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Behavioral Economics and Energy-efficiency Regulation

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In the US and around the world, 'energy-efficiency' is playing an ever greater role in debates regarding how to regulate energy use, particularly electricity use. The US Congress in recent years passed a law to ban the use of incandescent light bulbs, requiring people to turn to compact fluorescent lights (CFLs) and light-emitting diode (LED) bulbs. Their purchase has been subsidised in many locations through ratepayer-funded utility-managed programs. The US Environmental Protection Agency (EPA) has long had an 'Energy Star' program to certify devices that meet its energy-efficiency standards and provides an appliance labelling program with estimates of typical annual energy cost savings, so consumers can factor that information into their purchasing decisions.

Individual states in the US have their own energy-efficiency policies. Many states have absolute or percentage targets for reductions in electricity use, and some of them target reductions in natural gas use as well (Palmer et al, 2013). To meet these goals, some states mandate subsidies of the purchase of energy-efficient light bulbs and appliances. To defuse utility opposition to energy-efficiency policies that would reduce demand for their regulated services, a number of states have adopted 'decoupling' policies that separate an electric distribution company's revenues from its sales (Brennan, 2010a).

So, energy-efficiency is a hot topic, but what exactly is it? The concept itself is fairly easy to understand: A device or appliance is more energy-efficient if it provides more service (lighting, heating, cooling) from a given amount of energy or, equivalently, uses less energy to provide a given level of service. In that sense, more is better. However, as a matter of regulatory policy, it is crucial to understand that 'energy-efficiency' and 'economic efficiency' – maximising net value – are two different things.

From an economic perspective, more energy-efficiency is not necessarily better – because energy-efficiency costs money. Sure, energy-efficiency is a good thing, and if it were free, we'd want as much of it as possible. But in the real rather than ideal world, an incremental investment in energy-efficiency is worthwhile only if the benefit of that investment exceeds the cost of that investment.

The benefit of that investment can be viewed in one of two equivalent ways. One way is that, holding energy use constant, the incremental benefit of more energy-efficiency is the value of the added service one can obtain from that energy. A second way is that, holding the level of service constant, the incremental benefit is the reduced spending on energy needed to maintain that level of service. In practice, the household, business, or industrial plant adopting a greater increment of energy-efficiency will typically balance some of both benefits against their cost.

An example can illustrate this. The expense of a more energy-efficient air conditioner is worth incurring, holding energy use constant, when the value of the reduced temperature exceeds that added cost. If a household is not interested in cooling below a target temperature, the added cost of the temperature is worth incurring if it is less than the savings from reduced electricity purchases.

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Typically, in both cases the cost for the more energy-efficiency appliance, like the air conditioner, is incurred up front, while the benefit from increased cooling or electricity savings is incurred over time. Consequently, whether a consumer or business thinks the energy-efficiency investment is worth undertaking can depend on how much they discount those future benefits relative to the money spent on energy-efficiency in the present.

This is important for electricity regulation for at least three reasons. First, electric utilities in many jurisdictions are often charged with the responsibility of carrying out such programs, and regulators need to be prepared to evaluate their costs and benefits and adjust prices accordingly. Second, energy-efficiency can reduce demand for electricity and force adjustments in prices to keep utilities whole, especially where the fixed costs of utility service are covered with usage-based prices.[1] Third, and a consequence of the first two, utilities may exercise their political clout to impede or delay such programs unless regulatory prices are adjusted so that they remain whole even if demand for their services falls.

Energy-efficiency has had a number of justifications based on failures in the market. Energy-efficiency also need not reduce electricity use as much as one might expect – a ten per cent increase in energy-efficiency would typically reduce energy use by less than ten per cent – and under plausible settings will increase energy use. However, the primary issue here is that energy-efficiency policy is increasingly justified by appeals to the idea that consumers do not act in their own self-interest, failing to invest in energy-efficiency when, by their own lights, they would be better off doing so. Such errors or biases, the subject of 'behavioral economics', may well be valid, but create serious difficulties for policy evaluation and necessarily substitute a regulator's judgment for that of the consumer. The behavioral economics perspective forces questions regarding what decisions consumers can be trusted to make and whether climate-change policy advocates would want to 'correct' consumers where their errors reduce carbon emissions.

Other reasons to intervene?

In principle, energy-efficiency is like any desirable attribute, where the target is to have the amount where the marginal benefit just equals the marginal cost of producing more of it. The threshold question for regulatory policy has been to ask why the market would not determine the economically efficient level of energy-efficiency. To put it more directly: What is the market failure?

There is no shortage of candidates. Perhaps the oldest is geopolitical. For decades, the US imported as much as half of the oil it used. While some may have been concerned about this out of a generic discomfort with imports, basic international trade principles should provide some comfort. However, if the suppliers of that oil are able to collude, and are willing to reduce supply as a strategic tactic in pursuit of their non-economic national interests, the US (or any other importer) might want to reduce demand for oil to reduce its vulnerability to that tactic.

Efforts to improve the energy-efficiency of equipment that uses oil – automobiles primarily, but home heating furnaces and industrial boilers – would be consistent with this concern. Oil issues may not seem pertinent in an era when electricity is getting much of the focus, but it can be relevant. Although hardly any electricity in the US or Australia is produced by burning oil, as recently as the 1970s 17 per cent of US electricity was generated using oil. Along some margins – home heating, gasoline vs. electric cars – increased energy-efficiency on the electric side can reduce demand for oil.

Another electricity-specific justification for energy-efficiency policy is that the prices users pay for electricity do not track the costs of generating electricity. Retail prices have typically reflected the average cost of generation, but do not vary in response to the enormous variation in generation costs as demand varies. Generators used only when demand is at peak levels may be used a small fraction of the time. In Maryland, my home state, the top 15 per cent of capacity is used less than one per cent of hours in the year.

Recovering those costs can lead wholesale electricity prices to be 50-100 times the wholesale price during median demand periods. If users do not see those prices, they will use electricity too much. If using 'real-time' varying prices is not implemented, a second-best policy would be to subsidise more energy-efficient appliances that use electricity during peak periods, notably air conditioners.

Energy-efficiency policy could be a 'second-best' policy to address climate change. Economists widely agree that the best response to a negative externality in using a product is to set a price equal to the costs imposed by others. For climate change, that ideal solution is a carbon tax. However, if a carbon tax is not available, a second-best option is to encourage choices that people would make as if they faced a carbon tax. On the generation side, this leads to

[1] Brennan and Crew (2016) provide a formula for adjusting regulated prices in the face of declining demand, based on the elasticities of demand and of average cost.

renewable fuel-generated electricity requirements and feed-in tariffs to reduce fossil fuel use, as would happen with a tax. Energy-efficiency subsidies or requirements have this rationale on the consumer end, for example, that people would buy more energy-efficient appliances if they faced higher electricity prices following a carbon tax.

In some places, a further rationale is economic development. Some view energy-efficiency requirements as something that will promote the growth of the energy-efficiency industry and related businesses (energy management services, marketing) in that location. Some economists have noted that similarly motivated policies often fail to increase employment (Coates and Humphries, 1999, in the context of sports stadiums). Absent a recession, reallocating funds from one sector to another redistributes employment, but will not increase it. And if a recession has increased unemployment, energy-efficiency-related 'green jobs' will not create jobs if those out of work lack the skills needed to participate in these sectors (Brennan and Palmer, 2013).

Our focus here is on a different rationale – that markets work fine, but that consumers make wrong choices and invest too little in energy-efficiency. Before getting to that, we should see whether energy-efficiency reduces energy use and when it might not.

Does energy-efficiency reduce energy use?

Before getting to buyer mistakes, it is worth noting that the energy conservation benefits of energy-efficiency are easily overstated. When an appliance, an air conditioner for example, becomes more energy-efficient, it becomes less expensive to use. Consequently, it will be used more, turned on more often or set to a reduced temperature. This, in turn, increase energy use above the level had the thermostat remained untouched – an outcome known as the 'rebound effect'.

