



CENTRE FOR  
INTERNATIONAL  
ECONOMICS

# *Review of price discounts for wholesalers*

*Prepared for*

*Independent Pricing and Regulatory Tribunal of NSW*

*Centre for International Economics  
Canberra & Sydney*

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# 1

## *Background*

THE APPROPRIATENESS OF A WHOLESALE DISCOUNT is being assessed as part of IPART's review of Bulk Water Prices from 2006/07. The discount currently applies as a proportional reduction in the entitlement charge for irrigation corporations and districts (ICDs) compared with non-ICD customers who extract water from regulated rivers in the same valleys. The efficiency and equity of wholesale discounts has become the subject of much debate, particularly as a result of:

- the increase in cost recovery from water charges over time;
- the increase in MDBC and other environmental sustainability costs; and
- the approach taken in applying the discount, which is to an increasingly broad set of charges, some of which are sensitive to scale and many of which are not.

In submissions to the review, the Department of Natural Resources (DNR) and State Water Corporation (State Water) propose to remove the wholesale discount in favour of fee-for-service arrangements where warranted. ICDs argue for retaining the discount.

The scope of this review is to determine:

- whether the discounts are justified; and
- if so, the level of discount that should be applied or if discounts are unsuitable, what other pricing arrangements could be put in place.

Several stakeholders were contacted in the course of this review, as outlined in appendix A. Information provided by stakeholders, particularly financial data from the ICDs, was made available at very short notice and the review team appreciates the efforts of stakeholders in this regard.

### **Origins of the wholesale discounts**

Pricing arrangements for bulk water service delivery have for some time provided discounts or reduced costs to large users. They began in

recognition of the economies of scale involved in providing metering services to large companies that amalgamated meters within their own areas of responsibility.

Over the past decade, the scale and scope of bulk water charges has changed dramatically in line with increasing sustainable water resource management responsibilities. The involvement of IPART has also seen greater emphasis on cost recovery of efficient costs. The benefits associated with providing water to and regulating ICDs within this environment have become broader, some of which are not linked to the advantages of scale upon which wholesale discounts were originally premised. The question now is whether ICDs help to reduce the costs of water supply and/or improve overall water delivery systems in such a way that warrants recognition.

### *Metering charges under DLWC*

Effective price reductions for wholesalers were first made available in 1992 as a result of negotiations between regional directors of the Department of Land and Water Conservation (DLWC) and customer service managers of the later privatised irrigation corporations. At that time, there were only two components of the bulk water tariff – the water delivery charge and the metering charge. Much of the discussions concerned DLWC's approach to charging for metering after Murray Irrigation amalgamated its meters and then argued that large users ought to be allocated metering costs per meter. DLWC agreed that some of its costs were defrayed by wholesale irrigation customers who aggregated water orders and undertook billing and metering functions on its behalf.

The final allocation of metering charges agreed to by DLWC effectively granted wholesalers a lower per ML overall charge. In setting the distribution of metering costs, consideration was given to the user pays principle (the actual cost of reading the set number of meters for each licence holder) and fairness considerations through a negotiation process. In the end, the allocation outcomes across the valleys and licence holders within them loosely reflected the volume of water diverted to the irrigator's entitlement. The allocation of metering charges was not a 'discount' as such, and only applied to the metering component of bulk water costs.

The metering charge varied from region to region and ranged from \$0.40 per ML in Macquarie in the Central West to \$1.35 per ML in the Hunter. In the Murray region, the metering charges were set in the broad range of \$50 to \$5500 per meter, based on entitlement.

## Wholesale discounts under IPART

As part of broader reforms in bulk water pricing undertaken by IPART in 1997-98, metering charges were incorporated with other charges into a region-specific two-part tariff pricing structure. IPART set maximum prices to preserve the wholesale discount, but moved all discounts to a single fixed charge on entitlements (table 1.1).

### 1.1 IPART fixed charges for 1997-98

<i>Wholesale irrigation areas and districts</i>	<i>Fixed charge</i>	<i>Fixed charge per ML as a proportion of low security fixed charge</i>
	\$	%
Murray Irrigation Limited	2 112 000	60
Western Murray Irrigation	112 500	81
West Corurgan	112 500	65
Moira Irrigation Scheme	62 000	70
Eagle Creek Scheme	29 200	76
Murrumbidgee Irrigation Corporation	2 108 000	72
Coleambally Irrigation Corporation	756 000	68
Jemalong Irrigation Limited	151 500	74

Sources: IPART (1997, p. 10); IPART (1998, p. 42).

