy to a negotiated settlement sees the regulated parties negotiate the terms of the access arrangement they want. Further, it allows the parties to make trade-offs that reflect their preferences. In the absence of an agreement, the regulator can still be called upon to impose an arbitrated decision.

In the U.S. and Canada, alternatives to the cost of service approach have shown that they can provide better outcomes for both the regulated firms and their customer. An ever
The growing number of cases in North America and elsewhere show that when the regulator gives primacy to a settlement, and facilitates negotiations the needs of all parties can be better met. The experience of negotiated settlements in North America suggests that the process is more expedient, less costly and less adversarial. Incentive-based regulation appears to be much more amenable to the negotiated settlement approach, with a variety of innovations surfacing over the past three decades of negotiations (see Box 1 and Appendix 2).

The underlying economic benefits are, in some sense, obvious - negotiations are voluntary and allow parties to trade across price and non-price terms freely. When a unanimous agreement is reached, it is implicitly of higher benefit than the expected litigated outcome. In the absence of an agreement, parties are no worse off.

Some barriers may stand in the way of successful negotiations between regulated firms and their customers. In particular, there needs to be meaningful counterparties with whom to negotiate. Market structure is also important. For example, a monopoly buyer dealing with a monopoly provider of bottleneck services may lead to the problem of double
marginalisation. The regulatory scheme must also be designed to allow meaningful negotiations. If the regulator can too easily insert themselves into the decision-making process, then it is likely to do so. These issues notwithstanding, we believe that the Australian experience under the cost of service framework, along with the evidence supporting positive economic outcomes from negotiated settlements, provides a way forward to improve on the way we regulate utilities.

2. THE REGULATORY PROBLEM—WHY DO WE REGULATE PUBLIC UTILITIES?
To evaluate which regulatory approach is best suited to public utilities in Australia, we first need to be clear why regulatory intervention is justified. In particular, we need to clarify why firms who have monopoly control over essential or bottleneck services ought to be compelled to provide access to this infrastructure. As the 1993 Hilmer Report into Competition Policy noted:

“As a general rule, the law imposes no duty on one firm to do business with another. The efficient operation of a market economy relies on the general freedom of an owner of property and/or supplier of services to choose when and with whom to conduct business dealings and on what terms and conditions. This is an important and fundamental principle based on notions of private property and freedom to contract, and one not to be disturbed lightly.”

In 1993, the Hilmer Inquiry gave a clear outline of what it saw as affecting the public interest. The existence of monopoly control of ‘essential’ or ‘bottleneck’ facilities has the strong potential to reduce dynamic efficiency by limiting competition in proximate downstream and upstream markets. Importantly, these proximate markets could – if liberalised – support competition. As the Report states:

“where the owner of the ‘essential facility’ is vertically-integrated with potentially competitive activities in upstream or downstream markets — as is commonly the case with traditional public monopolies such as telecommunications, electricity and rail — the potential to charge monopoly prices may be combined with an incentive to inhibit competitors’ access to the facility.”

The Productivity Commission in its review of the National Access Regime – the laws governing when and how access to essential services should be granted – reaffirmed that public utilities regulation should address the problem of effective competition in related markets to natural monopoly facilities.

5 Hilmer Report, p.242
6 Ibid. p.241
Implicit in this view is that disturbing private property rights of bottleneck service providers can in some circumstances result in a net benefit to society.

2.1 NATURAL MONOPOLIES AND BOTTLENECK SERVICES
The key problem that often justifies policy intervention is the natural monopoly structure of the market. A natural monopoly is a monopoly in an industry in which it is most efficient (involving the lowest long-run average cost) for production to be permanently concentrated in a single firm rather than contested competitively. Natural monopolies can be found in markets for ‘essential services’ where duplication of the infrastructure would be highly wasteful. Key examples of such services may include the transmission and distribution of electricity, water, and gas.

In the case of natural monopolies, trying to increase competition by encouraging new entrants into the market creates a potential loss of efficiency. Duplicating lumpy infrastructure results in high-efficiency losses so it is sometimes optimal to forgo competition.

The potential for owners of these facilities to exploit the resulting monopoly power leads governments to nationalise or regulate them.

The basic monopoly problem in neo-classical economics is that monopolies produce below the social optimum and charge too high a price. Hence, intervention that reduces price and increases output can lead to an outcome closer to the social optimum.

Viewed this way the regulatory task can be seen as a search for the efficient price for monopoly services. Cost-of-service regulation attempts to do just this. The regulator attempts to establish efficient costs including capital costs, the return on capital and operating costs to determine the efficient price.

The Hilmer Inquiry saw the problem of regulating “essential facilities” arising as the result of a vertically integrated owner of a bottleneck or natural monopoly facility also operating in the potentially competitive upstream or downstream sectors. The potential for the owner of the monopoly facility, which cannot be economically duplicated, to charge monopoly prices combined with the incentive to inhibit competitors’ access to the facility may deter entry or limit competition in markets that are dependent on access to that essential facility.7

The Hilmer Inquiry’s preferred approach to this situation is structural reform to separate the monopoly element from the potentially competitive element. Where the bottleneck facility is separate, there is no incentive to withhold access. A problem remains in that the facility can charge monopoly prices. Hilmer did not support setting regulated prices for access to

7 Hilmer ch 11.
such a facility where it is not vertically integrated. The risk of error in price setting was seen as too great and a monitoring and surveillance response was preferred.8

Similarly, the Productivity Commission in its 2013 report into the National Access Regime9 argued that access regulation should address the problem of effective competition in related markets to natural monopoly facilities. It accepted that such regulation should apply to both vertically integrated and vertically separated natural monopoly facilities.10

The view that regulation of natural monopoly facilities is necessary to support competition in related markets was also supported by the ACCC and the NCC in submissions to the PC inquiry.11 The ACCC, however, did also emphasize the efficiency benefits achieved from the regulated business by preventing it from monopoly pricing.

2.2 REGULATORY HOLD UP AND CONTRACT CERTAINTY
One of the rationales for utility regulation has emphasised the risks involved for both the regulated businesses and its customers given the lumpy and sunk nature of the investments involved. Investors face the risk that governments may intervene and expropriate the returns. Given the significant sovereign risk involved investors will require a higher rate of return for holding this risk. If such returns are not forthcoming, then there will be a lower level of investment in the provision of these services than is socially optimal.12 In an extension of this argument, it has also been proposed that the activities of regulators are best explained as aiming to protect the sunk investments of users of these natural monopoly facilities.13 This argument is consistent with the Hilmer approach.