The extent of the rebound effect depends on how sensitive the amount something is used depends on the cost of using it. It does not take a great amount of sensitivity for the rebound effect to be so strong that energy-efficiency actually increases energy use. All one needs is that the demand for the services provided by the appliance is 'elastic', that is, if the price to use it falls by X per cent, its use will increase by more than X per cent. The increased demand created by energy-efficiency will more than offset the energy saving per unit of use. For some appliances, such as refrigerators, this will generally not be the case, as their use is largely uniform regardless of electricity prices. For others, such as air conditioners, the rebound effect may is significant.

Moreover, because energy-efficiency increases the value of the consumers get from a given amount of energy, it will enhance the value of that energy for initial levels of use. This implies that if the price of energy is sufficiently high, increased energy-efficiency will increase the demand for energy (Brennan, 2013). For example, if air conditioners become more energy-efficient, some who had been deterred from buying or using them because of high energy costs will start doing so.

Behavioral Economics: People making mistakes

In the late 1990s, electricity policy played a substantial role in an election in Maryland. The argument that something was awry rested on two premises: (1) the price of electricity is too high; and (2) people use too much of it. With any appreciation of basic economics, one cannot hold these two thoughts simultaneously without a severe headache. A price being 'too high' means that it should be lower, and if it is lower, people would be using more, not less. In standard economics, the harm from having prices too high is measured by the value to consumers of how they would be using more electricity, were it priced appropriately lower.

For these two premises too hold, standard economics cannot apply. For people to be consuming too much when the price is too high, they must be failing to act rationally in economic terms, that is, failing to purchase the amount of electricity that they most prefer, given how much they have to spend. The possibility of irrational behavior, specifically that people will fail to act in their own best interest, is the defining hallmark of behavioral economics.

While laboratory experiments involving choosing between alternatives have provided some support for behavioral economics, many of the most interesting phenomena involve actions in the real world. Most celebrated and perhaps most significant is a finding that in the US workers are much more likely to elect to pay into an employer-subsidised pension program than not, based only on whether they have to check a box to opt out of the program rather than check a box to opt in. Another finding is that taxi drivers tend to work longer hours on days when business is slow and quit early when business is plentiful, when basic economics suggests that one would work longer during booms and work fewer hours when one is earning less. One of my favourites is that professional golfers are more likely to make a putt, holding length and other attributes equal, if it is to avoid a bogey rather than to make a birdie, when in stroke play it should not matter. A notable feature of this example and the taxi drivers is that these choices are made by experienced professionals with money

on the line; they are not inexperienced students in a psychology lab.

The difference between behavioral economics and standard economics is that the former takes these anomalies as raw data, labelled as 'biases' of one sort or another (Zamir, 2016 at 2-3). On the other hand, standard economics regards them as phenomena, admittedly challenging, but worthy of effort to see how they might be subject to explanation as rational given limits on information, effort costs, and the like. This is not the place to pursue that methodological debate.

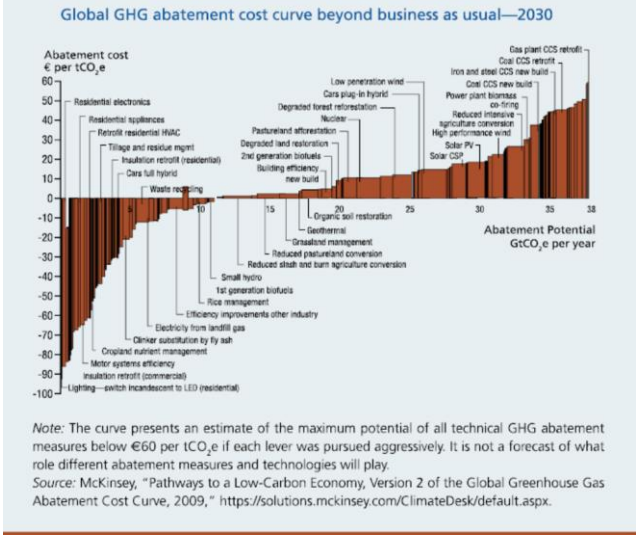
However one regards the likely outcome of such a debate, behavioral economics has found its way into the policy arena. The US government banned incandescent light bulbs on the grounds that consumers incorrectly buy those rather than more energy-efficient compact fluorescent lights. The US requires the use of low-flow toilets because consumers do not incorporate the reduced cost of water in their purchase decisions. US rules forcing automobile companies to meet minimum average fuel economy standards are justified in part by the saving that consumers could get but, for whatever reason, have chosen not to get.

More generally, the UK government established a now semi-private 'Behavioral Insights Team' to 'use insights from behavioral science to encourage people to make better choices for themselves and society'.[2] Following the UK's lead, President Obama on 15 September 2015 issued an Executive Order on the premise that 'research findings from fields such as behavioral economics and psychology about how people make decisions and act on them -- can be used to design government policies to better serve the American people'.[3] In February 2016, the Australian government formed its own Behavioral Economics Team within the Department of the Prime Minister and Cabinet.[4]

It is consistent with these trends that behavioral economics is playing a role in energy regulation – a role that in many respects predates many of these other initiatives.

Behavioral Economics and Energy Regulation

In the energy sector, much of the prominence of behavioral economics is due to its role as a supporting justification for policies to cut back on energy use as a means to reduce carbon emissions and risks from climate change. Virtually every economist and policy maker facing those issues is familiar with what is known at the 'McKinsey curve' from McKinsey and Company, delineating the upward sloping marginal cost curve for reducing carbon emissions. A version from 2009 describing global abatement costs is available from the World Bank.[5]



Note: The curve presents an estimate of the maximum potential of all technical GHG abatement measures below €60 per tCO_2e if each lever was pursued aggressively. It is not a forecast of what role different abatement measures and technologies will play.
Source: McKinsey, "Pathways to a Low-Carbon Economy, Version 2 of the Global Greenhouse Gas Abatement Cost Curve, 2009," https://solutions.mckinsey.com/ClimateDesk/default.aspx.

This 'marginal cost of abatement' curve is based on a fixed cost per ton of carbon dioxide emissions avoided if various methods to do so are used, and then ranking those methods in order of cost. The specifics of the sources of these savings, in the fine print in the picture, are not important here. Rather it is that the cost of carbon is displayed relative to '0'. The abatement methods indicated by the downward sloping bars toward the left of the curve are 'negative cost' abatement methods. These methods would be worth employing even if there were no benefits from the carbon abatement itself.

A famous joke among economists is to suppose that two economists are walking down a sidewalk. One says, 'There's a twenty dollar bill on the ground', and the other replies, 'No, there can't be'. The point is that had a twenty dollar bill been on the ground, someone would have picked it up. An economist looking at the McKinsey curve would say that it must be missing something, because all of those 'negative

[2] http://www.behavioralinsights.co.uk/. It is also known as the "Nudge Unit," following Thaler and Sunstein's (2008) prominent book. https://www.gov.uk/government/organisations/behavioral-insights-team.

[3] https://sbst.gov/uploads/exec-order-signed.pdf. Cass Sunstein, a prominent advocate of behavioral economics, was the chief of the Office of Information and Regulatory Analysis, the chief regulatory oversight official in the Executive Office of the President.

[4] https://www.dpmc.gov.au/domestic-policy/behavioral-economics.

[5] http://wbi.worldbank.org/energy/Data/energy/files/Urban_Energy/SUEEP_Toolkit/Knowledge_Center/Stage_3/3_step8_agressivebut_slide11.pdf. McKinsey (2008) has produced a qualitatively similar version for Australia.

cost' abatement methods imply that there a lot of $20 bills lying on the ground.

Nevertheless, all of these apparently profitable reductions in energy use have come to play a significant role in energy policy. They have earned their own nickname – the 'energy-efficiency gap' between what people actually choose and what they should do, as illustrated by the McKinsey curve. Gillingham, Newell and Palmer (2009) posit a number of potential explanations for these gaps, after observing and citing research suggesting that costs of energy-efficiency investments, such as reduced quality of services could explain why consumers do not make these investments.[6] Some involving pollution externalities or learning effects are not consistent with the energy-efficiency gap as defined specifically as a failure of persons and businesses to act in their own self-interest. Among their list of relevant explanations for such failures are: (1) inability to borrow to pay for energy-efficiency investments; (2) principal-agent problems; (3) information shortcomings; and (4) behavioral economics-identified failures.

