

Addressing environmental issues in IPART's price determinations

Research — Information Paper
July 2011

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1 Introduction

This paper explains how we have taken the environment into account when conducting our price reviews and making our price determinations. It also therefore provides an insight into how we are likely to address environmental issues in future reviews and determinations.

This paper considers IPART's work in making price determinations only. However, IPART also contributes to achieving society's environmental objectives through our work on licensing energy and water suppliers, undertaking special reviews (eg, of NSW Government climate change measures) and in administering the NSW Greenhouse Gas Reduction Scheme (GGAS) and the Energy Savings Scheme (ESS).

We hope that this paper will assist stakeholders in participating in IPART's reviews (eg, via submissions) and also the regulatory reviews of environmental regulators.

This chapter outlines the objectives of this paper and explains why the environment is an important consideration in IPART's price determinations.

1.1 What are this paper's objectives?

For regulated industries, the dividing line between the roles of price regulators and environmental regulators can sometimes be uncertain. This is because the environmental impacts of water, energy and transport utilities subject to economic regulation can be significant. Furthermore, these environmental impacts could theoretically be managed through:

- ▼ prices – where prices are set to reflect the costs of environmental impacts or to change consumption or production patterns in order to achieve a given environmental objective, or
- ▼ regulatory requirements or targets administered by environmental regulators or government in general.

As discussed in this paper, we have mainly relied on the latter approach. That is, in setting prices, we have allowed the utilities to earn sufficient revenue to enable them to recover the efficient costs of complying with the requirements of environmental regulators. This recognises the role and expertise of environmental regulators, as well as the suite of regulatory instruments and approaches potentially available to these regulators and government in general. IPART has limited ability to set or alter environmental standards.¹

However, where warranted and where there have been deficiencies in the environmental regulatory framework, we have actively sought to address environmental issues through our price determinations. For instance:

- ▼ in setting prices for public transport and recommending the levels of government subsidies, we use estimates of the external benefits of public transport, including the environmental benefits (see Chapter 2)
- ▼ where a sufficiently strong case has been made, we have set prices to allow utilities to achieve an environmental outcome greater than that mandated by regulatory requirements (see Yanco Creek example in Chapter 2)
- ▼ there have been cases where we have used our reports accompanying determinations to make recommendations to government about how to potentially address an emerging environmental issue – eg, greenhouse gas emissions in the early days of IPART’s regulation of the electricity industry (see Chapter 4)
- ▼ there have also been cases where we have recommended that governments amend inefficient environmental regulation, on the basis that it does not allow for the least cost means of achieving a given environmental target – as we have done in our recent draft determination of retail electricity prices (see Chapter 4).

Further, we have also aimed to ensure that our regulatory approach does not create any perverse incentives or obstacles to better environmental outcomes.

Our approach is largely consistent with those of most other economic regulators in Australia. There are instances in overseas jurisdictions, however, where economic regulators have adopted a more expansive view of their role in addressing environmental impacts (eg, Ofgem in the UK). Appendix E provides an overview of the approaches of other economic regulators to addressing environmental impacts.

To ensure efficient regulation and pricing, economic regulators should have a clear view of their roles and responsibilities in regard to environmental impacts, relative to environmental regulators (and vice-versa). Given this, we consider that there is value in explaining our approach to date, including our role in addressing environmental impacts relative to environmental regulators.

¹ We do, however, recommend the terms of operating licences for some water utilities, which can include provisions related to environmental management (eg, the requirement to have an environmental management plan and to report against environmental objectives or indicators).

Therefore, the paper's objectives are to:

- ▼ clarify the role of IPART relative to environmental regulators, taking into account legislative responsibilities, expertise and available regulatory instruments
- ▼ explain IPART's approaches to environmental issues in past price determinations and the rationale behind these approaches
- ▼ outline principles and approaches that IPART may consider in regard to environmental issues in future determinations.

We hope that this will assist stakeholders in making submissions to our price reviews, by:

- ▼ enhancing their understanding of our approaches to addressing environmental impacts
- ▼ helping stakeholders to understand the relationship between IPART-determined prices and the environmental requirements and instruments of other regulators
- ▼ ensuring that stakeholder attention and scrutiny is focused on the most appropriate regulator and regulatory instrument, relative to their particular concern.

1.2 Why is the environment important in IPART's price determinations?

The environment is an important element of IPART's price determinations for 2 key reasons:

1. elements of our legislative framework require us to consider the environment when making our determinations and recommendations
2. for prices to be cost reflective and result in efficient outcomes, they should reflect all efficient economic costs of service provision – including the efficient costs associated with environmental impacts.

These are discussed below.

1.2.1 Legislative requirements

The importance of considering environmental impacts in pricing decisions is recognised in IPART's legislative framework.

IPART regulates some industries under the *Independent Pricing and Regulatory Tribunal Act 1992* (the IPART Act), and other industries under different legislation (see Table 1.1 below).

Under Section 15 of the IPART Act, we are required to consider a range of matters when making determinations and recommendations under this Act. These matters, which are listed in full in Appendix A, relate to consumer protection, economic efficiency, financial viability and environmental protection. Of note for this paper, Section 15(1)(f) of the IPART Act requires IPART to have regard to:

...the need to maintain ecologically sustainable development (within the meaning of section 6 of the *Protection of the Environment Administration Act 1991*²) by appropriate pricing policies that take account of all the feasible options available to protect the environment.

When conducting reviews under the *Passenger Transport Act 1990* (eg, for metropolitan bus pricing), we must have regard to the factors set out in section 28J(5) of this Act. This includes similar provisions to Section 15 of the IPART Act, including the same provision as Section 15(1)(f) quoted above.

When setting prices under the *Gas Supply Act 1996* and the *Electricity Supply Act 1995*, we are not subject to any explicit requirements regarding the environment. However, these Acts give the Government the power to set terms of reference for any price determination for the respective industries. These terms of reference may or may not include a specific mandate or requirement to consider the environment.

Table 1.1 IPART's legislative framework for its price determinations, as it relates to the environment

Sector	Legislation under which IPART sets prices	Provisions in legislation that may relate to the environment
Water	<i>Independent Pricing and Regulatory Tribunal Act 1992</i>	Section 15(1)(f)
Electricity	<i>Electricity Supply Act 1995</i>	Section 43EB ^a
Gas	<i>Gas Supply Act 1996</i>	Section 27 ^a
CityRail	<i>Independent Pricing and Regulatory Tribunal Act 1992</i>	Section 15(1)(f)
Buses	<i>Passenger Transport Act 1990</i>	Section 28J(5)(d)
Ferries	<i>Independent Pricing and Regulatory Tribunal Act 1992</i>	Section 15(1)(f)
Taxis	<i>Independent Pricing and Regulatory Tribunal Act 1992</i>	Section 9 ^a

^a For these reviews, the Government may require IPART to have regard to other matters in a 'terms of reference'. They may or may not include references to consider the environment.

1.2.2 The efficient allocation and use of resources

In order to facilitate the efficient use of resources and maximise society's welfare, the environmental impacts of service provision must be adequately reflected in prices.

² See Appendix D for section 6 of the *Protection of the Environment Administration Act 1991*.

Market failure due to negative environmental externalities

If negative environmental impacts of service provision are not reflected in prices, then output of the relevant service, good or activity will be greater than optimal as the costs to producers and/or consumers will be less than the full social costs of their activity.

For example, if a firm is emitting pollutants into a river yet does not face the costs that this pollution imposes on downstream river users or the broader community, then its output of pollution is likely to be greater than the socially optimal level.

Similarly, if private motor vehicle use results in air pollution, noise pollution and congestion that impacts adversely on other members of society, yet private motor vehicle users do not face the costs of this pollution, then there will be an excess of private motor vehicle use and pollution.

In these instances, 'market failure' is said to occur. This is because the market has not sent appropriate price signals in order to provide incentives for the efficient use and allocation of resources so as to maximise society's welfare. This form of market failure occurs due to the presence of negative externalities, as there are costs of production or consumption that are 'external' to the producer or consumer (ie, costs to third parties). Other forms of market failure relate to the existence of imperfect competition, imperfect information and public goods.

It should be noted that the institutional or policy environment can also be the cause of less than optimal outcomes. For example, a lack of clearly defined legal rights (eg, to clean air or natural resources) can be the underlying cause of market failure. Inefficient or inappropriate government intervention can also distort resource use and result in sub-optimal outcomes.

Externalities and other forms of market failure are discussed further in Appendix B.

Addressing externalities and market failure

A range of government policies can be used to address environmental externalities. For instance, to address market failure associated with negative environmental impacts, the Government and/or environmental regulators can:

- ▼ Set regulatory requirements that eliminate or reduce the negative environmental impact (eg, requirements to reduce pollutant emissions to specified levels).
- ▼ Establish cap and trade systems – whereby an overall cap is set for pollutant emissions or natural resource use, and individuals or agencies must obtain a licence to a tradeable share of the allowable total pollutant load or total level of resource extraction.
- ▼ Levy environmental taxes or charges – whereby producers pay per unit of pollutant emitted. Ideally, this charge would be set to equate marginal private costs with marginal social costs (see Appendix B).

- ▼ Provide subsidies to a substitute with a lower environmental impact – this option is often referred to as a ‘second best’ solution, as it is most commonly used where assigning a tax or quota is impractical.
- ▼ Undertake education, information provision and moral suasion programs, to deter activities that damage the environment and/or promote activities that benefit the environment.

There will often be a number of potential options available to address environmental issues. We note that any regulatory action, including those options listed above, should be consistent with best practice regulatory principles and processes (see Appendix C). In particular, regulatory action must:

- ▼ be subject to thorough cost benefit analysis – which considers all economic costs and benefits of alternative options to achieve the objective, and
- ▼ provide the greatest net benefit or lowest net cost to the community, given its objective, out of all the options or alternatives available.

These can be demanding tests and it has been frequently acknowledged that there can be ‘government failure’ as well as ‘market failure’. For example, policy has to be made without perfect information and may have unintended or unanticipated consequences. Furthermore, regulation can be shaped through the interplay of various competing interests. Therefore, it is also important to subject regulation to periodic review after it has been implemented.

1.3 What does this paper cover?

Chapters 2, 3 and 4 explain our approaches to addressing environmental issues in our price determinations to date.

As these chapters show, we have considered both positive and negative environmental impacts in our price determinations. We have factored these impacts into our determinations through:

- ▼ the revenue we allow utilities to recover via prices (Chapter 2)
- ▼ the specific price structure that we set or allow (Chapter 3), and
- ▼ recommendations that we have made to Government following our prices reviews (Chapter 4).