These risks could be managed in different ways. Governments can tender out for the right to provide the service. Competition can thus be used to achieve productive efficiencies while the rights and obligations of both the Government and the provider can be set out in long term contracts enforceable in the courts. While such long-term contracts are used in some circumstances, their use can create difficulties and challenges. Such contracts need to be able to provide a reasonable degree of certainty and at the same time accommodate changing circumstances. An overly prescriptive contract may not be desirable as it does not provide the requisite degree of flexibility. An overly loose contract results in uncertainty and

8 Ibid. ch 12

9 Productivity Commission, 2013

10 The PC also recommended that the test adopted to determine declaration should be the ‘natural monopoly’ test based on the ‘net social benefit’ of duplicating the asset. This test has previously been rejected by the High Court in favour of a ‘private profitability’ test. (see Pilbara Infrastructure Pty Ltd v Australian Competition Tribunal [2012] HCA 3)

11 NCC, 2012

12 Original insight came from Goldberg (1976); For an Australia-specific context see Biggar (2001) or Maddock, Dimasi and King (2014)

13 Biggar, 2001
litigation. Where circumstances are difficult to anticipate it may be preferable to have an independent regulator who is given some discretion to deal with changes in the environment. Such discretion needs to be limited, and this is usually done by making the regulator accountable through the courts.

Regulation can thus be seen as similar to the regulator administering a long term contract that balances the interests of the owner and users of the natural monopoly facility. If one adopts this view then the mandate for regulators to impose the “right” or economically efficient price may be relaxed. Put differently, the job of eliminating inefficiencies when one or more firms is a monopolist falls to the stakeholders themselves – with the regulator providing a framework that empowers such stakeholders.

Attempts by the regulator to impose efficiency by controlling prices or revenues directly are fraught with difficulty. Information asymmetry and regulatory gaming by the various parties involved will make such a search futile. Rather the regulator’s role should be to strike a reasonable balance between the owners and users of the facility. It implies that where the owner and users can reach agreement this should normally be respected by the regulator. Indeed, especially where there is a small number of large users, they and the owner are highly likely to understand the operation of the business far better than the regulator. It is, therefore, preferable that the owners and users should be required to negotiate. The regulator should only play a background role and arbitrating on those issues where agreement cannot be reached.

This negotiate-arbitrate model is at the foundation of the first national access regime. However, except for a few key cases, this model has been ignored. Instead, in Australia we currently have an overly rigid and detail-driven system of regulation where the regulator makes upfront, lengthy and expensive regulatory decisions.

3. THE REFORMS OF THE 1990S—THE DEVELOPMENT OF INDEPENDENT UTILITY REGULATION IN AUSTRALIA

The competition policy reforms of the 1990s in Australia focused strongly on the utilities sector. The changes included moves to separate the potentially competitive segments from the bottleneck or natural monopoly components of previously integrated utilities. For example in the various State Electricity Commissions generation and retail were separated from the networks. In some rail services above and below rail services were separated while in the telecommunications sector new competitors were allowed to operate but the incumbent was not structurally separated.

The Hilmer Review significantly influenced the direction of reforms to restructure the utilities and introduce competition in related markets.

14 In the restructure of the Victorian electricity sector initially the retailers were bundled with the distributors. The private sector owners made the move to separate these.
These changes enabled the development of markets in the provision of services in energy, telecommunications, and other services that had previously operated as government owned monopolies. Many others were corporatized and put on a commercial footing. Some such as the major airports and the electricity and gas sectors in Victoria and South Australia were privatised.

3.1 THE ESTABLISHMENT OF INDEPENDENT REGULATORS
A key component of these reforms was the establishment of independent utility regulation. Before the mid-nineties independent utility regulation although long established in the US and more recently in the UK, was little known in Australia. Utilities in Australia were largely government owned, and regulatory decisions were made by the Minister and the responsible departments. In some cases the utility itself made some technical regulatory decisions.

Over the last twenty years, we have seen an explosion in the growth of utility regulators and their activities. The activities of these bodies expanded significantly while governments continued to extend independent utility regulation into ever more sectors.

At the National level, the ACCC administers the competition and consumer protection laws and is also largely responsible for the economic regulation of utilities. It administers the national access regime. Along with the Australian Energy Regulator, which is a body established within the ACCC, it also has more direct regulatory functions in energy, telecommunications, water, rail, and grain ports. Under the prices surveillance provisions of the Competition and Consumer Act, it is also responsible for price monitoring and surveillance in sectors such as the waterfront, airports, and postal services.

Other bodies such as the National Competition Council, the National Transport Commission, Australian Communication and Media Authority and Murray Darling Basin Authority also play a more technical regulatory role. They also tend to be involved in providing specific policy advice.

At the State and Territory level, each jurisdiction has a utility and pricing regulator. These bodies predominantly regulate government-owned businesses, but can also provide oversight for other activities ranging from taxi fares to local government operations.

Economic utility regulation in Australia is not generally industry based and is usually undertaken by multi-industry regulators. While the AER regulates electricity and gas, it remains a part of the ACCC. The decision not to go down the industry specific route was to reduce the risks of regulatory capture, to avoid inconsistent regulatory treatment in different sectors and to reduce the costs in having multiple regulators.\(^{15}\)

\(^{15}\) Hilmer, 1993, pp315-316
3.2 THE REGULATORY APPROACH - COST BASED REGULATION

A generic regime to regulate natural monopoly bottlenecks administered by the ACCC was introduced in 1995. The regulation of these natural monopoly bottleneck facilities would be dealt with through the creation of a right of access to specified “essential facilities” on fair and reasonable terms. The model envisioned was for these terms to be settled by negotiation between users and owners with the regulator available to arbitrate disputes.

This scheme was established in the Competition and Consumer Act but has not been often used. The regulatory approaches used in some sectors such as airports and rail in the Hunter Valley have to various degrees been consistent with this approach with parties negotiating the details under a regulatory umbrella.

In the major areas of regulatory debate, energy and telecommunications, the approach relies much more on upfront regulatory determinations. In both these sectors, industry-specific regulatory schemes administered by the national regulator were set up. These rely predominantly on cost-based regulation. The aim of this approach is to establish the efficient costs of the regulated businesses and to set prices or revenues based on these costs.

Over time cost of service regulation - described as the ‘Building Block’ method - has become the mainstream model for Australian regulators. It is used in energy and telecommunications at the federal level and by state and territory regulators in energy and urban water and in some parts of rural water.

3.3 REGULATION IN ENERGY

In electricity and gas, the natural monopoly elements were separated from the potentially competitive sectors. When the schemes were set up the electricity market was established which would see electricity traded on the East Coast from Queensland to South Australia. Similarly, interconnected gas grids were trading gas across the states. State governments in Victoria and South Australia were also intent on selling their energy assets. This privatisation included both the competitive sectors in retail and production and the network monopolies. However, the network monopolies would be tightly regulated.