The differential pricing arrangements were still based on differences in costs. In its determination in 1997, IPART made the following comments on the discount.

The costs incurred by the DLWC to deliver each megalitre of water to an area and district are lower on average than the costs of delivering that water to a river pumper. This is because the area and district aggregate water orders, billing and all interactions with the DLWC.<sup>1</sup>

Discounts are now offered as a proportional reduction on entitlement charges, which today include additional components such as the cost of asset maintenance, resource management costs, and a real rate of return on new assets and augmentations (table 1.2). Each component of the entitlement charge (except for charges relating to the Murrumbidgee and Yanco Columbo System) is reduced by the applicable discount for each licence holder. Despite the broadening of the base and the increase in the scale of entitlement charges, the applicable discount rate has remained unchanged, effectively granting ICDs a more substantial discount in real dollar terms over time.

<sup>1</sup> IPART 1997, p. 35.

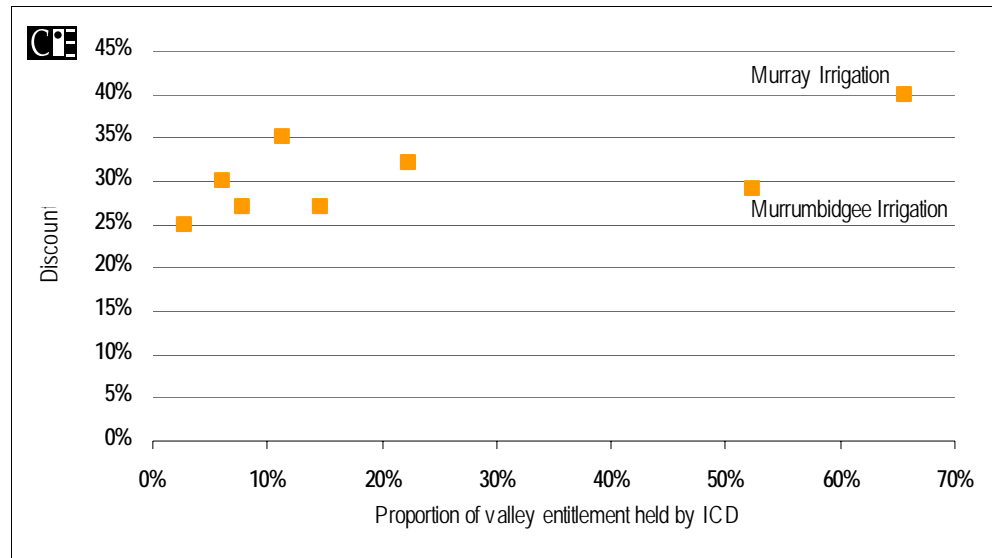
## 1.2 Discounts on the entitlement charge for wholesale customers

<i>Licence holder</i>	<i>Discount on entitlement charges</i>
	%
Murray Irrigation Limited	40
Western Murray Irrigation Limited	27
West Corurgan	35
Moira Irrigation Scheme	30
Eagle Creek Scheme	25
Murrumbidgee Irrigation Limited	29
Coleambally Irrigation Limited	32
Jemalong Irrigation Limited	27

Source: IPART Bulk Water Prices Determination 2005/06 (p. 6).

There is some moderate evidence that the discount remains linked to entitlement size and the proportion of the valley's entitlement held by the ICD (chart 1.3). For example, the correlation of the proportion of valley entitlement and the level of the discount is 0.63, using the sample of those customers receiving a discount. While the correlation of this association is not particularly strong, it is stronger than any other empirical relationship, including any relationship with customer numbers.

## 1.3 Discount relative to proportion of valley entitlement



Data source: CIE.



# 2

## *An efficient basis for differential pricing*

ANY CASE FOR DIFFERENTIAL PRICING should be clearly linked to the impact on the relative cost of supplying water to different customer groups, and the systemwide benefits that certain customers generate or contribute to. The term 'discount' is not necessarily appropriate as it implies that there are cross subsidies between customers that receive and do not receive the discount. This issue at hand is not likely to be one of cross subsidisation because of significant differences in regulatory compliance costs facing the two customer groups. ICDs are subject to a more onerous regulatory regime, which both imposes costs and delivers benefits, and cannot be efficiently implemented for all customers alike.