Chapter 5 provides a brief comparison of our approaches to addressing environmental issues in price determinations to those of other economic regulators, and considers any significant points of difference.

Finally, Chapter 6 discusses likely implications and approaches for future price determinations.

2 The revenue we allow utilities to recover

To determine prices for a monopoly service for a given period, we first determine the utility's efficient costs of providing that service over the relevant time period. In doing so, we take into account a range of factors, including regulatory requirements that are imposed on that utility.

Once we have determined the utility's efficient costs of providing the monopoly service, we then often have to decide how these costs should be split between direct users of the service and the broader community.

As discussed below, the environmental impacts of monopoly service providers can determine our assessments of:

- ▼ the efficient costs of service provision, and
- ▼ how these costs should be shared between direct users of the service (via the prices we set) and the broader community (through recommended Government subsidies).³

2.1 Allowing the prudent and efficient costs of complying with environmental regulatory requirements

To date, our primary means of addressing negative environmental impacts in our price determinations has been to allow for a utility's efficient and prudent costs of complying with environmental regulatory requirements, when determining the total level of its costs (or 'revenue requirement') to be recovered via its prices.

Examples of this approach are provided in Table 2.1 below, which lists the key environmental impacts of the water and electricity sectors, the environmental regulators responsible for managing these impacts, their regulatory instruments and requirements, and how we have allowed for these environmental regulatory requirements in our price determinations.

³ This cost sharing approach currently applies to bulk water and public transport, where we apportion the monopoly service costs between users of the service and the broader community in accordance with established principles and methodologies, as discussed in this chapter. For other services, including metropolitan water, gas and electricity, the monopoly service costs are primarily faced by users of the services.

In addition to the regulators and regulatory requirements listed in Table 2.1, we recommend the terms of operating licences for some water utilities (Sydney Water, Hunter Water, the Sydney Catchment Authority and State Water) – which can include provisions related to environment management. For example, Sydney Water’s operating licence requires it to have an environmental management plan and to report against environmental objectives and indicators. As with other regulatory requirements, we allow for each utility’s efficient cost of complying with its operating licence when setting prices.

Benefits of this approach

The benefit of our approach is that it allows prices to be set with reference to the requirements of environmental regulators, who have expertise in environmental management and are able to take a holistic approach to environmental issues.

If the environmental regulators set their requirements at the correct level, prices to customers would fully reflect the cost of the necessary corrective action. Prices would be unnecessarily high if we included an explicit environmental component in prices, beyond what was already reflected in prices through the costs of complying with the requirements of environmental regulators.

For instance, the Office of Environment and Heritage (OEH)⁴ is better equipped than us to determine the impact of (and consequently regulate) wastewater discharges from Sydney Water’s sewage treatment plants on the ecology and environment of the Hawkesbury-Nepean River. It has the expertise and legislative responsibility⁵ for such regulation, and it is able to impose requirements on Sydney Water, after taking into account pollutant discharges into the river from other sources.

Similarly, given that carbon emissions is a national and international environmental issue, with a number of significant emissions sources throughout the economy, the regulation of these emissions – either through taxes or emission limits – is best managed at the national level.

Related to this, overlapping roles and responsibilities can potentially be a source of inconsistent or inefficient regulation, both within and between levels of government. Therefore, it is important to maintain a clear separation between our role in setting prices, and the role of State and Commonwealth environmental regulators.⁶

Our approach ensures that environmental impacts are incorporated into prices – either through the cost of mitigating impacts to comply with environmental regulatory requirements or through any environmental fees or charges that the utility is required to pay in order to pollute.

⁴ Formerly the NSW Department of Environment, Climate Change and Water (DECCW).

⁵ Legislative responsibility is given to OEH by the *Protection of the Environment Operation Act 1997* (NSW).

⁶ This is consistent with best practice regulation as outlined in Appendix C.

We also note that our approach ensures prices recover costs incurred (including a return on capital), but that they do not become a de-facto environmental tax. The determination of any tax component is the responsibility of Ministers and Parliament, rather than an independent regulatory agency.

Potential disadvantages of this approach

A potential disadvantage of our current approach is that it effectively assumes there are no gaps or deficiencies in the environmental regulatory framework and that environmental regulatory requirements are optimally set.

This approach may lead to inefficiently low prices and sub-optimal outcomes if environmental regulatory requirements do not adequately mitigate environmental impacts or result in prices that do not sufficiently 'internalise' environmental externalities.

On the other hand, prices could be inefficiently high if environmental regulatory requirements are overly stringent and not consistent with best practice principles. A utility's prices will be unduly high if:

- ▼ the regulatory requirement is set at a level where the economic costs of complying with it are greater than the economic benefits that it will achieve
- ▼ the regulatory instrument is designed and targeted in way that does not allow for the least cost or most efficient means of achieving the intended regulatory outcome (eg, if the instrument is overly prescriptive).

As noted in Chapter 4, there have been cases where we have considered that there are deficiencies or inefficiencies in environmental regulation and made recommendations accordingly.

Furthermore, given that the costs of complying with environmental regulations impact on the prices that we regulate, we consider that there is merit in IPART engaging more with key environmental regulators. This is particularly where an environmental regulatory requirement has a significant impact on prices or where there are potential concerns or questions regarding the efficiency of the regulatory requirement. This is discussed further in Chapter 6.

Table 2.1 Key environmental impacts and regulatory requirements, as they relate to IPART's price determinations

Sector	Environmental impact	Environmental regulator	Regulatory instrument	Examples of treatment in IPART price determinations
Bulk water	<ul style="list-style-type: none"> ▼ Extraction of water from the natural environment and alteration of natural river flows ▼ Impediments to fish passage ▼ Cold water pollution 	<ul style="list-style-type: none"> ▼ NSW Office of Water (NOW) ▼ Department of Primary Industries ▼ NSW Office of Environment and Heritage (OEH) 	<ul style="list-style-type: none"> ▼ NOW issues and administers water management licences, which authorise utilities to extract water from the environment and specifies how much water they should release as environmental flows. ▼ Requirements are set by the Department of Primary Industries (under the <i>Fisheries Management Act 1994</i>) to install infrastructure enabling fish to migrate along river systems. ▼ There is a prevailing NSW Government strategy that states that water utilities should investigate and mitigate the impacts of cold water pollution at high priority dams, where it is technically and economically feasible to do so.⁷ Works approvals issued by NOW (authorising the construction and operation of works on river systems) can also contain conditions relating to the mitigation of cold water pollution. 	<ul style="list-style-type: none"> ▼ 2009 SCA price determination allowed \$26.5 million for a fish passage way and delivery structures for environmental flows at Tallowa Dam. ▼ 2010 State Water price determination allowed \$3.1 million over 2010/11 to 2013/14 for cold water pollution mitigation works (State Water had asked for \$15.0 million, but IPART found that \$3.1 million was the prudent and efficient amount for this period).

⁷ IPART, *Review of bulk water charges for State Water Corporation – Final Report*, 2010, p 89 & 188.

Sector	Environmental impact	Environmental regulator	Regulatory instrument	Examples of treatment in IPART price determinations
Metropolitan water	<ul style="list-style-type: none"> Extraction of water from the natural environment and alteration of natural river flows Discharge of wastewater to the environment (water pollution) 	<ul style="list-style-type: none"> NSW Office of Water (NOW) NSW Office of Environment and Heritage (OEH) 	<ul style="list-style-type: none"> As above OEH issues Environment Protection Licences under the <i>Protection of the Environment Operation Act 1997</i> for sewage transportation and treatment systems. These licences stipulate both quality and quantity conditions for sewage treatment plant discharges and links licence fees to pollutant emissions. 	<ul style="list-style-type: none"> As above 2008 Hunter Water price determination allowed for almost \$100 million in upgrades to Hunter Water's sewerage systems and sewage treatment plants to enable it to comply with Department of Environment and Climate Change (now OEH) standards.
Electricity	<ul style="list-style-type: none"> Greenhouse gas emissions Emissions of other air pollutants 	<ul style="list-style-type: none"> IPART (administrator of ESS and GGAS) Office of the Renewable Energy Regulator (ORER – administrator of LRET and SRES) NSW Office of Environment and Heritage (OEH) – for non-greenhouse air pollution 	<ul style="list-style-type: none"> Energy Savings Scheme (ESS), Greenhouse Gas Abatement Scheme (GGAS), Large-scale Renewable Energy Target (LRET), Small-scale Renewable Energy Scheme (SRES): each of these schemes establish requirements on electricity retailers to purchase and surrender a certain number of certificates per year. The certificates are created through activities that reduce the amount of greenhouse gas emitted. Recently announced carbon price, to transition to an emissions trading scheme. 	<ul style="list-style-type: none"> The 2011 draft retail electricity price determination⁸ included 2011/12 allowances for the efficient costs that each retailer will incur in complying with the LRET, SRES, GGAS and ESS schemes. IPART estimated that the increased cost of complying with the RET scheme (comprised of LRET and SRES) adds 6 percentage points to prices in 2011/12. It estimated that retailers' compliance with the GGAS and ESS schemes added less than 1% to electricity bills.

⁸ IPART, *Changes in regulated electricity retail prices from 1 July 2011 - Draft Report*, April 2011.

Sector	Environmental impact	Environmental regulator	Regulatory instrument	Examples of treatment in IPART price determinations
Public transport: Trains, Buses, Ferries	<p>Relative to private car use, public transport has positive environmental impacts in terms of:</p> <ul style="list-style-type: none"> ▼ Air pollution, including greenhouse gases and other air pollutants ▼ Noise pollution. 	<ul style="list-style-type: none"> ▼ Public transport modes are subject to Australian vehicle emission and fuel standards. They are also subject to environmental requirements that are imposed at the development approval stage. ▼ However, for pricing purposes, a significant focus of public transport is its positive social impacts relative to private car use. To account for its social benefits, including avoided environmental costs of car use, public transport is subsidised by the Government. Our pricing determinations recommend this level of subsidisation, which is based on our estimate of the external social benefits (or avoided social costs) of each public transport mode or service. 		<ul style="list-style-type: none"> ▼ As part of the 2010 determination of metro buses and outer metro buses, IPART engaged LECG, a consultancy, to estimate the value of the reduction in air pollution when bus services are used instead of cars. LECG found that the estimated external benefits of reduced air pollution amounted to 39 cents per fare. Compared to service costs, our determination reduced prices by this amount to account for the relative environmental benefit of using public transport. ▼ In our 2008 review of CityRail's fares, we recommended that taxpayers fund around 70% of CityRail's costs through Government subsidies. This reflected our assessment that the external benefits of City Rail's services equated to about 70% of its costs (or about \$1.9 billion by 2011/12). This estimate of external benefits was comprised of avoided road congestion, air pollution and greenhouse gas emissions.⁹

⁹ IPART, *Review of CityRail fares, 2009-2012 - Final Report*, December 2008, pp 95 – 110.