The problem here is not access, as the monopoly businesses have no incentive to deny access. Regulation is required as the separated bottleneck facilities, the electricity and gas transmission and distribution businesses, have monopoly power. The role of regulation here is to protect the related upstream and downstream industries from the network monopolist and to enable competition to develop in these sectors. It also provides a degree of

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16 The term Building Block originated in the Australian Competition and Consumer Commission in determining the total revenue requirement for a gas pipeline. It described the various components or costs which like the building blocks of a Meccano set was required to build the total revenue or price of the service in question. The term was adopted by a group working jointly with the then Office of the Regulator General in Victoria. It was publicly used by the ORG in 1998 and by the ACCC in its Statement of Regulatory Intent in 1999.
protection to the privatised monopolist from the potential risk of hold-up by the government as governments having sold the assets may then intervene to control prices.

A degree of certainty for the buyers of the regulated businesses was required. Detailed regulatory schemes were set up which required the regulator to have regard to the costs of the regulated businesses. Over time, the rules have become very prescriptive. For example, the rules governing the regulation of electricity distribution and transmission run to around 250 pages. The whole code governing the regulation of the National Electricity market is over 1500 pages.

The regulator is required to assess the regulated business’ proposal on a regular basis, usually every five years. These aim to establish the efficient capital expenditure, operating expenditure and return on capital for the regulated businesses.

The search for the efficient costs of these businesses has resulted in a regulatory scheme that has exploded in regulatory complexity and cost.

While a cost-based approach was introduced in the energy sector from the beginning what regulators and policy makers sought to implement was described as “incentive regulation”. What this meant was never clearly spelled out but the general expectation was that the regulator would try to introduce incentives for the regulated businesses to operate more efficiently, and this would require references to costs external to the business.¹⁷ The result does not look at all like a CPI-X price cap regime as set out by Littlechild or Baumol. For example, the National Electricity Code setting out the regulatory mechanism for distribution services states that the control mechanism for the regulated services must be of the prospective CPI-X form or some incentive based variant of the CPI-X form.¹⁸ However, it then goes on to specify in great detail a cost-based approach using a building block model.

³·⁴ REGULATION IN TELECOMMUNICATIONS

In telecommunications, the vertically integrated incumbent was not separated. Telstra was required to provide access to its key bottleneck service, the copper local loop while competing in the retail market with the access seekers. An industry-specific regulatory regime was introduced in the Competition and Consumer Act. This included industry-specific competition provisions and an industry-specific access regulatory scheme.

The initial scheme provided for negotiation between the parties and arbitration by the ACCC, but it also allowed more direct regulatory intervention. Over time, the arbitration provisions were diluted and eventually removed and replaced by more direct regulation.

Regulation was applied at the bottleneck level with the incumbent required to provide access to the local copper loop at a regulated price. Eventually, the incumbent Telstra was

¹⁷ The recent draft decision by the AER using benchmarks to help set the revenue cap for NSW distributors is a small step in this direction.

¹⁸ National Electricity Rules, Version 72, Ch6, pp654-658.
also required to provide a regulated wholesale service for the same activity. As a result, the service provided by the bottleneck is simultaneously regulated at different levels. Further, other services can be regulated following a public inquiry process if the ACCC decides they meet the criteria for regulation.

Until early 2015 there was also a separate price cap arrangement imposed directly by the Government on a range of retail services.

At the commencement of the regulatory regime, the regulator was required to set out its Price Rules. The pricing approach it used to provide access to the local loop (the connection between the local exchange and the home) in the late 1990s was to try to determine a forward-looking total service long run incremental cost, using best-in-use technology\(^{19}\).

The pricing principles foresaw the complexities involved in what it described as a full valuation approach and also suggested that in some cases a delta approach could be used. In that case, one starts with existing prices as a benchmark and changes the prices in accordance with subsequent and projected costs changes.

Inevitably the full valuation approach ended up being used on an old copper network that had almost certainly depreciated heavily. The result was a series of complex debates on the cost of building a hypothetical network at the time of regulation using an architecture and technologies that were unavailable or non-preferred at the time the copper network was rolled out and would likely also not be used if it were to be rolled out at the time when it was being regulated\(^{20}\).

The result was that if Telstra were to upgrade the local copper loop with fibre they were unlikely to get a significantly better return than they were already allowed by the regulator. As a result, the business was not prepared to significantly invest in the upgrade of the local loop.

The regulatory system was designed at a time when the services in question were predominantly voice based services. Since then, rapid technological change has seen data services become increasingly prominent. The regulatory standoff and the perceived need for investment to adequately cater for the growth in new data services contributed to the climate that led to the announcement of the National Broadband rollout.

The establishment of the National Broadband Network as a separate Government owned company effectively places the local loop in its control. Hence, the NBN also faces extensive regulation while the regulation of the incumbent continues.

The result is a confusing array of overlapping and sometimes multiple regulation for some services. At some point, this patchwork of regulation will need to be rationalised.

\(^{19}\) ACCC, 1997.

\(^{20}\) The Total Service Long Run Incremental Cost (TSLRIC) approach was eventually replaced by the Building Block methodology to avoid these sterile debates over the value of the sunk network.
3.5 OTHER SECTORS AND APPROACHES

As part of the privatisation process the major airports were regulated using a CPI-X price cap. The X for each airport was set by the Minister based on advice provided by the ACCC. Price caps have the advantage that they can be simpler to apply, and they provide stronger efficiency incentives. The downside is that once the X is set they have less flexibility in a changing environment. The Asian Financial Crisis impacted on airports and policymakers felt that the regulatory scheme was too rigid. As a result and following a review by the Productivity Commission the Government moved to lift the price caps and rely on the access provisions of the Australian Competition and Consumer Act.

Under these provisions, airports are at risk of declaration. If declared, access seekers can have disputes resolved through arbitration by the regulator. Services at Sydney and Melbourne Airports have been declared in the past. However, the airports and airlines were able to resolve their differences without resort to the regulator. In 2014, Tiger Air sought to have Sydney Airport declared for regulation. In this case, however, a settlement was reached between the parties and the request for declaration was withdrawn.

Airports and airlines have been negotiating outcomes without involving the regulator. The threat of regulation appears to provide the necessary incentive for both sides to negotiate.

