Energy Market Policy and Regulatory Barriers: How Energy Networks Can Contribute to Energy Market Objectives

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Abstract

As policymakers finalise the laws and rules that will underpin Australia's national energy regulation for the foreseeable future, it is timely to ask whether these rules will limit the positive role that energy networks can play in promoting enhanced energy efficiency and reduced greenhouse gas emissions. Networks can advance these objectives if regulation creates the right, positive incentives for dynamic efficiency and prudent risk-taking. But if the existing "building blocks" approach is hardwired into price regulations, there is a risk that capital markets will continue to prefer highly risk-averse capital structures and business models, thereby making networks less willing and able to take an active role in the broader marketplace. Distribution networks represent some 40% of the energy value chain and as such could play a potentially significant role in achieving energy market objectives if they are properly motivated. This paper examines an alternative regulatory approach known as "external" regulation that links tariff changes to industry total factor productivity (TFP) trends. This regulatory approach can encourage networks to vigorously pursue a variety of actions (such as AMR, distributed generation and demand management) that simultaneously improve their bottom line and promote broader energy market objectives, while at the same time providing stakeholders with the confidence that there is a necessary constraint on monopolistic behaviour.

Energy policy in Australia has changed significantly in the last few years. Until recently, the main focus of energy reforms has been to promote competition in wholesale and retail commodity markets and facilitate investment in transmission and distribution infrastructure. These efforts have been broadly directed to the supply side of the marketplace and are ultimately intended to create benefits for customers by maximising the efficiency with which energy is produced, traded and delivered.

Even as these reforms continue to be implemented, policymakers have begun to shift their focus to enhancing efficiency on the energy *demand* side. More emphasis is now being placed on promoting efficient energy consumption and making energy usage more responsive to price signals. These efforts are prompted in large part by concerns over greenhouse gas emissions (GHG), which have also led to a new generation of "supply side" initiatives designed to develop less carbon-intensive fuel sources and applications.

Many such policy initiatives are currently underway. In Victoria, prominent examples include the proposed Victorian Energy Efficiency Target (VEET), a certificate-based approach for stimulating investment in a broad range of energy efficiency technologies that will reduce GHG, and the Victorian Renewable Energy Target (VRET) which mandates that renewables account for at least 10% of electricity generation by 2016. New South Wales has also taken a leadership role on these issues, with efforts including a Greenhouse Gas Reduction Scheme in place since 2003 and a Climate Change Fund providing subsidies to consumers to retrofit and/or replace old appliances and to develop renewable energy pilot demonstration projects for solar, geothermal and other new technologies.

Many of these initiatives have significant merit, but it is notable that less attention has been paid to the role that energy networks can play in contributing to energy market solutions.[1] Policy efforts across Australia overwhelmingly focus on either energy producers or consumers, with subsidies or higher mandated standards as the preferred policy instruments. This approach to policy implicitly (and no doubt unintentionally) views energy delivery systems as inert links in the energy supply chain. Policymakers appear to assume that networks should provide the infrastructure necessary to connect energy producers with consumers but otherwise have little role to play in achieving broader energy market objectives.

This view fails to appreciate networks' potential contribution to policy objectives in both upstream and downstream markets. If they are properly motivated, networks can help the entire energy value chain respond to new policy demands. Moreover, energy networks can make these contributions without receiving either direct or indirect subsidies from the public. Well-designed regulatory frameworks that use "external" performance metrics such as industry total factor productivity (TFP) trends can encourage behavior that rewards networks for taking risks, investing in non-network solutions and thereby promoting broader energy market goals.

This article is designed to help policymakers and other interested parties understand the role that networks can play in promoting energy policy objectives. It will

[1] To the extent that policy makers have considered this issue it has been in the context of identifying potential barriers. This was examined by NERA in its report commissioned by the MCE on network incentives for distributed generation and demand side response

also explore, with particular reference to distributed generation and advanced metering infrastructure, how regulation can create either disincentives or positive incentives for realising this latent potential, depending on how it is designed. We wish to emphasise, however, that we do not see external regulation as a "silver bullet" for achieving energy market goals. External regulatory methods are certainly not sufficient for promoting energy efficiency and reduced GHG, but they are more complementary to these goals than the "building block" approach used to date in Australian regulation.

What is "External Regulation"?