2.2 Allowing costs to achieve environmental outcomes greater than those mandated by environmental regulations

There have been only very few instances where prices have been set to allow utilities to recover revenue that enables them to achieve environmental outcomes greater than those mandated by environmental regulatory requirements.

In these instances, which are outlined below, proponents were able to provide robust evidence of customer willingness to pay and assurance that the additional revenue would be spent in the agreed manner.

A levy on water users in the Yanco Creek system

In response to requests from the Yanco Creek Advisory Committee, our 2006 and 2010 determinations of State Water's bulk water prices included a levy on water users in the Yanco Creek system to fund a natural resource management plan for the area.¹⁰ This was in the absence of an environmental regulatory requirement for such a plan. This plan included measures aimed at rehabilitating part of the Yanco Creek system to improve river flows.

In this instance, several important conditions were met:

- ▼ the proponents of the price increase (or levy) were able to demonstrate substantial support amongst paying customers
- ▼ a mechanism was in place to ensure that the revenue generated from the levy was spent in the agreed manner, and
- ▼ we were able to apply the levy to the specific group of customers who were proposing it and were likely to benefit from the measures that it was funding.

Green energy

The green energy program is another example of where utilities have been permitted to levy prices to recover costs for targeting environmental outcomes that are greater than those mandated by regulations. Under current arrangements, energy customers can elect to pay extra for 'green energy'. The energy they consume is not necessarily green energy, but their payment is invested in renewable energy.¹¹

¹⁰ See: IPART, *Review of bulk water charges for State Water Corporation – Final Report June 2010*, pp 165-166.

¹¹ See: www.greenpower.gov.au/About-Us/.

Key elements of the green energy program are that:

- ▼ each individual customer can choose whether or not to pay more to achieve the higher environmental outcome (ie, subsidisation of renewable energy) – meaning that there is clear evidence of those willing to pay for higher environmental outcomes, and no negative implications for those who are not willing to pay
- ▼ it is supported by a program of audit and verification – to ensure that the additional revenue is invested in achieving environmental outcomes consistent with the expectations of paying customers.¹²

Issues associated with demonstrating willingness to pay

We note that, in the absence of customer choice and product differentiation, demonstrating sufficient willingness to pay can be difficult.

First, there is the issue of demonstrating or proving a certain level of willingness to pay. In the absence of a market, surveys are often used to assess willingness to pay. In carrying out a survey, an appropriate sample of the customer population needs to be surveyed, and questions need to be suitably phrased to reveal customers' true preferences and willingness to pay. In the absence of much product differentiation, it may be difficult for customers to understand what has been put to them.

Second, if customers do not have a choice of whether they pay for the improved environmental outcome once it is factored into prices (as they currently do with green energy), there is the question of what is a suitable willingness to pay threshold: is it that 100%, 80%, 60% or 50% of customers would be willing to pay for a higher environmental outcome or standard?

2.3 Discounting prices to reflect relative benefits in public transport

As discussed in Chapter 1, private motor vehicle use can result in negative environmental impacts and other social costs (eg, pollution and congestion), which are in addition to the private costs faced by motor vehicle users. The difference between the social and private costs of motor vehicle use means that, in the absence of intervention in the transport 'market', motor vehicle use will be higher than optimal.

¹² According to GreenPower, "the government GreenPower program organises publicly available independent auditing of energy retailers' sales and purchases" (see: www.greenpower.gov.au/About-Us/What-Is-GreenPower/). In the UK, Ofgem, the economic regulator, has set guidelines around the use of green tariffs by the energy utilities. These guidelines were introduced following findings by the National Consumers' Council that there was a great deal of confusion and mistrust of green tariffs.

In the absence of levying a charge on motor vehicle users to reflect the full social costs of their activities, the NSW Government subsidises public transport use. This recognises that, to the extent that public transport use displaces motor vehicle use, public transport use results in social benefits beyond those experienced directly by individual public transport users. These ‘external’ benefits include reduced pollution and congestion.

In our price determinations, we use estimates of the external benefits of public transport (relative to private motor vehicle use) to determine how much public transport users should pay via prices versus how much the Government should subsidise public transport services. Under our determinations, the share of public transport services funded by users has been essentially the efficient costs of these services less the external benefits of public transport use.

Under this approach, the greater the external benefits associated with public transport services – including environmental costs avoided as a result of public transport use displacing private motor vehicle use – the lower the price faced by users of that service (all other things being equal).

Our 2008 review of CityRail’s fares recommended that taxpayers fund around 70% of CityRail’s costs (or between \$1.7 billion and \$1.9 billion per annum over 2008/09 to 2011/12) through Government subsidies, and that passengers fund the remaining 30% through fares. This reflected our assessment that the external benefits of City Rail’s passenger train services equated to about 70% of its costs. This estimate of external benefits was comprised of avoided road congestion, air pollution and greenhouse gas emissions.¹³

Box 2.1 provides a further example of our approach to incorporating environmental impacts into our determinations of public transport prices.

¹³ IPART, *Review of CityRail fares, 2009-2012 - Final Report*, December 2008, pp 95 – 110.

Box 2.1 Example of our approach to discounting prices to reflect positive externalities**Reduced air pollution costs for metro buses**

When buses are used instead of cars, there is generally a reduction in greenhouse gas and other air pollution.

As part of the 2010 determination of metro buses and outer metro buses, IPART engaged LECG, a consultancy, to estimate the value of the reduction in air pollution when bus services are used instead of cars.

Their methodology took account of several issues, including:

- ▼ most buses run on diesel and most cars run on unleaded petrol
- ▼ buses use more fuel than cars for a given distance
- ▼ a typical bus carries more people than a typical car
- ▼ around 50% of people who catch the bus would drive if they did not catch the bus.

LECG found that the estimated external benefits of reduced air pollution amount to 39 cents per fare-paying bus passenger trip. Consequently, our determination reduced prices by this amount.

We used the sum of all relative benefits associated with metro buses to determine the recommended level of Government subsidy to these services.

2.4 Discounting recycled water prices to reflect avoided costs

Recycled water schemes can benefit the environment, through reducing the need to extract water from the natural environment and reducing discharges of wastewater to the environment. Related to this, they can also mean that water utilities avoid costs. For example, by recycling water, a utility may avoid or defer the need to invest in other sources of water supply (such as a dam or desalination plant), upgrade elements of its wastewater treatment system, and/or pay wastewater pollutant discharge fees.

Our 2006 Determination and Report on *Pricing arrangements for recycled water and sewer mining* provides that metropolitan recycled water prices can be discounted by the level of avoided costs associated with the recycled water scheme (provided certain conditions are met¹⁴). These avoided costs can then be added to prices of the utility's other water and wastewater services (depending on where the costs are avoided), to ensure that the utility fully recovers its costs of the recycled water scheme.

¹⁴ These conditions include that the costs and revenues of recycled water schemes are ring-fenced from the costs and revenues of other parts of the water utility's operations.

This recognises that some recycled water schemes can provide net economic benefits, including environmental benefits, and helps to provide an appropriate incentive for the uptake of recycled water where it is economically efficient to do so. Box 2.2 below provides a relevant extract from our 2006 Determination Report.

In line with this, our 2009 determination of Hunter Water's water and sewerage prices allowed Hunter Water to recover avoided costs associated with its proposed Kooragang Island Recycled Water Scheme, via its water and sewerage prices. These avoided costs related to deferment of the upgrade of the Grahamstown water treatment plant and operating cost savings at this plant.¹⁵

Box 2.2 Accounting for avoided costs associated with recycled water schemes

Where a recycled water scheme is part of the overall least-cost means of meeting long-term supply and other obligations, some costs can be legitimately shared across the system as a whole. For example, expenditure on a recycled scheme may lead to benefits in the form of avoided or deferred costs elsewhere in the system (ie, costs that would, in the absence of the recycled water scheme, otherwise be incurred by water or sewerage customers). Possible 'avoided costs' include:

- ▼ Current system operation and maintenance savings. These might include reductions in pumping and disposal costs associated with the sewage that would otherwise have been processed by the existing system (although these are likely to be minimal). 'Licence compliance savings' might also be achieved if a recycled water project reduced load-based licence costs.
- ▼ Future system capacity savings due to deferment of capital infrastructure upgrades or system augmentations in the water or sewerage networks to meet growth and/or compliance with obligations (such as environmental discharge requirements).

If this is the case, the recycled water scheme is potentially benefitting both its direct users and other water and sewerage users. Therefore, there is a case on both equity and efficiency grounds that both these groups should contribute to the costs of the scheme.

Source: IPART, *Pricing arrangements for recycled water and sewer mining – Sydney Water Corporation, Hunter Water Corporation, Gosford City Council and Wyong Shire Council*, September 2006, pp 32 – 33.

¹⁵ IPART, *Review of prices for water, sewerage, stormwater and other services for Hunter Water Corporation - Determination and Final Report*, July 2009, p 12.

2.5 Setting bulk water prices to allow the NSW Office of Water¹⁶ (NOW) to recover its water planning and management charges

Unlike some other jurisdictions in Australia (which don't set water planning and management charges), we set prices to allow NOW to recover the water user share of its efficient costs of undertaking bulk water planning and management activities for regulated rivers, unregulated rivers and groundwater sources across NSW. (The section below explains how the user share of NOW's costs is determined.)

These water planning and management activities are aimed at ensuring that water resources are extracted sustainably from the natural environment, for the long-term benefit of water entitlement holders, the community and the environment.

2.6 Allocating bulk water costs according to the impactor pays principle

Some of the costs of State Water and NSW Office of Water (NOW) are incurred as a result of water entitlement holders (water users), while others relate to the broader community.

For this reason, we allocate the costs of these agencies between users (to be recovered via bulk water prices) and the broader community (to be funded by the Government) in proportion to the contribution that each of these parties makes to creating the cost or the need to incur the cost.