The first key question for this review is whether or not there is a case for reimbursing ICDs in some way for the activities that they undertake.

There are several reasons that have been put forward to justify the case for differential pricing. Some of these relate directly to the retailing functions that ICDs undertake, which are costs that would otherwise be incurred by State Water. While this is true, such costs are not considered to represent a 'cost saving' to the current cost base of State Water. While in the absence of ICDs these costs would form part of the cost base of State Water, so too would the retail margin be extracted from current ICD customers. Hence, once the ICDs were established, the cost and revenue base of State Water was altered. Some ICDs have also raised the issue that ICDs have taken on some of the non performing assets/customers previously managed by State Water. However, to amount to a case for differential pricing, arguments need to relate to the current services provided by State Water.

The cost impacts that matter in terms of recognising scale as a factor in pricing arrangements relate to the following four factors.

- differences in the cost of supplying water to ICDs compared with other irrigators, including the cost of metering and billing;

- systemwide benefits that arise from the activities of ICDs compared with non-ICD customers, including the value of qualitatively superior environmental information, the policing of water use, qualitatively superior monitoring of diversions as a result of ICD investments in real time monitoring, and reduced concerns about the validity of measurement;
- compliance with environmental requirements in excess of that required as part of running each ICD and in excess of that required from other irrigators; and
- provision of services to State Water by ICDs.

Several stakeholders commented on the inconsistent treatment of conveyance losses among ICDs and stated that it interacts with the provision of discounts. While the treatment of conveyance losses and wholesale discounts both affect the total charge paid for water by a given licence holder, they are two separate issues. In particular, this assessment is comparing outcomes for ICD versus non ICD customers with respect to the wholesale discount, not outcomes between one ICD and another ICD. Moreover, issues for IPART with respect to conveyance losses are not limited to the consistency of treatment among ICDs. For these reasons, conveyance losses are being examined separately by the Tribunal as part of the determination process.

## Differences in the cost of supply

A key issue highlighted by ICDs has been that the bulk discount is not a discount but a reflection of the costs incurred in providing water to them compared with other customers. If there are different costs incurred in providing services to particular customers, then there is a defensible basis for charging different prices.

Theoretically, each customer could face a different charge depending on the costs incurred in providing services to that customer. In practice, such pricing is unachievable and unnecessary, particularly such in this case where large fixed costs account for the bulk of costs, and 'postage stamp' pricing arrangements exist for other reasons.

Examples of differential pricing on the basis of differences in the cost of supplying customer groups can be seen in many industries.

- Factory door clothing sales – the price at the factory door is lower than at a retail outlet because no transport costs are incurred in getting the product from the factory to the customer.

- Retail versus wholesale prices – the costs of getting the product to a final customer such as staff costs, marketing and shop-front mean that the retail cost is higher than the wholesale cost.
- Gas network prices – the price changes depending on the location of the customer (for large customers) to reflect the different infrastructure costs involved in getting gas to the customer.

To really understand cost differences between customers there are two types of costs that are important – those that may change (variable) and those that will remain the same regardless of the number of customers, entitlement etc.

### *Fixed and variable costs*

Costs that are ‘fixed’ would be incurred regardless of the number of customers, the amount of usage, the level of entitlement, the water sharing plan limit, or other factors that could potentially change. Currently 93 per cent of State Water’s and 100 per cent of DNR costs that are passed onto customers are described as fixed by these agencies. They are fixed costs because they fund the infrastructure and systems required to provide existing bulk water services to State Water customers. However, the proportion of fixed versus variable costs is not ‘fixed’ as it were. Indeed State Water is required to increase the proportion of variable charges in its pricing arrangements. Costs that are ‘variable’ are those that are not fixed. Variable costs might be driven by the number of customers, level of entitlement, usage, or the water sharing plan limits.

Allocating costs that are fixed is much more difficult than allocating variable costs whose drivers can be identified. Conceptually, an economically efficient allocation of fixed costs would allow each customer to use water until the marginal benefits of their consumption equalled the marginal costs. This can be achieved by setting fixed charges below the level of value that a customer obtains from consuming at current per unit prices, or more technically, by setting a fixed charge for each customer that is below the infra-marginal value placed on consumption. In practice this is not a particularly useful concept as the value placed on each unit of consumption by each customer is unknown. Instead, simple allocation methods based on equity are typically used.