The first two of these are not compelling. Were inability to borrow and capital market failures widespread, one would find them justifying public subsidies to upgrade kitchens, renovate bathrooms, replace roofs, purchase expensive appliances, and buy new cars, as well as invest in energy-efficient appliances. The prototypical principal-agent problem in energy-efficiency is that a landlord supposedly lacks an incentive to install more efficient appliances if the tenant pays for the electricity. However, rental property owners and managers compete by offering tenants all manner of goods and services to increase the quality of the space that the tenants would be renting. There is no reason to think that property owners could not and would not compete on appliances that reduce energy bills.[7]

Information is a more interesting possibility. The market for energy-efficient appliances may be hampered by asymmetric information, specifically that buyers cannot verify in advance claims made by appliance sellers regarding energy savings. This can lead buyers to assume the worst, and reduce incentives for manufacturers to produce more expensive but more efficient appliances. As Gillingham et al. (2009) point out, a solution for this problem is information, either private consumer goods evaluation services or public provision of information, such as expected energy cost labels.

Another information problem may be more subtle – the manufacture may be better positioned than a consumer to avoid wasteful uses. An analogy can help clarify this. Suppose someone buys a lawnmower and then injures his foot using it carelessly, perhaps by cutting the grass after a couple of beers. One might assume that the buyer would be liable, but in accident law, there is a doctrine of 'foreseeable misuse' under which the manufacturer may be liable for accidents if it could easily have prevented the accident, for example, by installing an inexpensive toe guard. In economic terms, foreseeable misuse makes sense if the manufacturer can prevent an accident at lower cost than the buyer would have had to undertake to be more careful, such as forgoing beers on a pleasant weekend afternoon.

What does this have to do with energy-efficiency? As perhaps with lawnmowers, the manufacturer of an appliance may be better able than the buyers to determine whether a particular performance characteristic – energy-efficiency, like toe guards – is worth the cost of including it. If so, it can make sense as a policy matter to put the onus of responsibility on manufacturers to meet energy-efficiency standards.

This leads to the fourth item in the list – behavioral economic failures, that is, consumers just make mistakes regarding what is in their own self-interest. The downward columns on the left of the McKinsey curve reflect piles of $20 bills that consumers (residential and commercial) are leaving on the sidewalk. It may well be true that consumers make mistakes. However, trying to design regulations, such as utility-funded energy-efficiency programs with that possibility in mind presents some daunting and unappreciated challenges.

But how to evaluate?

Behavioral economics plays a leading role in justifying regulatory policies, particularly directed at local distribution utilities, to encourage or mandate the use of energy-efficient equipment that consumers would, according to standard economics, already be choosing. Such policies include subsidies for purchasing more efficient appliances, directly or via tax breaks, and free or low-cost energy audits.

[6] To put it another way, there are no $20 bills on the sidewalk because people use those to pay for the higher quality of service from less energy-efficiency equipment, be it incandescent bulbs relative to compact fluorescent lights or faster, heavier automobiles compared to lighter subcompacts.

[7] In principle, the property owner could internalise the incentive by purchasing the energy-efficient appliances and pay the electricity bill ('rent includes utilities'). However, if the property owner pays the electric bill, tenants will have incentives to use the appliances too much, particular cooling in the summer and heating in the winter. This would lead to an outcome in which the property owners invests more in energy-efficiency than is optimal and charges rents large enough to cover those costs as well as the cost of energy by tenants who act as if it is free.

These subsidies and audits are not without cost. Depending on how they are structured, their costs typically fall on ratepayers or taxpayers. This means that energy-efficiency regulations programs should be subject to the overarching question all regulations should face: Are they worth it?

The basic method for evaluating regulations is benefit-cost (or cost-benefit) analysis. At its heart, it sounds simple: add up how much beneficiaries would pay for the benefits; add up how much it would cost to provide those benefits; and adopt only policies where the former exceeds the latter.

This simple formulation camouflages many empirical and ethical problems. On the ethical side, this addition assumes that benefits can be monetised – not a big problem for economists[8] – and that a dollar gain or loss to a rich person counts just as much as a dollar of gain or loss to a poor person. The response to this is that after instituting a regulation that passes a benefit-cost test, the winners could compensate the losers. But if that compensation does not take place, important distributional considerations may not get the weight they deserve. On the empirical side, a host of difficulties arise. These include, among others, how much to discount future benefits against present costs; whether to use willingness to pay for a benefit or willingness to accept the loss of a benefit; and how to measure benefits or costs when there is no market test, for example, willingness to pay to preserve a habitat for rock-wallabies or marine turtles.

With or without these complications, the data that feed into benefit-cost analyses are estimates of what people would pay for the 'benefits' or to avoid the 'costs'. When one has market data to ascertain willingness to pay, one uses it; if not, one does one's best to come up with proxies for those data. The crucial premise behind using those data is that the preferences they reveal, in terms of what people are willing to buy and what they are not, are the preferences people actually have. If I pay $10 for a hamburger, I would rather have the hamburger than the $10. A regulation that gives me that hamburger instead of $10 makes me better off, so that's what the regulator should do. And if I don't pay the $10, the regulator should not give me the hamburger if doing so would deprive me of $10.

Behavioral economics adds not just another wrinkle to benefit-cost analysis; it undercuts its very foundation (Brennan, 2014). Its defining claim is that revealed preferences are not actual preferences, because of the biases and errors they entail. If the behavioral economists are correct in that one cannot infer actual preference from revealed preference, then the data used to do benefit-cost analyses are irrelevant. The revealed benefits of a regulation may be less than their costs, but the actual benefits might exceed them from the behavioral economists' perspective. Following benefit-cost analysis would, for them, give the wrong answer.

The McKinsey curve provides an important and relevant illustration. In standard economics, choices not to make the 'negative abatement cost' choices on the left side of the McKinsey curve not only reveal a preference not to do so but imply that people are better off not having done so – because that is the choice they made. Behavioral economics questions this logic, by saying that people actually preferred to make those negative abatement cost choices but mistakenly failed to do so. A regulation to mandate or subsidise energy-efficiency may fail a standard benefit-cost test, but the behavioral economist can claim that the people chose in error and that they'd really be better off under such a regulatory mandate.

One could be precise about this if one had an independent measure of actual benefit that overcame the putative limitations of revealed preference. So far, there is not one. Cass Sunstein, the chief regulatory oversight officer in the Obama Administration and a leading advocate for incorporating behavioral economics into policy design, proposed a connection between behavioral economics and benefit-cost analysis (Sunstein, 2000). The connection, however, does not point to a method for undertaking benefit-cost analysis when the underlying data cannot be trusted because of consumer error. Rather, Sunstein argues that people have the same biases and make the same mistakes when they vote as when they make purchases in the market. Consequently, public sector decisions, such as regulation, should be made through benefit-cost analysis because decisions made by voting will be error-prone.

Sunstein does not specify how benefits and costs should be calculated. Perhaps a natural choice would be to attribute as benefits of a policy based on what mistaken consumers would have received had they made the right choice. This is the implicit standard in the 'California Manual' for evaluating energy-efficiency subsidy programs (State of California, 2002), used widely in the US. The California Manual defines a number of different benefit-cost tests looking separately and together at net effects on customers adopting energy-efficiency,

[8] The most compelling example may be that one values an expected saving of a life from an environmental or safety regulation by how much people are observed to pay for safety equipment or give up to avoid a dangerous job that would reduce risk in such a way to avoid one death on average.

ratepayers as a whole, and utilities, where one includes the cost of administering the energy-efficiency program. Going into the weeds of the California Manual tests is considerably beyond the scope of the paper. The crucial point is that the benefits of the program depend on the idea that some of the consumers, who had erroneously not adopted energy-efficiency prior to the subsidy, do so and in doing so realise their mistakes and now regard the previously foregone cost reductions as benefits (Brennan, 2010b at 3882-84). If electricity users do not make erroneous choices, there is no benefit boost from the subsidy program. Energy-efficiency subsidies will not be beneficial unless the price of electricity is below its cost of generation (including unpriced externalities).