Energy networks in Australia are currently regulated using what is known as the "building block" approach to CPI-X regulation. The building block approach essentially sets price trajectories so that each network's forward-looking revenues are equated to its forward-looking costs (or revenue requirements) over the price control period. Building block reviews focus on determining appropriate values for each company's own capital asset values, weighted average cost of capital (WACC), capital expenditures and operating expenditures for the upcoming price control period.

"External" regulation is an alternative method for regulating energy networks. Compared to building blocks, external regulation creates maximum incentives for utilities to pursue profit-maximising activities in both regulated and non-regulated markets. This will in turn lead to efficient integration across various businesses in which networks may achieve economies of scope (*i.e.* unit cost reductions that result from increasing the number of services provided by a firm) and, in the process, increase efficiency in upstream and downstream energy markets. External regulation finesses the cost allocation issues that bedevil such diversification under cost-based regulatory approaches, while also providing a light-handed but effective constraint on utilities' ability to exercise market power for natural monopoly services.

External regulation can overcome these concerns since, unlike building block regulation, it does not link overall price changes to each company's allocated cost of service. After initial cost-based prices are established, external regulation updates prices using information on industry TFP and input price trends. This approach is explicitly designed to mimic the operation and outcome of competitive markets, where the change in prices charged by a competitive industry is equal to the trend in that *industry's* unit cost, rather than the unit cost of any particular firm. The benefits of *industry* productivity growth are then passed to customers over time in the form of slower price growth. However, because the industry unit cost trend is insensitive to action of individual firms, companies in competitive markets have strong incentives to improve their productivity.

External regulation uses these insights to operationalise the terms of CPI-X formulas. The values chosen for the CPI-X formula reflect the industry's historic trends in input prices and productivity. It is important to emphasise that *industry* rather than individual company measures are relevant for calibrating the CPI-X formula. This is necessary to comply with the competitive market paradigm, because the prices facing any firm in a competitive market are external to its costs or efficiency. Prices in competitive markets evolve in response to industry-wide trends in unit costs which, in turn, depend on industry input price and productivity trends.

Compared with a building block approach, external regulation can simultaneously enhance performance incentives, facilitate marketing flexibility, and reduce regulatory cost. Using data that are "external" to the firm in the CPI-X formula serves to break the direct link between a utility's own cost and marketing performance and its allowed prices. Because prices are based on external data, unit cost reductions do not decrease allowed price changes but go straight to the bottom line. This creates optimal incentives to control costs and pursue revenue generating activities in other markets.

Energy Networks and Important Technological Developments

These properties of external regulation can be critical for encouraging networks to make positive contributions to broader energy markets. Before we examine why this is the case, it will be instructive to review some recent technological developments that have important implications for how Australia and other advanced nations can achieve their energy efficiency objectives.

Advanced Metering Infrastructure or AMI will be critical for the energy marketplace of the future. At its most basic level, AMI is designed to automate the process for recording customers' power consumption, but it can also create a much wider array of benefits. AMI systems generally involve three interrelated components. The first is the metering units themselves, which are far more sophisticated than the "accumulation meters" that have essentially been in place since the industry's inception. The second is the information networks that are used to transmit data on customer consumption to the utility. Some AMI networks also allow data to flow in two directions, from the customer to the company and from the company to the customer. The third component is the meter data management system, where data on customer consumption and market conditions are stored and accessed.

AMI provides a number of benefits to energy distribution networks. Automated meter reading saves costs that would otherwise be incurred from manual meter reads. AMI can also provide "real time" information on the operation of the distribution system, which allows companies to locate faults that lead to power interruptions more quickly and accurately. In addition to enhancing the reliability of service provided to customers, better information on fault location can be used to optimise the size and dispatch of work crews, thereby reducing operating costs. AMI can also monitor the loading and condition of distribution system components, which can help companies optimise their inspection and maintenance cycles as well as extend the periods for replacing capital equipment. Automated meter reads also tend to improve billing accuracy and the timeliness with which bills are produced, thereby improving cash flow and the quality of billing service provided to customers.

In addition to providing these benefits for energy networks and their customers, more sophisticated metering systems will be increasingly necessary for distributors to cope with the more diverse and "distributed" (*i.e.* less centralised) nature of new generation technologies. Nearly all distribution systems are "radial" or designed for power to flow in one direction (from the bulk transmission system to the end user). Distributed generation (DG) units that are connected to the distribution network can lead to power flows in more than one direction, potentially decreasing the stability of electrical systems. This can affect the extent to which connected loads and generators interact with each other and, particularly when outages occur, the presence of DG units can lead to broader system instabilities. DG can also complicate the restoration of service whenever faults on distribution lines occur.