For example, in our 2011 determination of NOW's prices, we assigned 70% of NOW's costs of 'surface water quantity monitoring' to water users, and the remaining 30% to the Government (on behalf of the broader community). This reflected our finding that 70% of the costs of this activity are due to the presence or impact of water entitlement holders (eg, to monitor water extractions and river flows to inform compliance activity and the development of water sharing plans), while 30% of these costs are incurred due to the broader community (eg, to monitor river flows to manage flood events).¹⁷

The impactor pays principle ensures that bulk water entitlement holders pay those bulk water supply and resource management costs that are attributed to their water entitlements and extractions.

¹⁶ On behalf of the Water Administration Ministerial Corporation (WAMC).

¹⁷ See: IPART, *Review of prices for the Water Administration Ministerial Corporation – Final Report*, February 2011, p 85.

3 The price structure we set or allow

Once we have established a utility's efficient costs and the share of these costs to be recovered from users via prices, the next step in our price determination process is to determine whether to set or regulate the structure of the utility's prices and, if so, how.

This chapter discusses our approach to setting or regulating price structure. In doing so, it first discusses elements of our general approach. It then provides specific examples of our approach to price structure for water and electricity utilities. These are sectors where price structure can be particularly important, as increased water and electricity consumption can be associated with increased environmental cost.

3.1 Elements of our general approach to price structure

As outlined in Chapter 2 and Appendix B, an efficient price structure is one that reflects the underlying cost structure of service provision, and therefore encourages the efficient use and allocation of resources by the signals that it sends to consumers and producers (see Box 3.1 below). This is achieved by setting prices at the marginal cost of supply, where marginal cost is the increase in costs – including any environmental 'external' costs or externalities – resulting from the production of one more unit of output.

We have often favoured 2-part tariffs¹⁸, comprising:

- ▼ a usage charge – where a price is levied per unit of water or electricity consumed, and the customer's bill therefore increases with their consumption
- ▼ a fixed charge – where a charge is levied per connection.

This price structure has meant usage prices can be set at or near marginal cost, and efficient fixed costs can be recovered independently from use.

¹⁸ In some instances, however, multi-part tariffs may be more efficient where there is variability in the marginal cost of supply. For example, when the marginal cost per unit of supply varies over certain output ranges or time periods (eg, the difference in costs between peak and non-peak periods in electricity generation and supply), then there may be a case for multi-part tariffs – as have been in place in electricity.

We have often set the usage charge with reference to the utility's marginal costs – including those related to environmental regulatory requirements. The fixed charge is then set to recover the rest of the utility's efficient costs.

However, we have generally not sought to explicitly equate utilities' usage prices with their marginal social cost of service provision so as to internalise or eliminate externalities. That is, we have not attempted to set prices at a level that reflects the environmental costs of a utility's activities, beyond the utility's costs of complying with environmental regulatory requirements.

The reasons for this are similar to those outlined in section 2.1 (which explains our approach to determining the amount of revenue a utility should receive via prices). They include the following:

- ▼ Many environmental externalities (eg, greenhouse gas emissions or water pollution) relate to economy or environment wide issues. However, we set prices for only some sectors. There is therefore a risk that we could actually distort resource use, and create inefficient outcomes.¹⁹
- ▼ Many or most significant environmental impacts are already being addressed by environmental regulation.
- ▼ It is difficult for us to determine the environmental impacts of additional units of supply with a great deal of accuracy. We may be able to value impacts or outcomes, but do not have the data or expertise to determine these impacts in the first instance (ie, the dose-response relationships between additional output and environmental impacts).

Furthermore, while we could seek to structure prices to maintain levels of cost recovery (by setting the usage charge equal to marginal social cost, and then adjusting the fixed charge so that the utility does not over or under-recover), there may still be some disconnect between the utility's costs and revenue raised by prices. There may therefore be a risk that we would be viewed as a taxing agent, rather than an economic regulator.

In summary, we consider that the Government and/or environmental regulators are best placed to optimally address environmental externalities via their regulatory instruments (including, for example, limits on pollution, taxes or tradeable pollution rights). We also note that if these instruments affect a utility's marginal costs of supply, then this will also likely be ultimately reflected in its usage price to customers. That is, through their regulatory instruments, Government and/or environmental regulators are better placed to equate marginal private costs with marginal social costs, if this is deemed necessary.

¹⁹ Eg, see theory of the second best.

If we find evidence of significant externalities, it's likely that we would make recommendations to Government to review or adjust the environmental regulatory framework accordingly (eg, as we did in the early days of electricity price regulation with greenhouse gas emissions), rather than try to directly internalise these externalities via the prices we regulate.

Box 3.1 Efficient pricing for utilities

An efficient price structure is one that encourages the efficient use and allocation of resources in the economy by the signals that it sends to consumers and producers. This is achieved by setting prices at the marginal cost of supply, where 'marginal cost' is the increase in total costs^a resulting from the production of one more unit of output.

The marginal cost of utilities (eg, water, electricity, rail, etc) is largely dependent on the capacity of large, indivisible capital investments. For example, in the case of water, these large capital investments may include dams, desalination plants, treatment plants and transmission pipeline. Once a utility has incurred the cost of building such infrastructure, marginal cost is much lower than the average cost of supply.^b This means that, if prices are set at marginal cost, the utility may not recover its costs. This will impact on the utility's incentive to invest in the business in the future.

For this reason, it is generally accepted that pricing of monopoly services is efficient if it meets the following objectives:

- ▼ it signals to consumers the costs imposed (or avoided) if they increase (or reduce) their consumption by a small amount
- ▼ it allows utilities to recover the efficient cost of service provision and recover these costs with the least harm to economic efficiency.

In most circumstances, a 2-part tariff is considered the most efficient price structure for monopoly services, as it comprises a single usage charge (set at the marginal cost of supply) and a fixed charge (to recover the remaining revenue requirement). A fixed charge is considered an efficient means of recovering the difference between average costs and marginal costs, because it is levied independently of usage and does not distort the pricing signal set by the usage charge.

^a Marginal cost should include all marginal social (or full economic) costs – including costs accruing to third parties (ie, those external to the transaction).

^b Marginal cost can be low for long periods of time. However, as capacity is taken up, marginal cost increases as the next augmentation approaches (and may exceed average cost).

3.2 Metropolitan water

Water prices

For metropolitan water, our practice has been to set geographically uniform (or 'postage stamp') prices. This does not have a major impact on the effectiveness of the price signal, as the cost of a metropolitan water utility supplying water within its area of operations does not vary significantly with location.

The relationship between fixed and usage charges is of greater significance. In recent determinations of prices for metropolitan water utilities, our practice has been to set their water usage charge with reference to estimates of the Long Run Marginal Cost (LRMC) of water supply, with the fixed charge often used to recover the water utilities' residual cost. LRMC represents the incremental cost of delivering new measures to bring supply and demand into balance over the longer-term.

Usage charges have been set with reference to LRMC rather than Short Run Marginal Cost (SRMC), as water supply systems in Sydney, the Central Coast and the Hunter have faced capacity constraints. These usage charges therefore provide water consumers with a signal of the costs of future supply augmentation measures associated with additional consumption, and help promote water conservation and demand management measures (where efficient).²⁰

The costs of expected environmental regulatory requirements associated with supply augmentation measures are generally included in LRMC estimates. However, any environmental impacts residual to these regulatory requirements (ie, externalities) are not. For example, the impact of a new dam on in-stream water quality and river life (net of any mitigation achieved through environmental regulatory requirements) would not normally be factored into our estimates of LRMC.

Minimum environmental flow requirements will be factored to some extent into LRMC estimates and hence usage prices. This is because, all other things being equal, higher mandated environmental flow requirements of a supply system will require earlier delivery of water supply augmentation measures, which will increase LRMC (and therefore usage prices).

²⁰ Further, our practice of setting usage charges with reference to LRMC and fixed charges to recover the utility's remaining revenue requirement is consistent with COAG National Water Initiative Pricing Principles, as agreed in April 2010 (see: www.environment.gov.au/water/publications/action/pubs/nwi-pricing-principles.pdf).

Wastewater or sewerage prices

As with water prices, we set postage stamp prices for wastewater (or sewerage) services. This weakens the effectiveness of price signals to some extent, as the cost of transporting, treating and disposing of wastewater can vary quite significantly by area. In particular, the cost of treatment and disposal is usually significantly higher in inland areas, where environmental protection licences often require tertiary treatment before wastewater can be discharged to inland rivers. Coastal discharges, particularly via deep ocean outfalls, often require a lower level of treatment.

We recognise that postage stamp pricing can result in a significant wedge between prices and costs in particular areas. However, it enjoys significant community support. Developer charges previously signalled where costs differed, to promote more efficient patterns of development. These were removed by the then NSW Government in 2008.

For Sydney Water and Hunter Water, our current practice is to set only a fixed sewerage charge for residential customers, and a fixed and usage charge for non-residential customers. We set a usage charge for non-residential customers because they:

- ▼ often discharge larger volumes of sewage than residential customers
- ▼ are more likely to have a higher level of discretionary discharges, and hence may be more likely to respond to a price signal.

As much as possible, we have attempted to align non-residential fixed and usage charges with the utility's fixed and variable costs of providing these wastewater services (including their fixed and variable environmental regulatory costs).

Box 3.2 below provides an outline of issues associated with the determination of sewerage prices for Hunter Water at its last price review. This includes reasons for its move away from usage charges for residential customers, and the extent to which environmental standards increased its usage charge for non-residential customers.

Box 3.2 2009 determination of Hunter Water's sewerage charges

Prior to the 2009 determination of its prices, Hunter Water had a fixed and usage charge for residential customers (as well as non-residential customers). However, residential sewerage usage, in terms of kL discharged, was not directly measured. Rather, it was assumed to be 50% of a customer's metered water consumption.

Residential usage charge

At the 2009 determination, Hunter Water argued against continuation of its residential usage charge on the grounds that:

- ▼ little water conservation (or reduced wastewater discharge) was achieved due to the low price signal and the high level of non-discretionary sewerage discharge (eg, toilet flushing) for the majority of customers
- ▼ increased recycling and rainwater use (eg, due to the introduction of BASIX) meant that metered water use was not always a reliable proxy for sewer use. In turn, this meant that properties that discharged rainwater or recycled water to the sewer paid less, even when they discharged the same.

We accepted Hunter Water's arguments, and we noted that the application of a fixed sewer service charge only for residential customers recognises the predominantly fixed costs associated with the pipes, pumping stations and treatment works used to provide sewerage services.

Non-residential usage charge

We also accepted Hunter Water's proposal to maintain its sewer usage charge for non-residential customers, and to increase this charge by 27% over the 4 year determination period.

We considered that non-residential customers should continue to pay a usage charge to reflect the often larger volumes of sewage that some businesses discharge.