In regulating water infrastructure operators in the Murray-Darling Basin, the ACCC has recognised that these operators vary enormously in size and ownership structure. As a result, the rules follow a three-tiered regulatory structure. Small and member-owned operators are simply required to publish charges and have to abide by non-discriminatory pricing requirements. A consultative process is introduced for larger member-owned operators and medium sized non-member owned operators who must develop network service plans every five years. Under these plans, the process for asset management, capital expenditure, operating expense and a breakdown of the method used for setting prices is given.

A small number of large non-member owned operators are required to have their charges approved by the regulator using cost-based regulation.

The judgement here is that given the incentives created by the ownership structure and the extent of market power involved for many of the smaller operators, using an alternative to the cost-of-service model is appropriate.

A different approach was also taken in setting access arrangements for rail in coal haulage in the Hunter Valley. The access arrangements were settled through an undertaking provided by the operator to the ACCC under the provisions of the generic access regime.

The users in this case were coal miners including some very large operators. While the needs and priorities of the users were not identical, they were prepared to trade off a higher level of charges by the operator for other quality of service benefits such as train length. The
users had a clear view of their needs and were knowledgeable about the operation of the rail system.

In some respects the process followed was familiar in that the operator proposed an undertaking with the key elements in there including costs and charges. The ACCC as regulator undertook a public process to determine the reasonableness of the proposal. However in this case the regulator did not attempt to assess whether the numbers in the undertaking were the “right” or the economically efficient ones. The framework adopted by the regulator was to encourage the parties to reach agreement.

The regulator played a role as facilitator between the parties. At the end of the day, the regulator still had to make a decision on the undertaking overall but in doing so many of the parameters were agreed by the parties who were prepared to make trade-offs. So for example the returns sought by the operator were not determined as the cost of capital as determined through the application of the capital asset pricing model or some other approach. The returns were agreed by the parties in return for other benefits.

Competitive tendering has also been used in some circumstances in place of regulation. Examples include above-rail urban transport. There is also a provision in the regulation of transmission gas pipelines which allows terms and conditions to be set through a competitive tender process that is overseen by the regulator.

Despite these examples of alternative approaches to regulation, the prevailing methodology by regulators of major utility infrastructure in Australia - particularly at the national level - is to rely on cost-based regulatory determinations using the building block methodology.

4. AN ASSESSMENT OF THE REGULATORY APPROACH

4.1 SUCCESSES

In many respects, the outcomes of the reforms in Australia have been very successful. The introduction of independent utility regulation was a necessary part in introducing markets in a number of these areas. In applying regulation, there has been a willingness to try different approaches but with a few notable exceptions utility regulation has over time tended to converge to a cost of service approach.

It is difficult to separate the impact of regulation from other influences in looking at the performance of the regulated sectors and related markets. Overall there has been the introduction of energy and irrigation water markets, greater competition in the provision of telecommunication services and rail freight services, and increased contestability in the provision of urban rail transport services.

As a result, we see greater use of market signals and more efficient use of resources. For example, the price of water used in irrigation can vary greatly depending on rainfall patterns and water availability. Irrigators can sell their water so that in years of scarcity water use can move away from more marginal use to higher value use. Similarly in electricity, wholesale
prices can vary dramatically when there are spikes in demand such as on very hot days when use by air conditioners is high. Increasingly we see more of these differences reflected at the retail level. We have also seen greater operational efficiencies achieved where markets have been introduced as well as in the monopoly sectors especially where we have private sector provision.21

These benefits derive from the restructure of previously integrated utilities and the introduction of markets rather than due to the introduction of utility regulation per se. Independent utility regulation plays an important part in providing owners and users of monopoly bottleneck facilities greater certainty through independent determinations accountable through the courts.

The way independent regulation operates is also important. It has been successful at ensuring:

- Regulation is conducted publicly, in a transparent manner and allows input from the various stakeholders.
- Regulators are accountable to the courts for their decisions.
- There is a significant degree of consistency in the broad regulatory approach the various regulators. The establishment of the Utility Regulators Forum where the regulators meet regularly and discuss regulatory approach has contributed to this.
- The building block approach that has become the default regulatory approach by regulators is broadly understood by the various participants.

While building Block regulation predominates other forms of regulation (see Appendix 4) certain sectors have adopted models that give greater emphasis to negotiation between the parties (for example in airports and coal haulage). These approaches appear to be working reasonably well and at much lower cost.

4.2 LIMITATIONS

The limitations of the current regulatory approach have become increasingly evident. The building block model is essentially applying cost-of-service regulation and carries a raft of well-known problems. It is essentially a search for the “right” or efficient price. This has resulted in regulatory gaming since entities have a strong incentives to challenge the grounds on which the “right” price is set. To do this it mounts a case to justify as high a level of operating and capital expenditure costs as possible and a high cost of capital to apply to the regulated asset base.

Information asymmetry means that attempting to assess whether these costs are prudent and efficient is always a challenge for the regulator. The evidence shows an enormous expansion of procedural costs for both regulator and regulated firms. These costs, significant

as they are, pale into insignificance compared to the costs to society that can result from the misallocation of capital such as we see in electricity networks.

The question may well be asked how “deregulation” led to such a vast increase in regulation.

Part of the reason for that growth is that regulation was previously not transparent. The relevant Minister made decisions without the public process that currently takes place. Making the regulator accountable through the courts and the Australian Competition Tribunal (ACT) leads to appeals, reliance on expert consultants and witnesses. It also leads to risk-averse behaviour by regulators who try to protect their decisions from appeals by accounting for all contingencies. On the other hand, the regulated businesses will try to game the regulatory process and use the rules to their advantage including by “cherry picking” appeal points where that is possible as even small wins can be financially significant.

The concern in Australia in the early years was that the regulator would be too concerned with protecting the short-term interests of consumers and would provide low regulated returns that in turn could lead to underinvestment.\textsuperscript{22}

While it was recognised that both underinvestment and overinvestment could occur the consequences of overinvestment would be some inefficiency and higher costs to society but under provision could result in “the lights going out” with greater potential cost to society and so the regulator should err on the side of allowing higher returns. The experience of the electricity and telecommunications sectors that faced different circumstances (where arguably high regulated returns were allowed by the regulator) demonstrates that there can be significant negative consequences that were at least in part due to the regulatory approach.

In both electricity and telecommunication, the returns provided by the regulator’s decisions were arguably both too high. However, the circumstances in each sector initially saw a different response.

In telecommunication, the incumbent was rewarded as if it had invested in a new network. Hence, it had little incentive to replace or upgrade the bottleneck and required additional regulatory returns to do so. A regulatory impasse occurred which was ultimately broken politically and resulted in the announcement of the NBN.