AMI is critical for helping distributors cope with these challenges. “Real time” information on the loading of distribution system components can be critical for monitoring the impact of DG units on the stability of the overall distribution system and for efficiently dispatching a portfolio of renewable (including wind) and distributed generators. Distribution AMI investments are therefore an important and increasingly essential complement to the renewable and DG units that are becoming more prominent in the energy marketplace.

There are a range of available AMI vendors, employing different technologies and offering diverse functionalities. The broadband, two-way communication systems tend to be the most expensive but also offer the greatest functionalities in terms of network “intelligence” and being able to monitor and optimise system conditions. These more advanced AMI technologies tend to promote energy efficiency objectives most effectively, since they lead to fewer line losses (*i.e.* energy that is generated but lost during delivery to end-users), unnecessary outages and other inefficiencies that contribute to GHG emissions. As discussed, the choices for networks’ initial AMI technologies can have important implications for longer-range energy efficiency and GHG objectives. In general, the business case for more sophisticated AMI systems is enhanced when distributors are integrated into related activities like retailing, since such vertical integration allows a company to capture a greater range of the benefits created by these systems.

Of course, some large scale AMI deployments are planned for Australia (most prominently in Victoria), but these efforts are the result of legislated mandates rather than networks responding naturally to commercial incentives. Given the significant benefits from AMI, the fact that networks and retailers have not invested in large scale AMI voluntarily may be seen as somewhat surprising. One important part of the reason is that, as suggested above, AMI tends to create “split benefits,” or benefits that are distributed among multiple parties rather than captured entirely by the network undertaking the investment. An ability to integrate across different businesses would help companies consolidate those benefits and thus more willing to undertake AMI investments but, as we will explain, such integration has been discouraged by network regulation and the risk-averse corporate and financial structures it has spawned.

Another issue regarding AMI deployment is standardisation. There are currently no industry AMI standards, and the multiplicity of AMI technologies and vendors may lead to incompatibility of the equipment used by different players in the marketplace. In addition to encouraging investment in the more sophisticated systems, vertical integration by the distributor among all aspects of the AMI infrastructure (meters, communication systems and meter data management systems) is a straightforward method for reducing concerns about standards and interoperability.

The lack of agreement on AMI standards also raises an important issue about risk. In mandated AMI rollouts, governments and regulators are inevitably drawn closer into making decisions about AMI technologies and ensuring compatibility among different market agents. The costs of these decisions are passed through to customers in regulated network rates. Because AMI investments can have implications throughout the energy marketplace, there are considerable risks to getting the technology decisions "wrong." These risks under mandated programs are ultimately borne by consumers, unlike more market-oriented arrangements where networks would act voluntarily and take a greater share of risks. Networks have much stronger incentives to invest efficiently when they bear the risks and reap the rewards of their own decisions. In fact, mandating AMI rollouts and shifting risks to customers is an example of what economists refer to as "moral hazard," or the possibility that agents will act sub-optimally when the risks of their actions are redistributed to other parties. For companies to be willing to take risks, however, there must be a compensating potential for greater upside returns, which is typically not possible under the building block regulatory methods used to regulate Australian networks.

Demand Response is an important element of the new energy reforms. Policymakers want consumers to respond naturally to the price signals coming from the energy marketplace. For example, customers should be encouraged to reduce their consumption during peak hours when energy prices are typically at their highest. Lower demand pressures at the peak will tend to reduce energy prices and GHG emissions, since energy and line losses are usually greatest during peak hours. Lower peak demands can also lead to lower overall energy consumption, thereby further reducing current GHG emissions, or to more efficient use of energy infrastructure if energy use is shifted from peak to non-peak hours. Power generation, transmission and distribution infrastructure must all be sized to accommodate peak demands, so reducing peak usage will tend to defer the need for energy infrastructure investments. Pushing energy investments into the future saves costs and also increases the probability that R&D devoted to cleaner generation technologies will have come to fruition and can be used when investments are ultimately required. Effective demand management can therefore contribute to a cleaner, more efficient energy supply and delivery system both now and in the future.