We also noted that the 27% increase in the non-residential usage charge reflects higher costs of sewage treatment, driven by requirements of the Department of Environment, Climate Change and Conservation.

Source: IPART, *Review of prices for water, sewerage, stormwater and other services for Hunter Water Corporation*, July 2009, pp 139 – 143.

Trade waste charges

Metropolitan water utilities such as Sydney Water and Hunter Water also levy a range of trade waste charges, including agreement and inspection fees, a high-strength charge, a phosphorus charge, and a sulphate charge.

Trade waste charges are intended to reflect the higher costs (including environmental regulatory requirements) and risks associated with trade waste discharges compared to domestic sewage.

For example, Hunter Water's trade waste heavy metal charge is levied per kilogram of heavy metal discharged into its sewerage system, and reflects treatment requirements and load based licensing fees imposed by the Office of Environment & Heritage (OEH).²¹

In 2003, IPART defined a set of trade waste pricing principles, which we have continued to apply in pricing determinations. These principles are as follows:

- ▼ standards for acceptance of trade waste should be set on the basis of the capacity of current systems to treat wastes
- ▼ trade waste charges should at least cover the costs to the water supplier of handling these wastes
- ▼ charges should vary to reflect differences in the cost of treating waste to the required standards at particular locations
- ▼ water suppliers should set charges and standards in a manner that is transparent and accurate, and the basis for setting charges should reflect costs incurred as far as possible.²²

Under our current approach, a water utility's efficient costs of complying with OEH licence requirements, including discharge limits and load based licensing fees, will be reflected in its trade waste and sewerage prices. However, to the extent that there are any residual environmental impacts of wastewater discharges, and the social cost of these discharges is greater than load based licensing fees paid, then environmental damage will not be totally reflected in wastewater prices.

3.3 Bulk water

State Water and the NSW Office of Water (on behalf of WAMC)

Our most recent determinations of prices for State Water (2010) and the NSW Office of Water (NOW) (2011) set two-part tariffs, by valley, comprised of:

- ▼ a fixed charge per ML of water entitlement
- ▼ a usage charge per ML of water extracted.

For NOW, prices were set in most valleys so that 70% of forecast revenue from the 2-part tariff is recovered from the fixed charge and 30% of revenue via the usage charge. For State Water, the ratio of revenue to be recovered from fixed charges relative to usage charges was 40:60, except for the North Coast and Hunter Valleys where the ratio was 60:40.

²¹ Formerly the NSW Department of Environment, Climate Change and Water (DECCW).

²² See: IPART, *Review of prices for water, sewerage, stormwater and other services for Hunter Water Corporation* - Final Report, July 2009, p 148.

These price structures for NOW and State Water do not closely match their underlying cost structures. NOW argued that its costs are independent of the level of water extracted, and that its costs are more closely related to entitlement volumes – as it is the entitlement system that it is administering and protecting. For instance, it noted that during droughts, and hence lower levels of water extraction, its costs actually increase. State Water’s costs are also likely to be mostly fixed, in the sense that they would not vary significantly with the actual volume of water extracted from the river. Therefore, its usage charges are set above its marginal costs of water supply.

In arguing for a fixed charge only, NOW also noted that traded water prices (where trading of water entitlements is possible, which is most of NSW) provide a signal of the scarcity value or opportunity cost of water.

Regardless, we favoured 2-part tariffs for NOW and State Water, as they:

- ▼ share water availability risk between these agencies and water entitlement holders – as they allow entitlement holders to face lower bills during time of lower water availability or usage
- ▼ give some conservation or scarcity signal to water users, irrespective of the ability to trade water
- ▼ provide some recognition that, at certain thresholds, bulk water management and supply costs may be positively related to water extractions.

The Sydney Catchment Authority (SCA)

For the most recent determination of SCA’s prices (2009), we maintained its 2-part tariff to Sydney Water (which consumes about 99% of SCA’s supply) so that approximately 40% of its revenue is derived from its fixed charge, and 60% of its revenue is obtained via its usage charge.

This means that the usage charge was set above estimates of SCA’s Short Run Marginal Cost (SRMC) of supply, but below estimates of both its LRMC and the desalination plant’s marginal operating costs (the desalination plant is a competing supply source, which has a higher SRMC of supply). SCA argued that:

- ▼ at that stage, it was not possible to accurately estimate SCA’s LRMC, as decisions on future SCA supply augmentation projects were to be made by the Government in finalising the next version of the Metropolitan Water Plan (which had not yet been released)
- ▼ given the magnitude of recent estimates of SCA’s LRMC, SCA would over-recover if its usage charge was set equal to its LRMC.

Our 2009 determination also noted our interest in the potential development of a form of ‘scarcity pricing’, as outlined in Box 3.3 below. We decided, however, not to implement a form of scarcity pricing at that time, because development and implementation of this option should be informed by reviews that were due to be

completed during the 2009 determination period, including the review of the water restriction regime, release of the updated Metropolitan Water Plan, and release of the operating rules for the desalination plant.

In its recent report for the National Water Commission, Frontier Economics noted the potential benefits of scarcity pricing (and other options to ensure the efficient use of water). It consequently recommended that:

...further detailed work in each jurisdiction should be undertaken to assess the potential role of administered scarcity pricing and other options to ensure pricing contributes to economically efficient water use, sourcing decisions and new investment decisions. Jurisdictions should consider administered scarcity pricing in the context of movements toward more market-determined prices and greater customer choice in their preferred level of supply security. Ultimately, the most effective way of enabling more efficient pricing of water that reflects its underlying scarcity value may be directly through the development of workable urban bulk water markets in metropolitan areas.²³

Our upcoming review of prices for the SCA will again consider the issue of scarcity pricing (see IPART's July 2011 Issues Paper for this review).

Box 3.3 Scarcity pricing for the SCA: extract from IPART's 2009 determination of SCA's prices

IPART is particularly interested in the potential development of a form of 'scarcity pricing', as a complement to (not replacement for) water restrictions. Under such an approach, SCA's volumetric charge to Sydney Water would vary with dam levels and the relative scarcity of SCA's available water supply. This may or may not be linked to a form of scarcity pricing for Sydney Water's customers – although if scarcity pricing is passed through to retail customers, IPART envisages that it would apply to discretionary levels of water consumption.

A form of scarcity pricing would have the advantage of recognising that as SCA water becomes more (or less) scarce, the opportunity cost of using water for immediate consumption increases (or decreases). In turn, this may help to:

- ▼ signal to Sydney Water the points in time when it is more appropriate to draw on alternative sources (such as desalination)
- ▼ provide incentives to Sydney Water to invest in additional water conservation and demand management measures, where efficient
- ▼ signal to water consumers the scarcity value of water (meaning that they may have an incentive to reduce discretionary consumption when dam levels are low) – if this price is ultimately passed through to these consumers by Sydney Water.

Source: IPART, *Review of prices for the Sydney Catchment Authority from 1 July 2009 to 30 June 2012*, June 2009, p 85.

²³ Frontier Economics, *Efficient water resource pricing in Australia: an assessment of administered scarcity pricing in urban areas*, for the National Water Commission, April 2011, p ix.

3.4 Electricity

For electricity retailers, we do not set the level of individual prices. Rather, we determine the maximum percentage by which each retailer can increase its average regulated price. The retailers can adjust the level and structure of individual prices as they see fit, provided that the average percentage increase is not more than the maximum percentage we set.

To determine each retailer's average regulated prices, we estimate their network costs, energy costs and retail costs. Energy costs are comprised of purchase costs – which are based on our estimates of the LRMC of supply or market-based purchase costs – and the costs complying with several 'green' (or climate change mitigation) schemes, as required by the Federal and NSW Governments.

We allow electricity retailers to set their own individual prices (and hence price structures), as:

- ▼ there is a strong incentive for retailers to reduce their risk by setting their price structure to match their cost structure
- ▼ the retailer is best placed to match its cost structure to its price structure.

4 Making recommendations in our reports

As discussed in chapter 2, a potential disadvantage of our current approach is that it effectively assumes there are no gaps or deficiencies in the environmental regulatory framework and that environmental regulatory requirements are optimally set.

However, to overcome this, we have used our reports accompanying price determinations to make recommendations to Government where we have identified deficiencies in the environmental regulatory framework.

These recommendations have usually arisen from the consultation and analysis we carry out during the price review. They have related to a range of issues, including:

- ▼ gaps in the environmental regulatory framework
- ▼ concerns with the efficiency of environmental regulatory requirements.

Examples are discussed below.

4.1 Identifying a gap in the environmental regulatory framework

In 1994, with the emergence of greenhouse gas emissions from electricity generation as a significant environmental concern, we identified a number of potential schemes to reduce these emissions, including 'green taxes' or price adjustments, tradeable demand management credits, appliance and building standards information, and education programs.²⁴

However, we noted that:

These policies are best considered by Commonwealth and State Governments, rather than by an independent pricing regulator such as the Tribunal, and will be more effective if they are part of an integrated national environmental policy. National coordination will increase the effectiveness of environmental policy and reduce the costs to the economy.²⁵

²⁴ IPART, *Price Regulation and Demand Management*, 1994, p 3 and 33.

²⁵ IPART, *Paying for electricity, An Interim Report*, 1994, p 7.

Rather than try to include the social cost of greenhouse gas emissions in prices, we sought to ensure that the structure of electricity prices and the form of price regulation did not create impediments to any program introduced by the Government. We therefore proposed to remove regulatory barriers to demand management or renewable energy, and proposed a form of revenue cap to weaken incentives for distributors to sell more electricity.²⁶

4.2 Identifying concerns with the efficiency of the environmental regulatory requirements

Our recent draft report on *Changes in regulated electricity retail prices from 1 July 2011* is an example of how we have used our reports to identify concerns and make recommendations regarding the efficiency of specific regulatory requirements.

This draft report expressed concern with the efficiency of the current regime of 'green' energy schemes. It stated that:

We consider that both the Federal and NSW Government's schemes that promote the installation of rooftop solar generation units promote high-cost abatement. The carbon reduction achieved by these schemes will cost electricity customers and taxpayers significantly more than if the same level of reduction was achieved by an alternative, less expensive means.²⁷

Our concerns with the efficiency of these schemes did not affect how their costs were passed through to retail electricity prices. However, our draft report recommended that the NSW Government consider options to limit future increases in green scheme costs by ensuring that only the most cost-effective options are adopted in the future, and to consider:

- ▼ closing the NSW Solar Bonus Scheme to new participants
- ▼ requiring electricity retailers to contribute to the costs of the Solar Bonus Scheme for existing participants
- ▼ advocating that the Federal Government eliminate the solar credits multiplier from its Renewable Energy Target Scheme
- ▼ tightening the activities funded under the Energy Saving Scheme and removing the showerhead installation program from the scheme
- ▼ periodically evaluating all green schemes to ensure they remain cost-effective and complement any national price-based carbon reduction scheme.