Regulators will have to decide whether the benefits to consumers from giving them something they could have chosen before but did not should count. In the US, these benefits are called 'private benefits', to distinguish them from the public benefits that normally count when a policy corrects a market failure. Miller (2015) finds that of the US$26.6 billion in benefits, the Department of Energy attributed to energy-efficiency standards promulgated between 2007 and 2014, private benefits – giving consumers what they failed to choose for themselves – of US$23.4 billion. The Department's estimated cost of these regulations was US$7.8 billion. Counting private benefits, these regulations collectively pass a benefit-cost test, but if one does not count the private benefits, the benefit of the standards is only US$3.2 billion, far below the costs.

The debate then, rests not purely in the ivory tower. The merits of regulatory requirements to promote energy-efficiency, whether placed on utilities or the wider energy sector, are closely tied to whether consumer behavior is interpreted as a revealed preference or a mistake. A very useful debate between advocates of counting 'private benefits' (Allcott and Sunstein, 2015a, 2015b) and those opposed (Dudley and Mannix, 2015a, 2015b) provides insights from both sides. I lean toward the side of the opponents in this debate, admittedly because leaping to irrationality as an explanation pre-empts the search for theories to explain the previously inexplicable. Economics would have failed to develop theories based on incomplete information, strategic behavior, and transaction costs, had one just assumed a bias. But there are larger concerns as well, both in electricity regulation and beyond.

Manipulating Consumers and the Slippery Slope

Although alleviating consumer error enables energy-efficiency mandates to pass benefit-costs tests, concern for mistaken consumers is not the motivation behind those mandates. Rather, the motivation is that such policies will produce public environmental benefits, such as mitigating climate change, because they reduce energy use. This leads to an unstated question: What if consumer error is good for the environment or for climate?

Automobiles offer two examples. Electric cars are often characterised as 'zero emissions'. Of course, they typically are not, as they draw energy from electricity generated by coal or natural gas plants. Hence, consumers are likely to overstate the environmental benefits.[9] Another error going beyond electric cars involves how US consumers understand fuel efficiency. The US, unlike most countries, uses distance/fuel quantity (miles per gallon) rather than fuel quantity/distance (litres per 100 km). Consequently it is easy for consumers to assume that going from 40 to 50 miles per gallon has the same benefit as going from 20 to 30 miles per gallon, when the former increase efficiency only 25 per cent compared to 50 per cent for the latter. But if consumers are more willing to buy electric or high mileage cars based on mistaken beliefs, will the 'private losses' be included in assessing policies to promote their use? I have my doubts.

Going beyond the energy sector, regulators and policy makers face a very slippery slope in considering whether to enact policies on the basis of consumer mistakes. If regulators believe that people cannot make rational purchasing decisions regarding energy-efficient lighting or air conditions, what decisions can they be trusted to make? Will they pick the right careers? Buy the right house or car? Get the correct medical treatment? Attend the right university? Save for their retirement? For some of these, we have policy interventions, such as accrediting universities, licensing physicians and mandating contributions to public pension systems, which may be responses to consumer mistakes. But those hardly limit the scope of what could be justified by such errors.

In large measure, this viewpoint undercuts the broad reliance on markets characteristic of Australia, the US, and most modern developed economies. If consumers make mistakes, the quantities determined by supply and demand will not typically generate the greatest net economic benefit. Maximising net economic benefit is not the only defence of markets. They can be defended as being most consistent with freedom of action, apart from whether the outcome is best in a benefit-cost sense. This libertarian

[9] Zivin, Kotchen and Mansur (2014) found that in the middle of the US where coal generation is prominent, an electric car charged at night has greater emissions than the average car.

justification of markets, however, undercuts state actions to address market failures – correcting for externalities, ameliorating market power, overcoming asymmetric information, providing public goods. If one thinks these are important goals but that markets in general cannot be trusted, one may be left with a more aggressive form of central planning.

So what might regulators and the public do?

Three options come to mind. The first, and probably foremost, is to put a high burden on showing that consumer error, and not some underlying preference or information shortcoming, is sufficiently compelling to warrant replacing private choices with regulatory mandates. Otherwise, one gives up the ability to let disinterested benefit-cost analysis provide appropriate information for what regulators should do.

If consumer error is sufficiently compelling to warrant superseding choices with mandates, the problem then becomes who gets to make those regulatory choices. This can be thought of as a higher-order choice question for the public: Who would you like to make choices in contexts where you think you would make the wrong ones? This is not an unusual question; people delegate choices all the time to doctors, financial advisors, auto mechanics, and the like. The outcomes are hardly perfect, but one could view regulation as a similar kind of rational delegation through a democratic process of authority to an agent – the regulator – to make choices on behalf of a principal – the public.

A final suggestion in these potential error contexts is for a regulator not to act until it gives the public the information and time to understand that it is making a mistake. A useful methodological principle in limiting the scope of behavioral economics is to acknowledge that people make mistakes. But if they continue that behavior after they understand why it seems to be a mistake, then it becomes a revealed preference to be respected, even if the regulator does not understand its rationale. If someone says they still want the less energy-efficient air conditioner despite the energy savings that have been explained to them, that is their choice. Taking that away from them is a cost, not a private benefit.

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Critical Issues in Regulation – From the Journals

Sectoral Regulation and Competition Policy: The U.K.'s Concurrency Arrangements – An Economic Perspective, Jon Stern, *Journal of Competition Law and Economics*, 11, 4, December 2015, pp. 881-915.

This article discusses the concurrency arrangements in the United Kingdom under which sectoral and industry regulators can apply aspects of competition law to their industry areas. The author, Jon Stern, argues that concurrency arose during the 1980s as one aspect of an almost uniquely procompetitive regulatory framework for privatised telecommunications and other UK infrastructure areas. The article discusses the origins of these formal concurrency arrangements and their use in the UK since the 1980s. It also compares the UK with other EU and OECD countries over the role of *ex post* competition policy relative to *ex ante* regulation and the interactions between sectoral regulators and competition authorities. It emphasises the role of both 'informal' concurrency and 'formal' concurrency in the UK and other countries. The author concludes with a discussion of the likely prospects for the UK under the enhanced concurrency regime established in 2013, and makes some recommendations for the future. Developing and implementing effective methods to evaluate the net welfare benefits of the enhanced concurrency regime will be crucial, both in their own right and in establishing a robust deterrence strategy against anticompetitive behavior in areas with sectoral regulators.

The article can be accessed by subscription to the *Journal of Competition Law and Economics*.

The Political Economy of Energy Tax Differentiation across Industries: Theory and Empirical Evidence, Niels Anger, Christoph Bohringer and Andreas Lange, *Journal of Regulatory Economics*, 47, February 2015, pp. 78-98.

This article investigates the political-economy determinants of energy-tax differentiation across industries. The authors argue that industries with relatively inelastic energy demands may face higher energy taxes under environmental tax reform, but that powerful lobbying is able to counteract this effect.

Regression analysis was performed on a cross-sectional dataset based on data for environmental tax reform in Germany, between 1999 and 2003, for 42 manufacturing industries. Higher taxes were levied on energy use while recycling the additional energy tax revenue through a deduction of employer's social security contributions. The aim of the regression analysis is to assess determinants of environmental tax differentiation across industries.

Dependent variables include the average tax rate on electricity, gas and oil use, and explanatory variables include lobbying power (measured by the number of representatives) and price elasticity of demand for each industry. The equations were specified in log-log form and estimated using Seemingly Unrelated Regression Estimation, which allows for contemporaneous correlation between the error terms across equations.

As the results did not find a statistically significant coefficient for the lobbying variable, it could not be concluded that differentiated taxes are driven by interest-group activities alone. By considering a multiplicative interaction term between lobbying and the price elasticity of demand, which has a statistically positive coefficient, it appears that less elastic sectors with more powerful lobbies feature lower tax levels and lower net burdens.