In electricity expansion of the network, growth in load in the earlier years and high returns provided the environment for rapid growth in investment. Attempts by the regulator to curb returns and spending were rarely successful in the Australian Competition Tribunal. Under the rules, the regulated businesses were able to cherry pick different parts of the determination or even individual parameters and improve on the decision of the regulator.

\textsuperscript{22} See for example Productivity Commission, 2001
4.2.1 One Way Bets, Cherry Picking and the Appeals process

Under cost of service regulation, the financial implications of even small changes can be significant. As a result, there is an incentive to test and challenge the regulator’s decision including the individual parameters of the decision. For example, a recent regulatory determination for an electricity distribution firm showed that a 1 per cent increase on the allowable return on firm assets would have increased revenue by 8 percent. This kind of return makes fighting for even the smallest concession worth millions to regulated firms.

In energy and other sectors, it is typical that a number of elements of each decision are cherry picked for appeal, allowing regulated firms to isolate favourable terms from the review process. This tended to make it a one-way bet for regulated businesses and, as a result, appeals to the Australian Competition Tribunal were numerous, and the success rate was high. Network businesses have sought a review for 18 AER determinations on electricity networks (i.e. they appealed about 40% of the time) three on transmission and 15 in distribution. Across all of these cases, the Tribunal increased allowable electricity network revenues by around $3.2 billion. In one review, a simple revision of the period over which the ‘risk-free’ rate of interest was calculated led to a $2 billion gain to five network service providers. Another case saw a detailed review of ‘gamma’ – the parameter for tax imputation offsets – lead to a gain of $900 million. Recent changes to the rules have aimed to curb this, but the new system is yet to be tested. An Appeal on an AER decision is in before the ACT as this paper is being written.

4.2.2 Administrative Costs and the ‘Arms Race’

Decisions have become complex as technical specialist advice has been sought to justify the positions of both the regulated business and the regulator on the individual parameters that make up the detail of the decisions. Both the regulatory proposals and the regulatory decisions have become very lengthy as all of the detail is canvassed, and the regulator demonstrates that consideration has been given to all of the arguments put in front of it. The documentation for a final decision including the regulatory proposal, submissions and expert advice can run to thousands of pages.

The result is that all this takes a very long time to complete. For example under the electricity rules the AER is required to set out its regulatory approach 23 months before the regulatory determination is due to come into place. If the decision is appealed, this could add several years before the decision is finalised. Hence, the time taken to make the decision can exceed the duration of the decision itself.

The resources that are involved including the regulatory practitioners from within the regulator, the regulated businesses, lawyers, and independent experts and consultants are substantial. Regulatory decisions have become increasingly larger in volume, running in some cases over a thousand of pages, and extremely complex. Indeed many components of the decisions are a “black box” and are only accessible to the experts involved. There is

vast expense involved in attempting to establish what the efficient cost of the regulated firm should be including determining the optimal amount of capital and operational expenditure that should be allowed by the regulator.

4.2.4 Misallocations and Dynamic Inefficiency
While these administrative and transactional costs are important, the bigger issue is the impact that the regulatory system is having on the regulated and related sectors. It is apparent utility regulation as it is applied in Australia not only imposes a high administrative burden; it is also contributing to serious resource misallocation in these sectors.

In electricity, we have seen significant expansion in the transmission and distribution asset bases despite declines in generation and peak demand (see Figure 4.1 and Appendix 1).

In telecommunications fixed networks we have seen a period of deliberate underinvestment by the incumbent followed by the commencement of an extensive and expensive fibre network in which large parts of the rural component is likely to be commercially uneconomic and will need to be cross-subsidised by the urban component. There are a number of factors behind these outcomes, but the regulatory schemes played a clear role.

The regulators’ inability to pick the decline in demand which resulted from the higher electricity prices and alternative sources of supply such as the growth in solar panels has led to overcapacity in the network, leaving energy users across Australia to foot the bill for a $30b plus growth in the asset base of the networks between 2007/8 to 2013/14. A significant proportion of this cannot be explained by growth in generation, consumer numbers or growth in peak demand and is likely an example of gold plating” of the electricity network.
4.2.4 Crowding out customers

Efforts to make ‘better’ regulatory decisions by adding more and more detail to the determinations fail to acknowledge the natural limitations of centralised decision making.

The ever increasing complexity of setting components like WACC, RAB, and the many parameters that lie within such calculations leads regulators to abstract away from the ‘bigger picture’ task of setting a bundle of terms that form a contract between the regulated business and the customers.

The regulated firms and their customers may have different sets of preferences and may be willing to trade-off certain terms against each other. Cost-of-service regulation with upfront regulatory determinations crowds out customer involvement and provides little opportunity for the regulated business and the customer to reach preferred outcomes.

The notion that an agent who has limited information about the principals’ preferences can yield an ‘optimal’ result on their behalf is inherently flawed and will inevitably lead to the sort of inefficiencies identified in this paper.

An updated system would give primacy to the needs and wants of customers as well as the regulated firms. It would reduce the need for ex-ante decisions from a regulator with limited information who is subject to gaming.

After some 20 years of the current experience, it is timely to take stock. The continuing growth in length and complexity of regulatory decisions especially in energy and telecommunications with the resulting expense and more importantly the economic consequences and incentives created by the regulatory system cannot continue. It may be
possible to improve on this situation incrementally, but a more significant change in these sectors is required to make the system simpler to administer and to reduce the inefficiencies that result from cost-of-service regulation.

There is evidence that moving to a system that places greater reliance on an agreement between users and owners of monopoly facilities with the regulator taking a step back and playing a more deliberative role can improve the current situation.

5. THE WAY FORWARD
The experience in Australia has shown some attempts to use various forms of regulation. Some have provided for the relevant parties to negotiate outcomes under a regulatory umbrella and to provide incentives to encourage regulated firms to operate efficiently.

Despite this, the prevailing approach that has emerged in the major areas of regulatory debate is industry specific regulation and cost based methodologies: the search for the “right price”. This has resulted in a complex, lengthy, expensive and often distorting regulatory system. The question is how to achieve the benefits of a regulatory system that constrains the market power of bottleneck infrastructure facilities, and provides greater certainty to investors and users of these facilities without the costs and distortions of the current system.

In looking for the way forward, it is important to go back to first principles and be clear why we want to have regulation. Once we do that, it becomes quickly apparent that whether monopoly facilities are publicly or privately owned does matter. In fact, this is fundamental to determine what the regulatory system should look like.

5.1 REGULATING PUBLICLY OWNED UTILITIES
Do government owned natural monopoly facilities require the same kind of regulation as privately owned businesses?

As discussed above the services provide by these facilities tend to be regarded as essential services while the facilities required to deliver them tend to be lumpy and sunk. Private investors risk ex-post government intervention once the capital investment is sunk, with possible expropriation of their expected returns.