AMI is critical for ensuring optimal demand response. Two-way AMI communication systems can relay price signals in real time from the marketplace back to consumers. Visual displays can let customers know the prices they are paying for power being used in their homes and businesses at that moment, and this information can be used to adjust their consumption accordingly. Demand response can be further enhanced if automated direct load control (DLC) devices are installed on customer premises. DLC devices can be programmed to slow consumption (*e.g.* through less frequent cycling of air conditioning units) or eliminate it entirely when power prices hit established thresholds. Automated demand response of this type can be a very effective tool for disciplining the energy marketplace, reducing greenhouse gases and enhancing overall efficiency, but more sophisticated and expensive AMI systems are necessary for achieving these benefits.

The prices that are charged for network services are also important for getting price signals right. Networks account for nearly 40% of the overall price of power delivered to end-users, but networks have little incentive to price efficiently under current building block regulation. For example, when volumes per customer are increasing, companies typically benefit from having relatively high prices on the kWh delivered to customers, yet few network costs are driven by kWh sales. Energy market efficiency would be encouraged by having more cost reflective network tariffs, and external regulation is likely to create stronger incentives to price efficiently than building block regulation.

Distributed Generation We have already mentioned the increasing importance of DG, but the relationship between DG and network infrastructure is complex. As discussed, AMI investments can help distributors cope with the challenges of managing distribution systems when distributed and renewable generation sources are being dispatched. But at the same time, DG units can provide voltage control and ancillary services such as spinning reserves that can help networks manage system stability. Energy networks can therefore benefit directly from owning, operating and dispatching DG units.

It should also be recognised that DG can serve as a substitute for energy network investments. Because DG is located closer to customer loads than more centralised generation sources, the need for transportation capacity to move power from supply to demand points is reduced. Networks can therefore use DG to avoid or defer the investments that would otherwise be needed to augment energy transportation capacity. Locating generation closer to end uses also reduces line losses and the energy that must be generated to meet final demands, thereby contributing to lower GHG emissions. Greater reliance on DG also reduces the need for, and defers investment in, larger generation stations, which again increases the probability that cleaner technologies will be utilised when those investments are ultimately made. All of these factors demonstrate that DG can be an important "input" into network operations, with positive benefits in terms of operational flexibility and promoting energy market objectives. Networks should therefore consider DG when evaluating investment choices, but the current regulatory system inadvertently discourages this and similar actions that can improve overall system efficiency and energy conservation goals.

Barriers Created by Current Network Regulation

Although the price changes under building block regulation are implemented through CPI-X formulas, the building block method is very reminiscent of cost of service regulation as traditionally practiced in North America. In both cases, regulators establish revenue requirements for a specific firm that are just sufficient to recover that particular firm's costs. The main difference is that the building block approach sets a defined period between regulatory reviews (or a defined period for "regulatory lag"), which creates somewhat stronger incentives for operating efficiently while the plan is in effect. However, like traditional cost of service regulation, building block regulation does not create strong incentives for dynamic or longer-run cost efficiency. One important reason is that both regulatory systems link returns directly to regulated asset base (RAB), or the value of capital assets used to provide regulated services. Particularly as cost-based regulatory systems become more mature, networks therefore have little incentive to reduce capital expenditures and, indeed, are rewarded when RAB increases. In such an environment, networks have little to gain and much to lose from any actions that reduce RAB, such as effective demand response, appropriate DG investments, or other actions that defer or reduce the need for network capital expenditures.

The need to determine "regulated" asset bases and operating costs can also raise cost allocation issues, particularly if networks are providing both regulated and non-regulated services. Costs of inputs that are used to provide regulated and non-regulated services must be allocated in some way. Such allocations are inherently arbitrary and usually controversial, since network managers have incentives to allocate the largest possible share to the regulated business. New and competitive market opportunities can also be pursued through unregulated affiliates, but this can create new controversies surrounding the pricing of utility-affiliate transactions.

Regulators are also likely to face more difficulties in evaluating the appropriateness of network capital investments as wind and micro renewable generation investments proliferate. As noted, AMI can be critical for helping networks manage their operations under these circumstances, but there is considerable uncertainty about technologies and types of investments are most appropriate in a given instance. Under building block regulation, the burden ultimately falls on regulators for determining efficient investment levels, and this task will become more complex as renewable and distributed generation becomes more common. The information asymmetry problem and associated potential for gaming may become even more pronounced in the future under cost-based regulation.

In the present context, one particularly negative consequence of building block regulation is that it can prevent networks from integrating efficiently or, more generally, offering the full range of services that can benefit both shareholders and customers.