²⁶ IPART, *Paying for electricity, An Interim Report*, 1994, p 7.

²⁷ IPART, *Changes in regulated electricity retail prices from 1 July 2011 - Electricity Draft Report*, April 2011, p 86.

Subsequent to our Draft Report, the State and Federal Governments have acted as follows:

- ▼ the NSW Government closed its Solar Bonus Scheme and announced that it will ask IPART to set a subsidy-free fair value for a feed-in tariff for future customers installing solar photo voltaic (PV) units
- ▼ the NSW Government announced that IPART is to review the feed in tariff for solar systems and the amount that retailers should redistribute to the NSW Government to offset the costs of the Solar Bonus Scheme for existing participants
- ▼ the Federal Government reduce more rapidly its solar credits multiplier under the Renewable Energy Target Scheme.

No longer applicable

5 Approaches of other economic regulators

This chapter compares our approach to addressing environmental issues in price determinations to those of other economic regulators, primarily in Australia and the UK, and considers significant points of difference.

5.1 Our approach compared to other economic regulators

Our approach to addressing environmental issues appears to be largely consistent with those of other economic regulators in Australia (see Appendix C). That is, most economic regulators allow for the efficient and prudent costs of complying with environmental regulatory requirements.

Other jurisdictions also provide government subsidies to services such as public transport. However, there often appears to be little transparency or explanation as to how these subsidies are determined. Our approach of estimating the external benefits of public transport provides rigour and transparency around the setting of the user share of costs and the recommended government subsidy.

5.2 Instances where other economic regulators have gone further to address environmental issues

Some economic regulators in the UK appear to be going further than merely allowing for the efficient and prudent costs of complying with environmental regulatory requirements.

In the UK, there is some evidence that economic regulators are:

- ▼ assessing customers' willingness to pay for environmental outcomes that may be above or outside those mandated by environmental legislation/regulations
- ▼ taking a more proactive position by aiming to provide incentives for regulated entities to develop innovative and efficient means of reducing greenhouse gas emissions.

These 2 approaches are considered further below.

In this context, we note that there are some significant differences between the regulatory environments in the UK and here. In the UK:

- ▼ the likes of Ofgem and Ofwat are national regulators, who can therefore view and address issues from a national perspective
- ▼ there are a larger number of regulated firms, which allows for the use of regulatory tools such as cost and performance benchmarking
- ▼ there are stronger statutory obligations in regard to consumer interests – eg, 1 of Ofwat’s 3 primary duties relates to furthering the interests of consumers²⁸
- ▼ there appears to be more political consensus around climate change, and hence the policy framework appears more settled and established.

Assessing customers’ willingness to pay for outcomes greater than those mandated by environmental regulators

The first option above has some appeal. However, as discussed in Chapter 2, it can be difficult to demonstrate customer willingness to pay and to justify an increase in prices to achieve a standard greater than that mandated by the environmental regulator.

Regardless, we would cautiously consider allowing a price increase to achieve environmental outcomes or standards greater than those mandated by environmental regulations, provided sufficient justification for such an increase was provided. We would require:

- ▼ robust and comprehensive evidence of customers’ willingness to pay
- ▼ an explanation as to why such an outcome or standard has not been targeted by environmental regulation
- ▼ evidence that the additional expenditure is prudent and efficient
- ▼ sufficient measures in place to ensure that the additional revenue is spent to achieve the agreed environmental outcome.

Providing incentives for environmental innovation

In terms of the second option above, we note that we have generally allowed for expenditure that is shown to be prudent and efficient when setting prices. There may therefore be justification for additional expenditure to achieve greater than (currently) mandated environmental standards if the utility can make a sufficient case that the expenditure is prudent and efficient, and that customers will therefore ultimately benefit through lower prices over a reasonable time period (eg, due to the need to invest in assets of an optimal scale).

²⁸ Department for Environment Food and Rural Affairs, *Review of Ofwat and consumer representation in the water sector*, 2011, p 18.

However, Ofgem has gone further by establishing an innovation fund to fund measures aimed at reducing greenhouse gas emissions (see Appendix E). The rationale for this is that the UK is moving to a low carbon economy, and that innovative measures to reduce greenhouse gas will likely ultimately benefit consumers through lower prices.

We note that there are already several national and state-based environmental innovation funds in Australia, and that there is already a strong case for centralisation and consolidation of these funds.²⁹ Investment in achieving environmental outcomes should be directed to the least cost or most efficient options from a whole of economy or environment perspective (depending on the scale of the environmental issue or objective).

As we only regulate some utilities and some sectors, we are not as well placed as a more centralised body to ensure the efficient allocation of innovation funding. We consider that this is best done by a centralised body, such as the Commonwealth and State Governments, rather than an independent pricing regulator such as IPART.

²⁹ In his review of climate change programs, Wilkins states: “the consequences of many jurisdictions pursuing the same or competing goals in the same policy space (whether it be climate change or some other area) is likely to lead to duplication, complexity, wasted resources and questionable results.” (Roger Wilkins AO, *Strategic review of Australian Government Climate Change Programs*, July 2008, p 32.)

6 Implications for future IPART determinations

This chapter outlines the approaches we are likely to take, and issues we are likely to consider, in addressing environmental impacts in future price determinations.

This shows that we consider our current approaches largely appropriate, but that there is scope for potential enhancement by engaging more with environmental regulators and also more clearly explaining our consideration of environmental impacts in reports accompanying our determinations.

This chapter also shows that, while we would be cautious, we would consider allowing higher prices to achieve environmental outcomes beyond those mandated if sufficient evidence and justification was provided.

6.1 Maintain the key elements of our current approach

We consider that our current approach to addressing environmental impacts in pricing determinations is largely appropriate.

This approach largely relies on the requirements of environmental regulators to ensure that market failure associated with environmental impacts is appropriately addressed. These regulators are best placed to address environmental issues, as they have the responsibility and expertise for such matters, and are able to take a holistic approach.

This means that we are likely to continue to address environmental issues in our pricing determinations primarily by:

- ▼ allowing for the efficient and prudent costs of complying with environmental regulatory requirements, when determining a utility's notional revenue requirement for the purposes of setting prices
- ▼ recommending that public transport modes be subsidised by an amount equal to the value of their respective positive externalities
- ▼ making recommendations to Government and/or environmental regulators if we consider environmental regulatory requirements may not be efficient.

6.2 Engaging more with environmental regulators

However, we also consider there is some scope to enhance our approach by engaging more with environmental regulators – where an environmental regulatory requirement has a significant impact on prices or where we have concerns about the efficiency of the regulatory requirement.

Given the relationship between environmental regulatory standards and the prices that we regulate, both IPART and key environmental regulators could benefit from more engagement with each other, primarily via sharing of information. For instance, we could:

- ▼ review and provide comment on the environmental regulator's cost benefit analysis underpinning its regulatory proposal, where this proposal is likely to affect the costs of an agency also regulated by IPART
- ▼ provide the environmental regulator with an indication of the impact of its requirements on prices (as a cross-check against its original cost benefit analysis or regulatory impact statement)
- ▼ ask for more information on the objectives of the regulatory instrument and why it was favoured over other potential options
- ▼ query whether the environmental regulator has a view on the regulated agencies' forecast costs of complying with its requirements – for example, whether it considers these cost estimates are reasonable or efficient, taking into account all feasible options available to achieve compliance (to inform our assessment of the regulated agencies' efficient and prudent costs of compliance).

Over time, such interaction could enhance the information and processes of IPART and the environmental regulators, thus leading to better environmental and economic regulatory outcomes.

Ideally, such interaction with key environmental regulators would be formalised via a Memorandum of Understanding (MoU). In this context, we note that Ofwat, the economic regulator of the water and sewerage industry in the UK, has a MoU with the Environment Agency (the environmental regulator). The MoU sets out principles that guide relations between the two agencies, including principles for:

- ▼ roles and responsibilities
- ▼ their working relationship
- ▼ treatment of matters of common interest
- ▼ exchange of information (in both directions), and
- ▼ disputes.³⁰

³⁰ www.environment-agency.gov.uk/static/documents/Research/eaofwatmou_1901043.pdf.

We will therefore endeavour to engage more with key environmental regulators, such as the NSW Office of Environment and Heritage (OEH), possibly via MoUs.

6.3 Considering higher prices to achieve environmental outcomes greater than those mandated by environmental regulation

If sufficient evidence and justification was provided, we would cautiously consider allowing a price increase to achieve environmental outcomes or standards greater than those mandated by environmental regulations.

At a minimum, we would require:

- ▼ robust and comprehensive evidence of customers' willingness to pay
- ▼ an explanation as to why such an outcome or standard has not been targeted by environmental regulation
- ▼ evidence that the additional expenditure is prudent and efficient
- ▼ sufficient measures in place to ensure that the additional revenue is spent to achieve the agreed environmental outcome.

For instance, our recent Issues Paper on our upcoming review of prices for Sydney Water Corporation considered the issue of allowing price increases to achieve environmental standards greater than those mandated by government or environmental regulators. In doing so, it referred to the example of a proposed program for Sydney Water to become carbon neutral. The Issues Paper stated:

In deciding whether to allow any expenditure above the level required by legislation and government standards to be included in our allowance for revenue to be recovered from customers, we would expect that Sydney Water can show broad community support for such expenditure.³¹

6.4 Clearly explaining how we have considered environmental issues in each price determination

Finally, although not discussed in earlier chapters, we also consider that there is benefit in ensuring that, for each price review:

- ▼ the issue of environmental impacts, and our potential treatment of them, is clearly addressed in our Issues Paper
- ▼ our Final and Draft Reports clearly and comprehensively explain how we have considered and addressed environmental impacts in the determination.

We will endeavour to ensure that our consideration and discussion of environmental impacts in our reports is proportionate to these impacts.

³¹ IPART, *Review of prices for Sydney Water Corporation's water, sewerage, stormwater and other services from 1 July 2012 - Issues Paper*, June 2011, p 61.

No longer
applicable

Appendices

No longer
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A Matters to be considered by IPART when making determinations under the IPART Act

As noted in Chapter 1, IPART regulates some industries under the *Independent Pricing and Regulatory Tribunal Act 1992* (the IPART Act), and other industries under different legislation (see Table 1.1 in Chapter 1).