The sovereign risk issue that exist for private investors in utility industries does not exist for government owned monopolies as the government is the shareholder. Government ownership can be thought of as an alternative approach to managing the monopoly power issue. The government as owner is constrained by voters if they push up prices too much. However, this constraint may not be considered adequate by users whom themselves may have sunk investments.
Exposing the government-owned utility to independent regulation can provide greater certainty to users, both wholesale and retail. In this way, the Government commits to constrain the monopoly power of its facility.

The rationale for regulation here might be to keep the management of these organisations at arm’s length from the political process and to have professional managers manage the organisation according to commercial objectives and goals set by the shareholder.

While the regulatory approach should try to encourage efficiency, the job of ensuring internal operations respond to such encouragement lies with the shareholders. If the regulator is given responsibility to impose efficient operations on individual businesses, then it is inevitable that such an approach will be intrusive and disruptive and the regulator will inevitably be led to second guess management decisions.

In this case, certainty can be provided to users with a simple price cap. Price caps can be successful at incentivising efficiency and yet avoid the issues associated with other prescriptive and complex regulatory instruments.

For example where you have a number of local monopolies such as in urban water, a price cap that is set to challenge the business to achieve a given level of industry performance may be more appropriate and effective.

Further, under CPI-X price cap regulation of government owned entities there is no need for a full cost analysis when setting ‘X’ since the government is essentially able to self-regulate.24

The greater simplicity and efficiency properties of a price cap can be particularly useful. The downside of applying price caps in the private sector are the risks to the business if the caps are set too low, and the social cost of setting the caps too high. In either case, there is the risk of a political reaction. In the case of private investment, such a political reaction can generate sovereign risk. These risks are better managed for government owned businesses as the question of sovereign risk for the regulated businesses does not arise.

The challenge of operating these utilities efficiently remains. The profit motive is much weaker for publicly owned firms.25 They often face a range of goals and objectives some of which may conflict. The question of achieving efficiency remains but this is a shareholder issue and should not be given to regulators.

Giving this role to the regulator only leads to confusion as to its role. The regulator could be seen to stand in the shoes of the shareholder in trying to ensure that the business runs efficiently but is likely to become more intrusive and second guess the firm’s decisions. Its role should be to deal with the basic problem arising from the monopoly power of the utility. That is to constrain market power and provide certainty to users.

24 For the original theoretical development of price cap regulation in the U.S. see Baumol, 1982; in the U.K. see Littlechild, 1993.
25 See the Senate Committee Report into Electricity Networks
5.2 REGULATING PRIVATELY OWNED UTILITIES

Managing sovereign risk leads to greater levels of detail in a regulatory system. Investors want to know upfront the regulatory approach and will want the ability to recoup reasonably incurred expenses and to challenge regulatory decisions in the courts. These needs a push towards greater reliance on cost-of-service regulation. However, even within the current system we see some continuing attempts to try variations to the regulatory approach where circumstances allow.

In particular, the regulation of airports since 2002, and the regulation of coal rail lines in the Hunter Valley points to an alternative way. The operators and users can play a more direct role in reaching agreements that are better likely to suit their needs. The key seems to be to have a system that genuinely allows negotiation between the parties with the potential of regulatory backup.

This approach does seem to have some parallels with negotiated settlements in North America.26 The move to reach negotiated settlements appears to have developed initially in the energy sector where the predecessor to the Federal Regulatory Authority (FERC) faced a severe backlog of cases. It has spread to many other Public Utility Commissions in the US and also in Canada. Although operating within a cost of service rate case framework, the parties have, initially out of necessity, been able to develop a speedier, simpler and more efficient process involving negotiated outcomes between the utility and the users.

26 J. Doucet and S. Littlechild, “Negotiated Settlements: The development of legal and economic thinking”, Utilities Policy, December 20006
BOX 1: NEGOTIATED SETTLEMENTS IN ACTION

Negotiated settlements (NS) were traditionally used to manage the significant backlog of rate cases that arose in the U.S. during the 1960s and 1970s. During this time a combination of high inflation, high interest rates and oil price shocks put significant strain on regulators, leading to the use of NS as a ‘procedural streamlining technique’.

Recent scholars such as Littlechild and Doucet (2006) Littlechild (2008, 2012), and Wang (2004) have endorsed the use of NS as a ‘first best’ approach to public utilities regulation, citing the innovative and mutually beneficial economic outcomes reached in such settlements.

Procedural Streamlining

During the 1960-70s, Spritzer (1971) found that more than half the cases brought to the United States Federal Power Commission (FPC) settled on at least some issues. The use of NS provided "a quantum leap in the speed of agency decisions without adversely effecting quality" (Morgan, 1978, p.55). Wang (2004) found that by the 1980s settlements were reached in approximately two-thirds of all electric utility rate cases, making NS the rule rather than the exception in North America.

Innovation and Trade-offs

Recent work by Littlechild, Littlechild, Doucet, Wang and others has sought to investigate the economic impacts of NS in North America. They found that not only did NS streamline decision making, it also led to substantial innovations and improved economic outcomes for regulated firms and their customers.

"Recent research ... confirms that settlements involve considerable innovation, notably the introduction of rate moratoria, multi-year incentive regulation and light-handed regulation, that otherwise might not have been possible."- Doucet and Littlechild, 2006, p.1

A review of rate cases before the Florida Public Services Commission from 1976-2002 conducted by Littlechild (2003, 2009) found that

- the average rate reduction was $49.6m when settled compared to $6.7m without settlement
- nine electricity rate cases achieved $3.8b in rate reductions, which were not likely to occur outside the negotiated settlement procedure

Importantly, these windfall gains for industrial and residential customers did not come at the expense of the utilities. The utilities were able to avoid the uncertainty of hearings, secure
favourable procedural and accounting standards, and lock in revenue-sharing incentive schemes instead of cost-of-service/rate-of-return regulation.

Evidence from Australia – Hunter Valley Rail

The negotiated settlement reached by the ARTC and its customers over access to the Hunter Valley rail network shows the potential for innovative, mutually beneficial outcomes that differ substantively from the ACCC’s likely decision. Major outcomes included:

- settled on a higher rate of return - the ACCC proposed 8.57%, whereas the parties settled on 9.10%
- a capex mechanism that empowers customers in the decision making process
- the ability for customer-funded capex projects to occur
- a pricing mechanism that takes ‘the most efficient train configuration that could conceivably be run on the rail network’ as its benchmark

This case shows how regulators can be overly focused on price variables and ignore certain price/quality tradeoffs that firms and customers would otherwise prefer. For a full dissection of the Hunter Valley rail settlement, see Bordignon and Littlechild (2012).