The reference list contains forty-four items, many from major journals such as the *American Economic Review*, *Quarterly Journal of Economics*, and *European Journal of Political Economy*. Their publication dates range from the years 1962 to 2014, with most having been published in the past decade.

This article can be accessed by subscription to the *Journal of Regulatory Economics*.

Using Supervised Environmental Composites in Production and Efficiency Analyses: An Application to the Norwegian Electricity Networks, Luis Orea, Christian Growitsch and Tooraj Jamasb, *Competition and Regulation in Network Industries*, 16, 3, September 2015, pp. 260-287.

This article is about supervised dimension reduction methods applied to the regulation of natural monopolies, where a business's cost and performance are affected by a large number of environmental factors. The application is in relation to the Norwegian electricity distribution networks.

The estimation procedure used is a sliced inverse regression (SIR), a method of dimension reduction based on inverse regression. The parametric counterpart of SIR is parametric inverse regression (PIR). One of the major issues encountered when working with large datasets is the 'curse of dimensionality', where a large number of varied factors have complex interactions, leading to an

overfitting of the model and poor predictive performance. Compared with the more traditional principal component analysis (PCA) method of dimension reduction, the authors found that SIR and its parametric counterpart, PIR, were superior. The Bayesian Information Criterion (BIC), an index balancing a lack of fit (under-specifying the model) with overfitting (over-specifying the model), was used to evaluate performance of various models. Generally, lower values of the BIC are preferred. The minimum BIC achieved was with five composites. Regarding the different estimation procedures, it was noted that the model using PCA composites was not able to capture any performance variation among the utilities, suggesting the higher suitability of the SIR method.

In the empirical analysis, the authors also addressed issues caused by the fact that the response variable (that is, electricity distribution costs) not only depends on the weather and geographic factors to be aggregated, but also on a set of economic variables (for example, number of customers, energy delivered, network length, etc.) that might be correlated with the environmental variables. Regardless of the methodology used to avoid the dimensionality problem, the estimated coefficients of the environmental composites are statistically significant indicating that weather and geographic conditions matter, and that they should be included as cost determinants. The authors also found large differences among utilities in cost attributed to different environmental conditions.

The authors' preferred model predicts up to 44 per cent lower costs for utilities operating in areas with favourable environmental conditions. For utilities operating in an area with unfavourable environmental conditions, higher costs of up to 35 per cent are predicted. While lower costs are mostly associated with 'urban' factors, district heating systems, and agrarian farms around roads and lines; higher costs are mostly caused by weather conditions and two geographic factors reflecting the hilliness and slope of the ground and the presence of water bodies (for example, wetlands or lakes), or shallow soil. The authors also examined the robustness of a traditional efficiency analysis in order to use different aggregation methods to control for environmental factors.

There are 39 references in the list. Journals most often cited are *Journal of the American Statistical Association*, *Annals of Statistics*, *Energy Economics* and *Energy Policy*.

This article can be accessed by subscription to *Competition and Regulation in Network Industries*.

How EU Sector-Specific Regulations and Competition affect Migration from Old to New Communications Infrastructure: Recent Evidence from EU27 Member States, Wolfgang Briglauer, *Journal of Regulatory Economics*, 48, May 2015, pp. 194-217.

This article examines how to optimally design the regulatory framework around high-performance fibre optic networks in order to incentivise investment. The authors analysed a recent EU27 panel data set and examined the role of regulatory policies and competition controlling for relevant supply and demand side factors and the investment dynamics.

The results indicated that relevant forms of previous broadband access regulation have a negative impact on investment in new fibre infrastructure, and that infrastructure-based competition from mobile operators and the replacement effect stemming from the incumbents' existing infrastructure exert a negative impact on investment incentives.

The authors proposed an aggregate model, with the dependent variable being a measure of total next generation network (NGN) connections expressed in logs. The main explanatory variable is the ratio of regulated and actually used wholesale broadband lines, which is a measure of the effect of regulation on the market. Other explanatory variables include the unbundling access charge, and the 'Polynomics Regulation Index', a formal measure of relevant EU broadband access obligations, which is used as a regulatory robustness variable. Demand and cost shifters are included as control variables.

The model was estimated by the system-GMM estimator. The empirical results show that a one per cent increase in the intensity of service-based competition decreases total NGN investment by at least 1.58 per cent and up to 5.30 per cent. It is also implied that an increase in the unbundling price by one unit (€1) increases NGN investment in the range between 2.9 per cent and 6.4 per cent.

Thus, there is strong evidence that previous broadband access regulation imposed on first-generation infrastructure exerts a significant and negative impact on aggregate NGN investment, which is consistent with previous literature. The paper also finds that the size of the first-generation broadband market has a very strong and positive impact on NGN investment incentives, whereas a highly saturated broadband market involves strong switching costs that hinder migration to NGN services.

The reference list contains thirty-six items. A wide range of journals were cited, including the *Quarterly Journal of Economics*, *Journal of Econometrics*, *Telecommunications Policy* and the *International*

Journal of Industrial Organisation. Most of the articles were published in the past ten years.

This article can be accessed by subscription to the *Journal of Regulatory Economics*.

Weak versus Strong Net Neutrality, Joshua Gans, *Journal of Regulatory Economics*, 47, December 2014, pp. 183-200.

This paper discusses the impact of net neutrality regulations on the allocation of consumer attention and the distribution of surplus between consumers, internet service providers (ISPs) and content providers. The author claims that strong net neutrality may stimulate content-provider investment, while there is unlikely to be any negative impact from such regulation on ISP investment.

A simple linear model with a single ISP, two content providers (CPs) and a consumer is proposed, with there being no nuance on demand from the consumer. For simplicity, no analysis of network priority rules, alternative pricing structures or download caps were considered. Everything is comprised of a set of simple transfers for services.

Strong and weak net neutrality was also defined, with strong net neutrality referring to the outlawing of content-based price discrimination altogether, and weak net neutrality allowing content-based price discrimination on one side (either the consumer, or CP side). The author uses the aforementioned model to evaluate a set of five propositions, the most notable of which is the third – that under strong net neutrality, the consumer will choose the socially optimal CP, who will earn zero surplus (as will the other CP). In this arrangement, the author contends that strong net neutrality is effective in the sense that it can change outcomes in the market, by shifting surplus from the ISP to the CP.

The reference list contains seventeen elements, most of which have been published in the past few years. Cited journals include the *RAND Journal of Economics*, *Journal of Industrial Economics* and *Journal for Competition Law and Economics*.

This article can be accessed by subscription to the *Journal of Regulatory Economics*.

Which Factors are Priced? An Application of the Fama French Three-Factor Model in Australia, Duc Hong Vo, *Economic Papers*, 34, 4, December 2015, pp. 290-301.

This paper is about the application of the Fama French Three-Factor Mode (FFM) to Australian economic regulation. Studies by Fama and French in 1992, 1993, and 1996 show that cross-sectional variations in returns were not adequately captured by beta alone, as per the Capital Asset Pricing Model (CAPM). They proposed an empirical model with an additional two factors, the size factor (SMB) and value (book-to-market ratio) factor (HML) which were supported by existing data, but not by finance theory.

Due to concerns about 'data mining', the lack of theoretical support and the commercial unavailability of SMB and HML data, the FFM has not been widely adopted. It has also been suggested, by Kothari, Shanken and Sloan in a 2005 paper that the effect of the size factor is small and that the value factor is due to survivorship bias.

Previous studies applying the FFM to Australian markets have had mixed results. Certain studies have shown that the FFM performs well; however, others have shown the additional factors proposed by the FFM to be statistically insignificant. The author identifies that previous studies have adopted different approaches to portfolio formation, which may have led to different conclusions. However, there is no strong theory to guide an appropriate approach in which portfolios can be formed.

In this study, the author applies the Fama French Three-Factor model to Australian data drawn over a five-year period. Three different scenarios were considered: (1) weekly data for all listed businesses during the five year period; (2) weekly data for all listed businesses as at 31 May 2014 (regardless of if they were listed at other times); and (3) similar to the previous scenario, but the number of shares traded, rather than the number of shares outstanding, is used to calculate the market cap of a firm.