Consider the case of a distributor owning and operating a DG unit. As discussed, DG can be used to enhance the stability of network operations, reduce the need for network investments and, of course, generate and sell energy to end users. However, networks have financial incentives to forgo DG investments whenever they reduce the network's overall regulated asset base. A DG investment would in fact reduce the RAB whenever the incremental cost of the DG investment was less than the incremental cost of network expansions – but this is exactly the condition that needs to be satisfied for DG to be a more cost effective and efficient solution for meeting infrastructure needs! In addition, under building block regulation, cost allocation issues will arise when the DG unit is used to support regulated operations and sell energy in non-regulated markets. The network is also unlikely to capture all the benefits of DG energy sales in related markets; especially since a "regulated" asset was used to provide competitive services, the network may have to pass some of DG sales revenues through to regulated customers in the form of lower network charges. For all these reasons, building block regulation creates inherent incentives for networks to forgo DG investments when these investments are more economical than network expansions. A failure to invest efficiently in DG would also lead to the loss of the auxiliary energy efficiency and conservation benefits that have been discussed.

These perverse incentives can be further "locked in" as utility financial structures and corporate cultures adapt to the incentives created by the building block model. Since building blocks tend to discourage dynamic efficiency and prudent risk taking (*e.g.* through sensible vertical integration), capital markets will over time inevitably establish highly geared (*i.e.* leveraged through debt), risk-averse business models and management styles. An example might be a privatised enterprise where retail is separated from distribution operations, with the remaining network financed largely through bonds and the residual equity marketed as a "widows and orphans" stock to investors with a low risk appetite. By having little equity, the network business is relatively capital constrained and thereby lacks the resources and flexibility to pursue somewhat riskier investments, such as distributed generation, which can have important spillover benefits for the broader marketplace.

This can be contrasted with the experience immediately after privatisation in Victoria where various networks (at that time integrated with retailing operations) pursued a variety of ventures that leveraged company expertise and assets into competitive market applications. Examples included advising customers on efficient lighting applications, providing HVAC maintenance and installation, energy service company operations, developing private networks, and participating in cogeneration, geothermal heating and cooling projects. These efforts required equity and were generally successful, but were largely abandoned after the regime increasingly took on cost-based characteristics. Capital markets concluded that returns would be driven more directly by the regulatory asset values and WACCs approved by regulators. A different regulatory approach may have encouraged the businesses to remain more integrated and active across a range of businesses in the broader energy marketplace, which in turn could contribute to enhanced energy efficiency across the entire value chain on both the supply and demand sides of the marketplace.

The Potential Benefits of External Regulation

Within this broader energy market context, external regulation can create positive incentives for networks to take actions that contribute to energy policy objectives. External regulation can therefore be an important complement to many current policy initiatives and papers (such as NERA's April 2007 report on DG) that are designed to remove *disincentives* for firms to pursue new opportunities efficiently. Compared to building blocks, external regulation creates positive incentives for utilities to pursue profit-maximising activities in both regulated and non-regulated markets. This will in turn lead to efficient integration across various businesses in which networks may achieve economies of scope and, in the process, increase efficiency in upstream and downstream energy markets.

External regulation may further enhance performance by allowing many operating restrictions to be relaxed. This is especially true of marketing flexibility and operations in competitive markets. When utility revenues are based on external indexes rather the company's own costs, prices of monopoly services can be insulated from the company's involvement in competitive markets. This reduces, but doesn't eliminate, concerns about cross subsidies and the impact of uncertain competitive market initiatives on core customer tariffs. Networks will always try to find ways to mask their efficient cost levels in order to reduce the extent to which their own costs are reflected in lower prices or lead to more efficiency gains transferred to customers. But while this incentive never goes away entirely, it is greatly diminished under external regulation. The reason is that under building blocks regulation, there is a direct link between a company's costs and its prices. This link is broken under external regulation, and the way a company reports its costs (*e.g.* through changes in the allocation of overhead costs or transfer pricing arrangements) will affect the company's own prices only to the extent that its own costs affect the industry TFP trend. Under external regulation, networks cannot affect their prices to the same extent as under building block regulation unless the cost reallocations take place repeatedly, which would make them easier for regulators to detect. Thus while regulators must still be vigilant about how networks use their assets in competitive markets, their job should become easier under external regulation because it reduces networks' ability to profit from cost misallocations.