Evidence from Australia – Airports

In 2002 price controls for Australian airport services were abandoned. The general access provisions that required direct negotiations between major airports and their airline customers could potentially apply. Subsequent court rulings established that Part IIIA of the CCA applied to the airports, providing a credible threat of regulator imposed arbitrations should negotiations fail.

In this context, the negotiated outcomes have on balance been a success. Forsyth (2007) concluded that prices “are well below monopoly levels, and there are no major efficiency losses”(p67). The Productivity Commission determined that the use of commercial agreements “has made it much easier to undertake new investment and for airports to reach agreement with airlines on charges for that investment.” (p32)

In the case of Sydney Airport, Australia’s largest international transit hub airlines have been able to reach negotiated agreement under threat of regulation (most recently Tiger Air in 2014).

A range of positive outcomes have been identified by Littlechild (2012) since the introduction of negotiate/arbitrate regulation:

- Multifaceted commercial agreements with all major domestic and international passenger airlines
- Good faith re-negotiations during the 2009 economic downturn, allowing investment to fall in line with lower passenger numbers
- Sustained and flexible capital expenditure program

Ironically while in Australian regulators and policy makers were anxious to avoid the US experience involving the excessively litigious approach of cost-of-service rate cases, in some key sectors it has largely ended up with
a system that is effectively a fixed term cost-based rate case. The decision making is lengthy, indeed in energy regulation making the decision can take almost as long as the period over which it has an effect, and at the national level there has been significant litigation. Litigation has been much less common at the state level, but that is largely because state regulators largely regulate government owned businesses and the shareholder usually does not welcome litigation between its various bodies. Litigation has tended to occur where there has been private sector involvement.

6. PROPOSALS FOR CHANGE

The current system of utility regulation needs to be simplified. In particular, the regulation of energy and telecommunications networks can be made less costly, timelier, and more efficient. To do this, the regulatory system needs to move away from the current cost-based model.

It must still meet the needs of investors and users. To do this, the regulatory system need not be the same for privately and publicly owned businesses. In the case of privately owned utilities, greater emphasis should be placed on negotiations between the relevant parties. This would be more consistent with the original Hilmer proposal.

This paper proposes the following changes:

a) Simplify the process for determining what facilities should be regulated.
   • The decision on what facilities should be regulated should be made by the NCC (or its replacement). This decision should be appealable to the Australian Competition Tribunal but not referred to the relevant Minister.
   • The declaration process needs to provide a meaningful threat of declaration for regulation to occur. It is important that decisions be timely. The law has now been tested all the way to the High Court, and recent evidence suggests that the threat of regulation does lead to meaningful negotiations.
   • Removing the Minister as the final decision maker is likely to enhance certainty and further shorten the timeframe for decision making.

b) Clarify the objectives of the regulatory scheme. Clear objectives will assist the regulatory scheme to achieve its goals. The main objectives of the regulation should not be a search for the efficient price which is largely unattainable and results in cost, complexity and delay. It should be:
   • To protect users from the market power of the monopoly facility by allowing them to negotiate outcomes under regulatory oversight.
   • To provide certainty for private investors and users of these facilities.
c) Rationalise the various regulatory schemes at the national level to a single scheme

- Regulation of declared facilities should occur through the existing generic regulatory scheme. It provides for negotiations between the parties with arbitration by the regulator if required.
- The regulator should not be required to, and indeed should not be able to, make an initial determination. If that is a requirement of the regulatory system, then the parties are likely to resist negotiating in good faith if they believe they can do better through a regulatory determination. The role of the regulator should be called in to arbitrate on specific elements of the negotiation if the parties cannot reach agreement.
- Regulatory intervention should be based on external benchmarks identified in advance.
- The regulator should set out guidelines on its approach.
- The regulator should not be able to join arbitrations as these could become akin to industry-wide determinations. Competition in the related markets would be better served if wholesale users reached their own agreements.
- Wholesale users are often substantial organisations with a good technical knowledge of the regulated business. They are in a good position to negotiate with the facility owner and can trade off different elements such as price and quality. While their interests are likely to overlap with final users to a large degree, this may not always be the case.
- It would also be helpful for the regulator to provide assistance to end users involved in the proceedings. This would be more relevant for utilities providing retail services such as water corporations.

d) Simplify the complex industry specific schemes.

- The existing industry specific schemes in energy and telecommunications are becoming unworkable and need to be simplified and made consistent with the generic national scheme as an interim step.

e) Regulatory decisions should be appealable to the Australian Competition Tribunal only if an error can be demonstrated.

f) Limit the timeframes for arbitrations

- Arbitrations should have a six-month timeframe.

g) Simplify the regulation of government-owned monopolies

27 See Maddock, Dimasi & King (2014) for further discussion of this point.
• Government owned monopolies do not face sovereign risk so a much simpler regulatory approach such as a price cap could be utilised. This would need to take care that the setting of the cap is straightforward.

APPENDIX 1: AN INDICATOR OF FAILURE OF THE REGULATORY SYSTEM: AN EXPLOSION OF THE ASSET BASE OF ENERGY NETWORKS

Since the period 2006-07 to 2013-14 the size of the asset base for Australia’s electricity distribution network has increased by over $30 billion dollars. This means that firms who supply distribution services are allowed to earn a return on this extra $30 billion, which is recovered from electricity customers across the NEM.

Despite this, no reasonable evidence exists that this extra $30 billion is necessary to the grid. Figure 1 clearly shows that while the distribution asset base has more than doubled since 2006-07, electricity generated, annual peak load and number of customers has virtually plateaued.

This begs the question – where has the $30 billion gone?

Figures 2, 3 and 4 shows a non-indexed comparison of regulatory Asset Bases’ against Total Generation, Annual Peak Load, and Customer Numbers respectively.
Figure 1: Change in NEM Statistics and Regulatory Asset Bases
2006-07 to 2013-14
(indexed to 2006-07 levels)

Figure 2: Regulatory Asset Base and Total Electricity Generation in the NEM
Figure 3: Regulatory Asset Base and Peak Demand in the NEM

Figure 4: Regulatory Asset Base and Customer Numbers in the NEM
APPENDIX 2: THE RISE OF NEGOTIATED SETTLEMENTS IN NORTH AMERICA

In North America, negotiated settlements were initiated by the Federal Power Commission (FPC). The initial uptake followed the Supreme Court’s decision to increase the FPCs jurisdiction from 157 natural gas businesses to 4,365 businesses. The huge increase in rate cases was estimated to take over eighty years to clear.