Under Section 15(1) of the IPART Act, we are required to consider a range of matters when making determinations and recommendations under this Act. Section 15(1) of the IPART Act is listed below.

Independent Pricing and Regulatory Tribunal Act 1992, Section 15(1):

(1) In making determinations and recommendations under this Act, the Tribunal is to have regard to the following matters (in addition to any other matters the Tribunal considers relevant):

- (a) the cost of providing the services concerned,
- (b) the protection of consumers from abuses of monopoly power in terms of prices, pricing policies and standard of services,
- (c) the appropriate rate of return on public sector assets, including appropriate payment of dividends to the Government for the benefit of the people of New South Wales,
- (d) the effect on general price inflation over the medium term,
- (e) the need for greater efficiency in the supply of services so as to reduce costs for the benefit of consumers and taxpayers,
- (f) the need to maintain ecologically sustainable development (within the meaning of section 6 of the *Protection of the Environment Administration Act 1991*) by appropriate pricing policies that take account of all the feasible options available to protect the environment,
- (g) the impact on pricing policies of borrowing, capital and dividend requirements of the government agency concerned and, in particular, the impact of any need to renew or increase relevant assets,
- (h) the impact on pricing policies of any arrangements that the government agency concerned has entered into for the exercise of its functions by some other person or body,
- (i) the need to promote competition in the supply of the services concerned,
- (j) considerations of demand management (including levels of demand) and least cost planning,
- (k) the social impact of the determinations and recommendations,

(l) standards of quality, reliability and safety of the services concerned (whether those standards are specified by legislation, agreement or otherwise).

No longer applicable

B The environment, externalities and market failure

The efficient allocation and use of resources

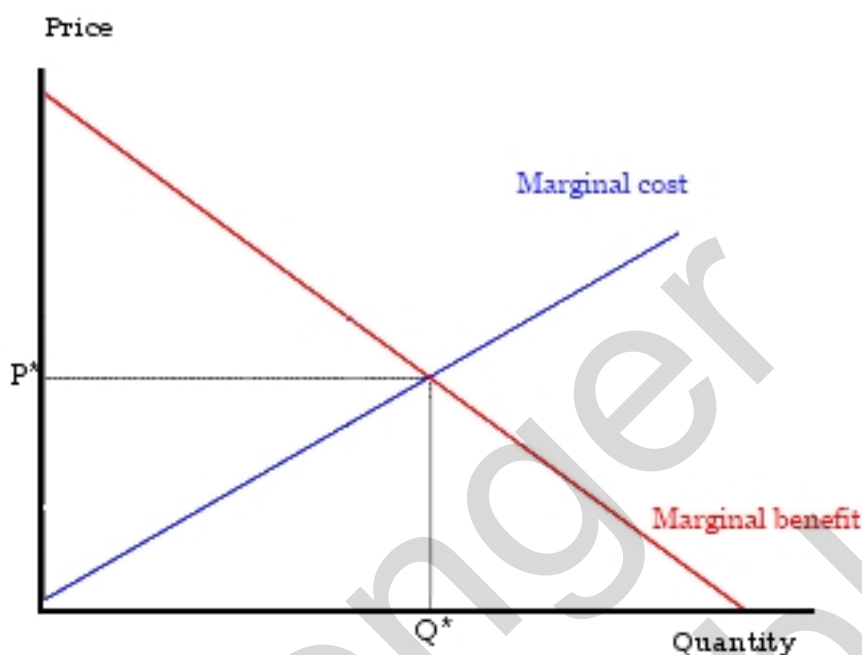
Total net benefit to society will be maximised at the level of output where marginal benefit equals marginal cost or, in other words, at the level of output where demand equals supply. This point of maximum net benefit is quantity or output level Q^* in Figure B.1.

At output less than Q^* , increasing quantity increases benefits by more than it increases costs (marginal benefit is greater than marginal cost), therefore there is merit in increasing output. At output greater than Q^* , reducing quantity reduces costs by more than it decreases benefits, therefore there is benefit in decreasing output. At output level Q^* , marginal benefits and marginal costs are equal and it is impossible to increase net benefits by changing quantity.

The marginal cost curve is upward sloping to reflect the relationship between the costs of supply and output (ie, as output increases so does the supplier's costs). The marginal benefit curve is also known as the demand curve, as it represents marginal willingness to pay. The marginal benefit (demand) curve slopes downwards as the greater the level of consumption of a good, the less people are willing to pay for an additional unit of the good.

Adam Smith's Invisible Hand theory suggests that, acting in their own self-interests, market participants will equate marginal benefit and marginal cost (demand and supply), and therefore maximise net benefit to society. Notably, this assumes that private marginal benefits are identical to social marginal benefits and that private marginal costs are equal to social marginal costs.

In reality, however, there is often a divergence between private marginal benefits and social marginal benefits and/or between private marginal costs and social marginal costs. This means that market forces do not maximise net social benefits by equating marginal social benefits with marginal social costs.

Figure B.1 Market Equilibrium

Market failure

Where there is a divergence between private and social marginal costs or benefits – and output therefore is not at a level where marginal social cost equates to marginal social benefit – ‘market failure’ is said to occur. Categories of market failure include externalities, imperfect competition, imperfect information and public goods.

Externalities

Externalities are the form of market failure most often associated with environmental impacts. An externality is a side effect on a 3rd party (external to the transaction) associated with production or consumption of a good or service. An externality can be negative (an external cost) or positive (an external benefit).

In general terms, externalities exist when individuals or firms make decisions that do not factor in the benefits and costs imposed on other parties. From society’s perspective, externalities can lead to people undertaking too much or too little of an activity.

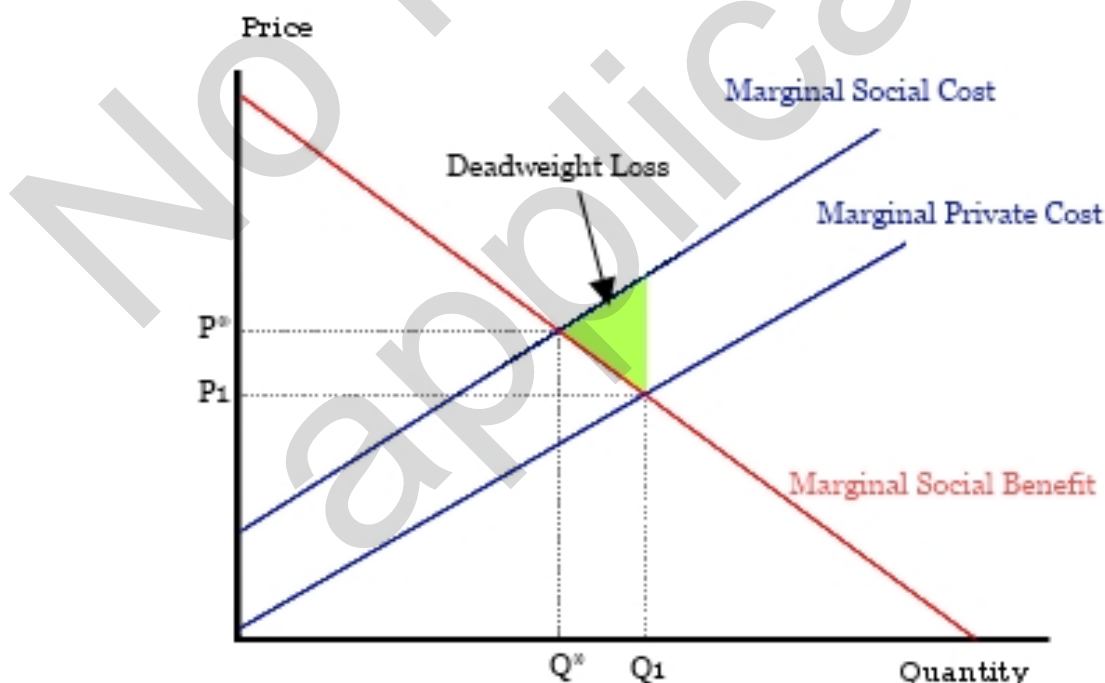
Negative externalities

A negative externality is a cost that arises when an activity or transaction between 2 parties imposes a loss on a 3rd, without any compensation to the 3rd party. That is, a negative externality arises when the private cost of consumption or production is less than the social cost. Pollution is often cited as an example of a negative externality, as it imposes costs on third parties, and these costs are often not faced by the polluter. Examples include carbon emissions from an electricity generator and wastewater discharges into river systems from sewage treatment plants.

A producer generally makes its production decisions by equating marginal private cost with marginal private benefit. Therefore, if the private costs faced by the producer are less than the social costs of producing the good (eg, due to the presence of pollution), the market level of production will be Q_1 in Figure B.2. This is greater than the socially optimum level of output of Q^* (where marginal social cost is equal to marginal social benefit).

For output between Q^* and Q_1 , the social costs of the good are greater than the social benefits associated with the good. The excess cost is the shaded area in Figure B.2 and represents the costs to society of having this higher than optimal level of output, also known as 'deadweight loss'.

Figure B.2 Market Failure: Marginal Social Cost greater than Marginal Private Cost

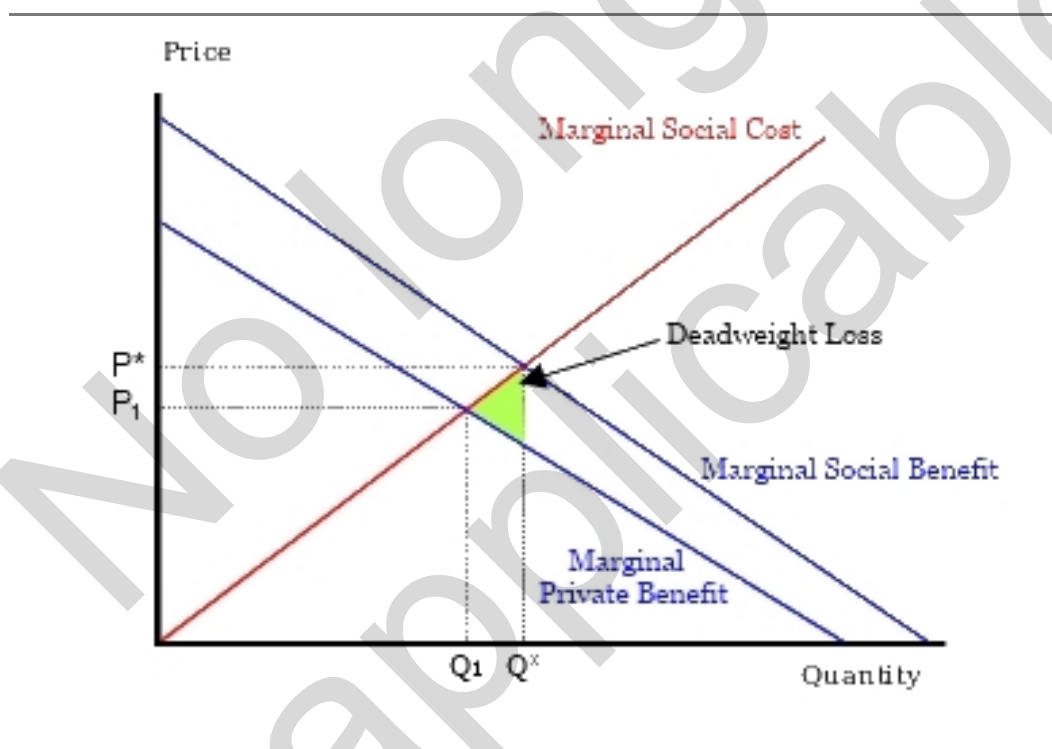


Positive externalities

A positive externality is a benefit that arises when an activity or transaction between 2 parties imposes a gain on a 3rd, without any payment by the 3rd party. That is, a positive externality occurs when the private benefits of consumption or production are less than the social benefits.