The results demonstrate that the estimated factor coefficients on beta (the single factor under the CAPM) are statistically significant and carry a positive sign across all portfolio formations in the three scenarios. It was also noted that, while the size factor (SMB) was generally well priced in the Australian context, the value factor (HML) showed mixed results. The risk premiums for the two additional factors (SMB and HML) varied significantly across the different portfolios and scenarios.

It is interesting to note that, in 2014, Fama and French have begun to move away from the FFM, instead, proposing a new five-factor model which they suggest outperforms the original three-factor model. However, it was also found that the value factor (HML) was redundant, as excluding it did not reduce the predictive power of the model. This supports the author's observations regarding the value factor (HML) in the Australian market.

Due to the inconsistent results of studies into the Fama-French Three-Factor Model and its possible reliance on 'data mining', it is suggested that whilst interesting for research endeavours, its application to policy is problematic, and thus, not recommended.

There are twenty-two items in the reference list, including international journals, such as the *Journal of Finance* and *Applied Financial Economics*, and many Australian journals, such as the *Australian Journal of Management*.

This paper can be accessed by subscription to *Economic Papers*.

Government Intervention and Information Aggregation by Prices, Philip Bond and Itay Goldstein, *Journal of Finance*, 70, 6, December 2015, pp. 2777-2812.

This article explores government intervention in private businesses. Efficient interventions depend on economic conditions, about which a government often has only limited information. The authors contend that it is efficient for governments to follow at least partially the market and make interventions based on observed stock prices. However, since price information is endogenous to government policy, it might, in some cases, be optimal for the government to commit to limited reliance on market prices in order to avoid harming trading incentives.

An important motivation for government intervention is the externalities that firms and financial institutions impose on the rest of the economy. This was one of the major reasons behind the US Government 'bailouts' of large financial institutions, such as Bear Stearns and the automobile industry. However, a long-standing concern is that governments only have limited information, preventing them from intervening in the most efficient way. A common tenet in finance is that, as the market price contains much information, it could potentially provide valuable guidance for governments.

The authors propose a mathematical model which combines its own signals and the signals gained from observing financial markets, along with respective weights. The weights depend on the precision of the government's signal and the informativeness of market prices. Situations in which the government did not utilise information in an optimal way ex post are also considered.

Analysis of the model shows that government usage of market prices as an input for policy might damage the informational content of the prices themselves. This is because increasing government reliance on market prices affects the risk-return trade-off faced by speculators. Thus, there are cases in which the government would achieve a better outcome by limiting its reliance on market prices and increasing its informational content. However, the government always benefits from some reliance on market prices.

The authors also noted that government transparency could have negative effects on the market by reducing trading incentives and price informativeness. Whilst this paper is focused on market-based government policy, it is noted that the analysis and results could apply more generally to other non-government actions based on price.

The reference list consists of forty-three items.

The article can be accessed by subscription to the *Journal of Finance*.

Regulatory Decisions in Australia and New Zealand

Australia

Australian Competition and Consumer Commission (ACCC)

ARTC's Compliance with the Hunter Valley Access Undertaking for 2013

See 'Notes On Interesting Decisions'.

NBN Co's Revenue Controls – Final Determination

On 3 June 2016 the ACCC issued its **final determination** on NBN Co's revenue controls for 2014-15. It has also set out its view that NBN Co's prices did not exceed maximum regulated prices during the 2014-15 financial year.

NBN Co's Special Access Undertaking – Proposed Variation

On 31 May 2016 the ACCC **published** NBN Co's proposed variation to its Special Access Undertaking (SAU) and is inviting feedback from interested parties on the proposed variation. The SAU is a key part of the framework that governs the price and other terms upon which NBN Co will supply wholesale services over the NBN.

Telstra's Migration Plan – Proposed Variation

On 20 May 2016 the ACCC released a discussion paper on Telstra's proposed variation to the Migration Plan. The Migration Plan sets out how Telstra will progressively migrate telephone and internet services from its copper and HFC networks to the National Broadband Network (NBN) as it is deployed.

NBN Wholesale Market Indicators – First Report Released

On 29 April 2016 the ACCC released its initial quarterly National Broadband Network (NBN) wholesale market indicators report for the period ending 31 March 2016.

Domestic Transmission Capacity Service (DCTS) – Final Access Determination

On 21 April 2016 the ACCC released its final decision on the regulated prices for the declared Domestic Transmission Capacity Service (DTCS).

WaterNSW's Proposed Charges for Infrastructure Services in the Murray-Darling Basin – Draft Decision

On 13 April 2016 the ACCC **released its draft decision** on proposed charges for WaterNSW's infrastructure services in the Murray-Darling Basin (MDB) during 2016-17.

Australian Competition Tribunal (ACT)

Declaration of the Right to Access and Use of the Shipping Channels Provided by the Port of Newcastle

See 'Notes on Interesting Decisions'

Australian Energy Market Commission (AEMC)

Annual Market Performance Review 2015 – Published

On 16 June 2016 the Reliability Panel of the AEMC published for consultation a draft report on the annual market performance review. **The draft report is available here.**

Australian Energy Regulator (AER)

Victorian Electricity Distributors – Final Decisions

On 26 May 2016 the AER **announced** its final decision on revenues for the five Victorian electricity distributors.

ActewAGL's Gas Distribution Network – Final Decision

On 26 May 2016 the AER issued its final decision on the access arrangement that will apply to ActewAGL's gas distribution network from 1 July 2016.

Amadeus Gas Pipeline – Final Decision

On 26 May 2016 the AER released its final decision on the access arrangement that will apply to the Amadeus Gas Pipeline for the 2016-21 access arrangement period, commencing on 1 July 2016.

ACT and NSW Network Charges Finalised

On 17 May 2016 the AER published the network charges that will apply from 1 July 2016 for the ACT electricity distributor, ActewAGL; the NSW electricity distributors Ausgrid, Endeavour Energy and Essential Energy; and the NSW gas distributor, Jemena Gas Networks.

Ring Fencing Guideline – Preliminary Positions

On 20 April 2016 the **AER published** its *AER Ring Fencing Guideline – Preliminary Positions Paper*.

National Competition Council (NCC)

Declaration of Shipping Channel Services at the Port of Newcastle

See 'Notes on Interesting Decisions'.

Australian Capital Territory

Independent Competition and Regulatory Commission (ICRC)

Retail Prices for Small Electricity Customers for 2016-17

On 9 June 2016 the ICRC announced its final decision on **retail prices** for small electricity customers for 2016-17.

New South Wales

Independent Pricing and Regulatory Tribunal (IPART)

Sydney Water, Hunter Water and WaterNSW Price Reviews Released

On 14 June 2016 the IPART released its final reports and **determinations** for Sydney Water, Hunter Water and WaterNSW for prices (for monopoly water and where applicable sewerage) to apply from 1 July 2016 to 30 June 2020.

Regulated Gas Prices and Charges – Final Report Released

On 10 June 2016 the IPART released its **final report** of the review of regulated gas prices to apply to AGL, ActewAGL and Origin Energy for residential and small business customers that remain on regulated prices under a standard contract.

Solar Feed-in Tariffs for 2016-17 – Final Decision Released

On 9 June 2016 the IPART released a **Fact Sheet and Final Decision** for solar feed-in tariffs.

Prices for Water Management Services Provided by WAMC

On 7 June 2016 the IPART **released its report** on Water Administration Ministerial Corporation (WAMC) Prices for water management services. The Report sets out IPART's prices and decisions for the review of the maximum prices the WAMC may charge. Its water management services are currently undertaken on its behalf by DPI Water. The determination is scheduled to apply for the four years until 30 June 2020.

Sydney Water and Hunter Water Wholesale Charges – Consultation

On 26 April 2016 the IPART announced it is **conducting a review** of the maximum prices Sydney Water and Hunter Water can charge for wholesale water and sewerage services. The IPART's Discussion Paper outlines IPART's proposed approach to setting wholesale prices, the rationale for these decisions and explains how stakeholders can provide input.