The combination of stronger performance incentives and reduced regulatory costs can have a salutary effect on utility management and corporate cultures. Managers are likely to be more effective as attention shifts towards the marketplace from the regulatory process. Stronger incentives to perform may also develop skills that can facilitate expansion of the utility business via mergers and acquisitions and successful involvement in other markets.

All of these features become more important when competitive pressures increase. Competitive environments require companies to react quickly and nimbly to unexpected developments. In energy markets, these developments include commercial opportunities and public demands for networks to promote conservation and energy efficiency. By mitigating concerns with cost allocations and reducing regulatory cost, external regulation can allow energy networks to be more active – and successful - in a broader array of energy markets.

Networks will also be far more motivated to pursue competitive market ventures under external regulation than building block regulation. Because allowed prices do not depend directly on allocated cost or revenues, networks have strong incentives to use their assets and expertise to generate revenues in related markets. Accordingly, external regulation can be instrumental for facilitating efficient diversification and integration of activities across the energy value chain.

Returning to the DG example considered earlier, networks under external regulation will evaluate DG versus network investments on the basis of relative incremental costs and revenues (including the extra revenues the network can earn from selling DG energy in related markets) rather than their impact on RAB. Networks would select DG investments when they are more cost effective in meeting investment needs and providing new sources of revenues, as would a firm operating in a competitive market. Efficient DG investments would also be likely to have a range of positive spillover benefits for the broader energy marketplace.

These benefits of external regulation may be offset to some extent by certain disadvantages. The biggest such concern is business risk, or the possibility that price restrictions will not track trends in external business conditions that affect a company's costs. Relevant business conditions include weather, the business cycle, prices of competing energy products, and government policy. Windfall gains and losses occur to the extent that the input price index does not reflect changes in these conditions. Some of these risks can be mitigated through careful design of an external regulatory system, but some financial windfalls may occur even if the plan is well-supported and designed. Ironically, this is another way in which external regulation mimics competitive markets. However, for energy networks to make their full contribution to energy market objectives, it is necessary for the regulatory framework to create incentives for companies to earn higher returns through prudent risk taking and enhanced dynamic efficiency.

Conclusion

There has been an unmistakable change in Australia's energy market policies. Current policies are emphasising demand management and energy efficiency, while supply-side initiatives are encouraging greater utilisation of renewable and clean energy sources that reduce GHG emissions. These policies have targeted energy producers and end users and have failed to fully harness the potential that 40% of the industry - energy networks – can contribute towards these goals. This is a potentially significant oversight, because all agents in the energy marketplace must make their maximum contribution if Australia is to attain its energy conservation and GHG emission objectives. Energy networks can play a critical role in promoting these goals. Efficient investments in AMI will impact the effectiveness of demand response and customer willingness to invest in demand side management programs. AMI can be important for optimising distribution assets and reducing the amount of energy that is produced but lost during transmission and distribution to consumers. Networks can also be important players in the DG marketplace, since DG offers a range of potential benefits to network operations as well as broader energy policy goals. Efficient investment in AMI, demand response and DG are all critical for reducing peak demands and deferring investments in power generation, transmission and distribution infrastructure which, in turn, increases the probability that cleaner technologies will become available to satisfy infrastructure needs. Efficient investments in AMI and similar areas are more likely if these result from market-related incentives where agents (including energy networks) bear the risks but also reap the benefits from their actions. Australia's regulatory regime has inadvertently discouraged this behavior, which has compelled governments to intervene and mandate investments (such as large scale AMI rollouts) that create widespread benefits but also increasingly shift the risks of bad decisions to customers.

Energy networks can play an important role in promoting energy policy objectives, but this is unlikely to be the case under current regulatory methods. Building block regulation implicitly encourages companies to build regulatory assets and blunts incentives to manage demand and utilise existing infrastructure more efficiently. These incentives are becoming increasingly "hard wired" into the financial structures and business models driven by capital markets. External regulation offers a more promising approach for encouraging networks to pursue demand efficiency goals, efficient network pricing and new technologies. Companies under external regulation will have incentives to pursue efficient integration, will benefit rather than be harmed by more efficient use of network infrastructure, and will evaluate investment options on the basis of relative incremental costs and revenues rather than their impact on RAB. At a time when network regulation is being enshrined in new energy laws, policymakers should understand the strategic implications of their decisions for network behavior and the subsequent evolution of industry structure. External regulation is not a "silver bullet," but it is more compatible with encouraging a wide range of efforts to enhance both supply- and demand-side energy efficiency than the building block methods currently used in Australia.