For example, when suburban landowners generate private benefits by planting trees, they also generate social benefits by reducing erosion, increasing air quality and improving neighbourhood aesthetics. However, since landowners make the tree-planting decision by equating marginal private cost and marginal private benefits, the market level of suburban trees will be Q_1 in Figure B.3, whereas the optimal level is Q^* .

Figure B.3 Market Failure: Marginal Social Benefit greater than Marginal Private Benefit



Other categories of market failure

In addition to externalities, other categories of market failure include:

- ▼ **Imperfect competition** – where the individual actions of particular buyers or sellers have an effect on market price. In the case of a monopolist, there is a divergence between marginal revenue (marginal private benefit) and marginal social benefit (demand). This means that the profit maximising level of output for the monopolist is less than optimal. In recognition of such market failure, IPART is responsible for regulating the prices of several monopoly services in NSW.
- ▼ **Imperfect information** – where consumers or producers or both do not know the true costs or benefits associated with the good or activity. In these instances, we would not expect the market to equate marginal social benefits with marginal social costs.
- ▼ **Public goods** – which are goods that are characterised by non-rivalry and non-excludability in consumption. Non-rivalry means that one individual's consumption of the public good does not diminish the amount of the good available for others to consume. Non-excludability means that if one person has the ability to consume the public good, then others can't be excluded from consuming it. The climate is an example of a public good.

C Principles and processes for best practice regulation

Best practice regulation³²

At a general level, good regulation:

- ▼ must be fully justified and effective – directed at solving a problem that cannot be more efficiently or effectively addressed by the market or by individuals acting without government intervention
- ▼ must provide the greatest net benefit or lowest net cost to the community, given its objective, out of all the options or alternatives available
- ▼ should be clear and concise, and readily accessible and understandable to those affected by it
- ▼ should be consistent with other laws or regulations
- ▼ must be enforceable, and enforcement regimes should be efficient, cost effective, and proportional to the issue addressed by the regulation
- ▼ should be administered by accountable bodies in a fair and consistent manner, and
- ▼ should not be unduly prescriptive – ie, where possible it should be specified in terms of performance goals or outcomes and be flexible enough to accommodate different or changing circumstances to enable the most cost effective ways of complying.

³² IPART, *Investigation into the Burden of Regulation in NSW and Improving Regulatory Efficiency - Issues Paper*, January 2006, p 23.

Achieving best practice regulation

Good process is the key to achieving best practice regulation. The elements of good process involve determining that a problem exists for which regulatory action is justified by:

- ▼ identifying the problem and desired objective(s) or outcome(s)
- ▼ considering the options (regulatory and non-regulatory) for achieving the desired outcome(s)
- ▼ assessing the impacts (costs and benefits) of each option for consumers, business, government and the community
- ▼ deciding among the alternatives, on the basis of transparent criteria, and
- ▼ developing a strategy to implement, enforce and review the preferred regulatory action and its operation.

D Section 6 of the Protection of the Environment Administration Act 1991

Section 15(1)(f) of the IPART Act

As noted in section 1.2.1 and Appendix A, section 15(1)(f) of the IPART Act refers to:

...the need to maintain ecologically sustainable development (within the meaning of section 6 of the *Protection of the Environment Administration Act 1991*) by appropriate pricing policies that take account of all feasible options available to protect the environment.

Section 6 of the Protection of the Environment Administration Act 1991

Section 6 of the *Protection of the Environment Administration Act 1991* refers to **ecologically sustainable development** as follows:

...ecologically sustainable development requires the effective integration of economic and environmental considerations in decision-making processes. Ecologically sustainable development can be achieved through the implementation of the following principles and programs:

(a) the precautionary principle—namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

In the application of the precautionary principle, public and private decisions should be guided by:

(i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and

(ii) an assessment of the risk-weighted consequences of various options,

(b) inter-generational equity—namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,

(c) conservation of biological diversity and ecological integrity—namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,

(d) improved valuation, pricing and incentive mechanisms—namely, that environmental factors should be included in the valuation of assets and services, such as:

(i) polluter pays—that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,

(ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,

(iii) environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

No longer
applicable

- E How other economic regulators consider the environment in their pricing decisions and determinations – preliminary findings

No longer
applicable

Table E.1 Overview of how other economic regulators consider the environment in their pricing decisions and determinations

Regulator/sector	Approach
Ofgem: electricity and gas (UK)	<p>Electricity:</p> <p>Established energy efficiency levy (which funds energy efficiency measures)</p> <p>Adopted hybrid revenue cap (which reduces financial disincentives for demand management and energy efficiency measures)</p> <p>Conducted market research and established a customer panel to gain understanding of the views of customers/stakeholders. This shows that customers value actions aimed at addressing greenhouse gas emissions and climate change.³³</p> <p>Indicated that it will introduce 'environmental incentives' via the Sustainable Network Regulation.</p> <p>Recent electricity price determination 2010-2015 (DPCR5) included mechanisms for rewarding and penalising utilities if environmental standards were not met. Ofgem rewards or penalises distribution network operators at a rate of 60 pounds sterling per MWh for meeting energy loss targets based on historic performance.</p> <p>Has established a Low Carbon Networks Fund, which will provide £500 million over 5 years to network operators to test new technology, operating and commercial arrangements aimed at reducing carbon emissions (and to allow the UK to transition to a low carbon economy at least cost). The objective of this fund is to imitate unregulated industries incentives to innovate.</p> <p>Has allowed for cost of undergrounding in 'Areas of Outstanding Natural Beauty', where there is sufficient indication of customers' willingness to pay, as determined using market research.</p> <p>Gas:</p> <p>Has a reward scheme of £4 million per annum for utilities that achieve a range of outcomes, including improved environmental impact of gas distribution. This scheme will be funded by consumers. A multi-disciplinary panel will decide who will receive this reward and why.³⁴</p> <p>Penalises gas distribution networks for excessive gas leakage, using the Department for Environmental Food and Rural Affairs shadow price of carbon.</p>
Ofwat: water (UK)	<p>Allows efficient expenditure to meet environmental standards</p> <p>Where proposed expenditure does not relate to statutory requirements, looks at indications of customer willingness to pay. For example, as part of a recent price determination (<i>Future water and sewerage charges 2010-15: final determinations</i>), Ofwat carried out a survey to assess customers willingness to pay for proposed service level improvements and, as a part of this, environmental performance indicators were assessed.</p>

³³ Accent, a consultancy, has completed WTP studies for OFGEM - *Expectations of DNOs and Willingness to Pay for Improvements in Service*, July 2008.

³⁴ OFGEM, *Decision on strategy for the next gas distribution price control – RIIO – GD1*, 31 March 2011, p 1.

Regulator/sector	Approach
	<p>Maintains a register of network performance indicators, which includes environmental compliance. These indicators must stay within a stable band. If the indicators are not within this band, Ofwat will work closely with the water supplier and shortfall adjustments are implemented to ensure customers do not pay for performance that it not realised.</p> <p>Sets out expectations regarding leakage and water efficiency standards (at economically efficient levels). These are not enforceable, but set out as 'good practice'.</p> <p>Has a memorandum of understanding with the Environment Agency (environmental regulator)³⁵</p>
Essential Services Commission, Victoria (ESC) – Water regulation	<p>Allows for efficient expenditure when setting prices to meet environmental standards set out by the Environment Protection Agency, the Department of Health Services, and the Department of Sustainability and the Environment.</p> <p>Allows for Ministerial direction when setting prices.</p>
Essential Services Commission of South Australia (ESCOSA)	<p>Energy : Allows for costs related to environmental regulation in the energy market such as the Residential Energy Efficiency Scheme (which it administers) and the Renewable Energy Target</p> <p>Water: Incorporates COAG and National Water Initiative pricing principles (which IPART complies with).</p>
Queensland Competition Authority – retail electricity	<p>Allows the costs related to clean energy schemes such as the Renewable Energy Target.</p>

³⁵ http://www.environment-agency.gov.uk/static/documents/Research/eaofwatmou_1901043.pdf

Regulator/sector	Approach
Independent Competition and Regulatory Commission (ICRC) – Water	<p>Sets a water abstraction charge to account for the 'scarcity value' of water and to recover costs incurred by the ACT Government in managing water conservation in the ACT. The revenue from this charge is passed onto the ACT Government.³⁷</p> <p>Sets the utility's water price to allow for the recovery of costs to meet environmental standards, including targets on reclaimed water.</p>
Department of Transport (Victoria)	<p>The Minister has the power to set prices for Victorian public transport.</p> <p>Externalities are not costed when the Minister sets prices for public transport. The Department of Transport gives the minister information on CPI only when making his decision.</p>
US regulation	<p>US regulators (especially on the West and East Coasts) have introduced numerous pro-environment measures, including energy efficiency and renewable energy programs (which have been customer funded and/or mandated). Enthusiasm for these programs waned in the 1990s. However, since 2000, environmental concerns appear to have increased, and there is now greater use of market –compatible mechanisms to address these concerns.</p>

³⁷ ICRC, *Water and Wastewater Price Review, Final Report and Price Determination*, April 2008, p iii.

E How other economic regulators consider the environment in their pricing decisions and determinations – preliminary findings

No longer
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