Northern Territory

Utilities Commission

Draft Access Policy – Port of Darwin: Update

On 10 May 2016 the Utilities Commission posted a brief update on its consideration and consultation on its access policy for the Port of Darwin.

Queensland

Queensland Competition Authority (QCA)

Queensland Rail 2015 Draft Access Undertaking (DAU) – Final Decision

On 17 June 2016 the QCA **released** its final decision on Queensland Rail's Draft Access Undertaking which was not to approve and to indicate how it 'must be amended in order for it to be appropriate to approve'.

Regulated Retail Electricity Prices for Regional Queensland 2016-17

On 31 May 2016 the QCA released **its final decision** on regulated retail electricity prices in regional Queensland for 2016-17.

Solar Feed-in Tariff for Regional Queensland

On 20 May 2016 the QCA released its final decision on the **Regional Solar Feed-In Tariff**.

Aurizon Network's Draft Access Undertaking – Final Decision

On 28 April 2016 the QCA released its final decision on **Aurizon Network's Draft Access Undertaking**.

DBCTM's Draft Access Undertaking – Draft Decision Released

On 22 April 2016 the QCA released a **Draft Decision** on Dalrymple Bay Coal Terminal Management's (DBCTM's) draft access undertaking.

South Australia

Essential Services Commission of South Australia (ESCOSA)

SA Water Regulatory Determination 2016

On 6 June 2016 the ESCOSA made a regulatory determination to apply to SA Water for the period 1 July 2016 to 30 June 2020 (RD16). RD16 is the second regulatory determination under the Water Industry Act 2012 and the Essential Services Commission Act 2002. It was developed following an independent review, with widespread community engagement by both SA Water and the ESCOSA. RD16 includes a price determination that sets four-year revenue caps for drinking water retail services and sewerage retail services and specifies pricing principles for excluded retail services.

National Energy Retail Law Review (NERL) – Report

On 30 May 2016 the ESCOSA released its findings for the NERL review. The ESCOSA's overall findings are that the operation of the NERL has: furthered the interests of South Australian energy consumers; resulted in increased efficiencies; and has not adversely affected consumer protection in pursuit of national consistency.

Tasmania

Office of the Tasmanian Economic Regulator (OTTER)

Aurora Energy's Standing Offer Prices and Regulated Feed-in Tariff Rate Approved

On 22 June 2016 the OTTER announced that it **has approved** Aurora Energy's Standing Offer Prices for 2016-17; its proposal to introduce time-of-use tariffs and the regulated feed-in rate for 2016-17.

TasWater's Proposed Price and Service Plan – Price and Service Plan

The OTTER released a Consultation Paper and is seeking comment on its draft Guideline with respect to TasWater's proposed price and service plan for the 2018 water and sewerage price determination investigation.

2016 Regulated Feed-in Tariff Rate – Investigation and Determination

On 5 May 2016 the OTTER released its Final Report and Determination in relation to its investigation to determine the Feed-in-Tariff (FiT) payable to Tasmanian residential and small business customers. The FiT is payable for excess electricity generated by eligible renewable generation systems (mostly solar photo voltaic systems) which is exported to the Tasmanian electricity network. **Read the Final Report and Determination.**

Standing Offer Electricity Pricing Investigation – Final Report and Determination

On 5 May 2016 the OTTER released its 2016 Standing Offer Pricing Investigation Final Report and Determination. The Final Report provides the background to the OTTER's investigation into retail electricity prices for customers who are not on a market contract; that is, standing offer customers. **Read the Final Report and Determination.**

Victoria

Essential Services Commission (ESC)

Goulburn-Murray Water's 2016-2020 Pricing – Final Decision

On 16 June 2016 the ESC released its **Final Decision** on Goulburn-Murray Water's Price Submission.

Review of Water Pricing Approach – Position Paper Released

On 24 May 2016 the ESC released its **water pricing position paper** titled *A New Model for Pricing Services in Victoria's Water Sector, Position Paper*.

Former Go Energy Customers Transferred to New Retailers

On 2 April 2016 the ESC announced that electricity retailer, Go Energy, has been suspended as an electricity market participant for failing to comply with Australian Energy Market Operator requirements. It can no longer operate as a retailer in Victoria, however, all Go Energy customers will continue to be supplied with electricity under the ESC's Retailer of Last Resort arrangements. **Read about retailer suspension.**

Energy Hardship Inquiry Final Report

In 22 March 2015, the ESC reported on its inquiry on the best-practice financial hardship programs of energy retailers. **View the report.**

Western Australia

Economic Regulation Authority (ERA)

Appointment of the Chair of ERA

On 22 June 2016 the Governor of Western Australia announced the appointment of Ms Nicky Cusworth as the Chair of the Economic Regulation Authority for a period of five years.

New Zealand

New Zealand Commerce Commission (CCNZ)

Electricity Distributors Subject to Price-Quality Regulation – Profitability Report

On 8 June 2016 the CCNZ released a **new report** detailing the profitability of the 16 electricity distributors subject to price-quality regulation in New Zealand between 2012 and 2015. The CCNZ claims that 'the analysis shows the revenue limits were effective at limiting excessive profits, while investment in the electricity distribution network also increased'.

Telecommunications Market Monitoring Report for 2014-15 Released

See 'Notes on Interesting Decisions'.

Deregulating Selected Schedule 1 Telecommunications Services – Submissions Sought

On 29 April 2016 the CCNZ released the preliminary findings of its five-yearly review investigating deregulating selected services in Schedule 1 of the Telecommunications Act 2001 (the Act). **Read the draft decision.**

Unbundled Bitstream Access Non-Price Terms – Consultation Document

On 7 April 2016 the CCNZ released a **consultation document** on the non-price terms of the Unbundled Bitstream Access (UBA) Standard Terms Determination (STD). The paper seeks views on the key issues the CCNZ intends to address in the review.

Mobile Telecommunications Business Market – Competition Report

On 31 March 2016 the CCNZ released **independent research** aimed at providing greater insight into the factors affecting competition in the high-value business segment of the mobile market.

Notes on Interesting Decisions

ARTC's Compliance with the Hunter Valley Access Undertaking for 2013

On 6 June 2016 the Australian Competition and Consumer Commission (ACCC) published its final determination on ARTC's annual compliance with the Hunter Valley Access Undertaking (HVAU) for 2013.

The HVAU financial model allows ARTC to recover revenue equivalent to its efficient costs in each calendar year for the 'Constrained Network' (currently comprising rail segments in Pricing Zone 1 and 2), while allowing ARTC to capitalise revenue shortfalls for Pricing Zone 3 into its regulatory value of assets for recovery in future years. ARTC is required annually to submit documentation to the ACCC for an assessment of its compliance with the HVAU financial model. ARTC submitted documentation for the 2013 calendar year to the ACCC in May 2014 and submitted revised documentation on 1 April 2016 following the ACCC's Draft Determination (released in late 2015). In its revised documentation, ARTC submitted that its total costs for the Constrained Network to be recovered from 'Constrained Coal Customers' were $297.6 million and that it had a $19.6 million shortfall in the revenue it received for the Constrained Network for the period. ARTC proposed to recover this shortfall from 'Constrained Coal Customers' (currently comprising Access Holders whose mines are in Pricing Zones 1 and 2). ARTC also submitted that it had a revenue shortfall for Pricing Zone 3 and proposed to capitalise cumulative losses of $8.7 million into its Pricing Zone 3 regulatory asset base for future recovery.

The ACCC's assessment has involved four stages of public consultation with stakeholders on three key issues: prudency of capital expenditure; efficiency of operating expenditure; and reconciliation of revenues. ARTC and Pricing Zone 3 Access Holders did not agree with the ACCC's position, arguing that ARTC's application was the correct interpretation and approach. In contrast, a number of stakeholders in Pricing Zones 1 and 2 supported the ACCC's position, while some of those stakeholders were concerned that it excluded some further costs for Pricing Zone 1 that Pricing Zone 3 Access Holders should contribute to.