To manage this backlog, the FPC (and later it is successor – Federal Energy Regulatory Commission) pushed for pipelines and their users to reach negotiated settlements. By the nineteen eighties, FERC approved settlements in roughly 60% of electricity rate cases and 70% of gas pipeline rate cases. Today FERC approves negotiated settlements for more than 90% of rate cases.

As well as FERC, many other areas in North America have shifted to use negotiated settlements as the primary method of rate case determination. The Florida Public Service Commission (FPSC) has notably encouraged the use of negotiated settlements. In this case, agreements between network service providers (NSPs) and their customers are led by a customer advocate, the Office of Public Counsel. The National Energy Board (NEB) in Canada has also strongly stated it has a preference for settlements. To reduce expensive, timeconsuming and often repetitive debates over the rate of return, NEB set out annual guidelines on how it would determine such matters if the case was referred to it. This form of ‘backstop’ regulation set a clear starting point for negotiations and delivered a clear outside option for NSPs and their customers.

Settlement discussions have taken place independently of the regulatory commission in Canada (under the NEB) and in Florida (under the FPSC), giving regulators a passive role in reaching a settlement. In contrast, the Trial Staff at FERC (who are distinct from the Commissioners and Advisory Staff) play an active role in facilitating negotiation and settlement. At the time that a gas pipeline applies for a new tariff, it is analysed by Trial Staff, who after three months propose an initial settlement offer.

This indicates the determination that FERC would make in a litigated determination. For example, an indication of the costs and return on equity that Trial Staff deem reasonable.

A discussion amongst the interested parties follows, with the aim of finding a mutually satisfactory tariff. Typically an in-principle agreement is reached in two-and-a-half months.

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28 see Doucet and Littlechild, 2006; Littlechild 2008a, 2008b
29 Littlechild, 2009
30 Doucet and Littlechild, 2009
31 Littlechild, 2011
32 Ibid.
after Trial Staff’s first settlement offer, just before the testimony filing date. Usually, it takes an extra 60+ days for the parties to finalise the settlement and obtain certification that the settlement is uncontested. It then takes a further three months for formal approval from FERC. The total processing time is in stark contrast to a typical litigated rate cases which usually takes several years to complete.\(^{33}\)

Despite the litigated regulatory framework in the US continuing to be highly burdensome (which was indeed the U.K. and later Australia’s motivation for rethinking their approach), stakeholders have found a much more effective way of operating. Utilities, customers and other interested parties have negotiated settlements of both price terms (rates) and non-rate terms such as capex schedules and quality of service terms. The general focus is on the ‘bottom line’, not the detailed parameters and components of each calculation. Overly detailed econometric and economic analysis is minimized, saving time and significant cost. Comparisons are minimal, partly because the ‘test year’ tends to focus on facts rather than estimates. Further, an agreed outcome does not need to have substantial supporting documentation making the negotiations less time-consuming, less costly and more certain.

Outcomes resulting from negotiated settlements are also more innovative and have often introduced incentive mechanisms for improved quality and efficiency. The outcomes also serve the needs of the parties more closely than those outcomes introduced by the regulator.\(^{34}\) They also have allowed for significant price reductions with much lower transaction costs. For example, the cases in Florida that were settled last 50-150% longer, with 25-30% less processing time.\(^{34}\)

In settled cases, the duration of price controls is usually shorter than in similar determinations in U.K. or Australia. This lowers risk for both parties. Further, it is typical for systematic risk to be shared between parties. This includes agreements to share the costs of unforeseen declines in demand. Additionally, both prices and capex schedules are usually transparent, and capital expenditure is not allowed to be recovered until it has been spent.\(^{35}\)

Negotiated settlements rarely contain complex formulae or extensive or arguments over minor parameters, which makes them much simpler than similar determinations in Australia or the U.K. Recent pipeline settlements at FERC are typically 12 pages, with some containing as few as four pages.\(^{36}\)

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\(^{33}\) Doucet and Littlechild, 2009

\(^{34}\) Ibid.

\(^{34}\) Doucet and Littlechild, 2006

\(^{35}\) Littlechild, 2009

\(^{36}\) Ibid.
Lastly, the settlement process has shown improvements in information sharing and improved relationships between network service providers and their customers. In general, all parties find that a negotiated settlement serve are preferred to a litigated outcome.
APPENDIX 3: COST OF SERVICE MODEL AND SOME OF IT’S PARAMETERS

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Estimate Range</th>
<th>Considerations / Issues</th>
<th>Cases and Rulings</th>
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<tbody>
<tr>
<td>Nominal Risk-Free Rate</td>
<td>200 – 1500 basis points</td>
<td>• Averaging Period&lt;br&gt;• Bond rating o</td>
<td>• In 2009 the Tribunal found that AER should adopt adjusted averaging periods proposed by regulated firms (September 2008) instead of the AERs proposed period (Feb/March 2009) raising the allowed cost of capital for NSW electricity distribution network operators from 8.8% to 10% increasing allowable revenues by $2 billion [2009 ACompT 8, par. 105-107]</td>
</tr>
<tr>
<td>Debt Risk Premium</td>
<td>300 – 400 basis points</td>
<td>• Extrapolation method o&lt;br&gt;Regression Specification o&lt;br&gt;Choice of sampling day</td>
<td>• The Tribunal raised the DRP from “3.74%” to “3.89%” for ActewAGL’s gas distribution network, increasing the cost of capital from 9.72% to 10.04% increasing allowable revenues by $5 million [AER NR 007/10]</td>
</tr>
<tr>
<td>Equity Beta</td>
<td>0.4 – 1.2</td>
<td>• Comparable firms o&lt;br&gt;Sampling frequency o&lt;br&gt;Regression Specification o&lt;br&gt;Choice of sampling day</td>
<td>• Tribunal has previously concluded that an expanded sample should be considered when determining yield curves: “… it is not reasonable to decide which of three non-linear curves best fits a set of data that consists of only five points” (ACT [2011] ACompT 4, Paragraphs 38-39)</td>
</tr>
<tr>
<td>Value of Imputation Credits (Gamma)</td>
<td>0 – 0.7</td>
<td>• Distribution ratio o&lt;br&gt;Utility Rate (Theta)</td>
<td>• ACT raised the gamma from “0.5” to “0.25” for Victorian distribution firms for the control period 2011-2015, with a combined revenue impact of over $900 million. • Tribunal has indicated it views past AER values of Gamma as presenting only an ‘upper bound’, and has tended to favour a lower value</td>
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APPENDIX 4 – LIST OF AUSTRALIAN NETWORKS AND REGULATORS

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http://www.aer.gov.au/node/13556
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