In the final determination, the ACCC maintained that its views as presented in the Draft Determination on the interpretation of the ceiling limit in the HVAU are correct and appropriate. In particular, the ACCC's interpretation is consistent with the objectives of the HVAU – removing the scope for cross subsidies between coal producers will result in more efficient pricing signals and investment across the Hunter Valley Coal Network. Also, under the ACCC's interpretation, ARTC remains able to recover its full economic costs, with the timing of the recovery of some costs related to Pricing Zone 3 Access Holders being deferred to the future. ARTC is compensated for this through its loss capitalisation model. While maintaining their overall opposition to the ACCC's interpretation, ARTC and Pricing Zone 3 Access Holders proposed alternative methodologies to WIK's (the ACCC's consultant) approach to estimating the incremental costs of Pricing Zone 3 Access Holders' use of Pricing Zone 1. The ACCC conducted further analysis based on the alternative methodologies proposed by stakeholders in their submissions to the Draft Determination. The ACCC's findings through this additional analysis did not support the results claimed by ARTC and Pricing Zone 3 Access Holders in their submissions.

The ACCC considers that WIK's approach to the calculation of incremental cost is thorough and robust and is supported by economic theory. The WIK assessment included close consultation with a rail engineering expert. WIK met with various access holders and the ARTC, and based its assessment on a substantial amount of information provided by ARTC. Additionally, the ACCC considers that, compared to the alternative methodologies proposed by stakeholders, WIK's approach removes subjectivity around the original rationale for investments in Pricing Zone 1. The ACCC considers that WIK's approach is consistent with the evidence that the investments were ultimately for the benefit of all users of Pricing Zone 1.

Declaration of the Right to Access and Use of the Shipping Channels Provided by the Port of Newcastle

On 13 May 2015 the National Competition Council (NCC) received an application under Part IIIA of the Competition and Consumer Act 2010 (CCA) from Glencore Coal Pty Ltd seeking declaration provision of the right to access and use the shipping channels provided by the Port of Newcastle. Over the ensuing year, the application was considered by the National Competition Council (recommended not to declare), the designated Minister (decided not to declare) and (on appeal) the Australian Competition Tribunal (ACT) (should be declared).

The NCC received thirteen submissions on the application and two submissions on the designated minister issue. On 30 July 2015 the NCC released its draft recommendation on the application for declaration of the shipping channel service at the Port of Newcastle. The draft recommendation was that the service not be declared. The NCC also reached the view that the designated Minister for this matter is the Commonwealth Minister. A further

round of consultation was commenced and nine submissions were received. On 10 November 2015, the NCC sent to the Federal Treasurer, the Hon. Scott Morrison MP, its final recommendation in respect of the application by Glencore Coal Pty Ltd for declaration of the shipping channel service at the Port of Newcastle. Under s44H(9) of the Competition and Consumer Act 2010 (Cth), if the Minister had not published his decision and the reasons for his decision within 60 days after receiving the NCC's recommendation, he will be deemed to have decided not to declare the service.

The Acting Treasurer, Senator the Hon. Mathias Cormann, made a decision on 8 January 2016, which was published on the NCC website on 11 January 2016. The Minister's decision was not to declare the service. The Minister was not satisfied that declaring access to the Service would promote a material increase in competition in any of the five functionally dependent markets. Amongst other things, the Minister found that: there is insufficient evidence that the identified dependent markets are currently not workably competitive; the navigation charges represent a small fraction of the overall coal price at present and even if the charges are increased significantly in future, it will remain a minor cost element; and coal producers currently manage a range of uncertainties in their businesses, many of which are likely to be far greater than that which exists in relation to navigation charges. The Minister's decision and the Council's final recommendation are available on the NCC's website.

On 29 January 2016 Glencore applied to the Australian Competition Tribunal (ACT) for a review of the Minister's decision. On 31 May 2016 the ACT decided the service should be declared. The ACT was satisfied that – adopting the approach mandated by the Sydney Airport FC decision – access to the Service would promote a material increase in competition in the market for the export of coal from the Hunter Valley. That view is reached even though, as counsel for Port of Newcastle says, it has an incentive to maximise the revenue from the provision of the Service (but perhaps by the balancing of volume and charges) and the Port is not capacity constrained. The ACT stated (166) that 'the fact remains …that coal miners supplying coal into that market from mines in the Hunter Valley have no real practical alternative to using the Service, and in more profitable times (accepting what has been said about the present state of that industry) be vulnerable to charging changes imposed by … Port of Newcastle for access to the Service to absorb to a significant degree the profitability of exporting coal produced from the Hunter Valley.' Further (167) the ACT 'is not satisfied that the declaration would cause any adverse effect on incentives or obligations to invest or discourage efficient investment and costs to … the provider of the Service.'

New Zealand Telecommunications Market Monitoring Report for 2014-15 Released

On 26 May 2016 the Commerce Commission of New Zealand (CCNZ) released its ninth annual New Zealand telecommunications market monitoring report for 2014-15. The report is over 50 pages in length and contains data from 2005-06 for many items; and for lesser time periods for other data (for example, since 2008-09 for investment data). The information is presented in the form of clear graphs and charts, with accompanying explanatory text. In many cases, the CCNZ benchmarks trends in New Zealand against those in the OECD. The report concludes with a month-by-month chronicle of important events in New Zealand telecommunications from January 2015 to April 2016.

The CCNZ presents 2014-15 as a 'milestone year' for telecommunications in New Zealand in a number of respects. In particular, the launch of Netflix and other video-streaming services led to strong growth in broadband data consumption – which was also responsible for some signs of congestion. Further, the deployment of 4G mobile technology allowed retailers to start offering fixed wireless broadband services that were comparable, if not better, in price and performance to some copper fixed-line broadband services.

Mobile telecommunications is overtaking fixed-line telecommunications, and the size of the overall retail market in telecommunications fell slightly. Calling on a mobile device is becoming more popular than calling on a fixed-line phone, with mobile voice minutes poised to overtake fixed-line voice minutes. Mobile calling increased strongly to reach 6.63 billion minutes, which is an average of 120 minutes per person per month. While the volume of texting decreased from its peak in 2011-12, it has remained constant in the past two years. Mobile revenue appears set to overtake fixed-line revenue, with mobile revenue increasing to $2.54 billion in 2014-15; while fixed-line revenue fell to $2.57 billion. Total retail telecommunications revenues fell a little to $5.11 billion.

The UFB fibre network deployment continued to be associated with a high level of investment by the telecommunications industry. The UFB fibre network is now connecting around 100 000 customers. There was also significant investment in 4G mobile spectrum. Total industry investment increased in 2014-15 over the prior year to reach a new record of $1.77 billion.

The total number of fixed-line connections remained approximately constant, while fixed broadband connections continued growing to reach 1.45 million as at 30 June 2015 (78 per cent of total lines) and held New Zealand's OECD broadband ranking. Average download speeds increased, and average data consumed per fixed connection increased (assisted by the growth in video streaming), to reach 48GB per month compared with 32GB in the prior year. Mobile data use also continued to grow strongly, up 70 per cent in 2014-15 over the prior year to reach 390MB per connection per month, with a very high proportion of mobile devices being used to access the internet.

The CCNZ observes that mobile pricing continues to be competitive across all bundle sizes, with what it sees as a significant improvement over last year, coming in the pricing of larger bundles. A bundle sufficient for 900 calls and 2GB of data in February 2016 could be purchased for $59 a month compared to $69 per month in August 2014. New Zealand's OECD ranking on pricing improved. On the other hand, New Zealand's OECD ranking for popular $20 and $30 plans has fallen as prices in other jurisdictions have fallen relatively more than those in New Zealand.

The CCNZ presents fixed-broadband pricing as being 'more dispersed'. A 100GB data and voice bundle can be purchased for $75 a month, five per cent below the OECD average.

Regulatory News

The Seventeenth ACCC/AER Regulatory Conference, Brisbane, Thursday 4 and Friday 5 August 2016

The seventeenth annual ACCC/AER Regulatory Conference will be held in Brisbane on Thursday 4 and Friday 5 August 2016. The theme of the conference this year is 'The Future of Economic Regulation: Does the Conventional Wisdom Still Apply?' A **draft program and details about how to register** are available on the ACCC website.

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