### *Price differentiation*

Price differentiation can be justified where factors can be identified that link strongly with costs. However, in many cases there are cost differences

between customers that are not reflected in prices, even in competitive markets. For example, a customer who takes up an hour of a sales person's time does not face a higher cost for their clothing than a customer who requires minimal assistance.

State Water has argued for no price discrimination. In particular, it has stated that prices should not be made to reflect cost differences in metering and billing because there are many other cost differences that are not recognised in prices. These include distance from dams, costs of coordination, and customer specific capital expenditure.

On the other hand, ICDs have argued for more price discrimination based on cost difference. The cost differences cited have included the way that customers provide information (electronically), the aggregation of customers billing and metering, and the extent of activities undertaken that would normally be undertaken by State Water and DNR.

The case for price discrimination will depend on how easy it is to observe customer attributes that drive costs. Some types of observable factors that may be drivers of costs for bulk water include:

- the valley in which the water is provided;
- the type of entitlement (high or low security);
- the scale of entitlement;
- the type or method of information provided to State Water;
- the location of the customer along the river;
- type of customer; and
- the number of customers.

Currently, the first two of these potential drivers are used to differentiate pricing. In addition, the wholesale discount scheme differentiates on the basis of the type of customer.

The extent to which a factor can be used to differentiate prices depends on how good a signal it provides for costs. If a factor does not provide a good signal then there could be horizontal inequity. For example, if ICDs and other irrigators were given different entitlement charges based on economies of scale then there may be equally sized corporations and river pumpers facing different prices. In other words, costs would be incorrectly attributed.

## Systemwide benefits

The generation of system wide benefits from the activities of certain customers may be another justification for differential pricing. ICDs have argued that by putting systems in place to regulate the water that is extracted from its users, value is provided to other users. For instance, the operations of an ICD may lower the costs of monitoring and enforcing the usage of other irrigators because the ICDs forecasts provide enough certainty to manage river operations. The types of impacts of ICD activity that may have a system-wide benefit component include the following:

- ICDs provide qualitatively superior environmental information to non-ICD customers, which may impact upon some agency costs and/or improve environmental policy outcomes;
- ICD efforts in policing water use has beneficial impacts on river systems beyond that captured by the firm;
- ICDs control of water within its system leads to reliable usage information being passed on to State Water, which reduces the stringency with which State Water must monitor usage of other irrigators; and
- ICDs qualitatively superior monitoring of intake as a result of investments in real time monitoring etc, reduces State Water concerns about the validity of measurement.

As discussed in chapter 3, it is difficult to conclusively assess the extent to which system wide benefits are generated. There is also considerable scope for argument about how to share the costs of activities that have both business and systemwide benefits.

## Provision of information

In some circumstances, compensation to ICDs could be warranted if information is provided by ICDs that would not otherwise be obtained, and is passed onto agencies who value that information. Clearly ICDs provide information in excess of that provided by other irrigators as a result of the more onerous regulatory environment in which they operate. Murray Irrigation (2005) lists a number of activities it undertakes beyond those of a river pumper aimed at managing sustainable land and water use. These include monitoring of environmental problems, soil health, saline water tables, research and development, amongst others. ICDs have indicated that their environmental reports, environmental monitoring and compliance cost between \$200 000 and \$600 000 per year per ICD.

In most cases the cost of providing that information is borne by ICDs, although government contributions have been made in some instances. ICDs also pay DNR between \$20 000 and \$50 000 to audit such information that is contained in compliance reports.

The scope to recognise ICDs' relative information burden in pricing arrangements is made difficult by the need to regulate intensive water users more heavily than smaller scale users. ICDs operate under more stringent licensing requirements compared with other irrigators because the scale of irrigation within these areas poses a greater threat to land and water resources. To the extent that information collection occurs as a result of the risk to natural resources arising from different customer types, the level of information would reflect higher potential damage costs.

However, if information is sought from ICDs solely because they have the scale and therefore the ability to be able to provide such information, then there would be a justification for some recognition of the costs involved in information collection.

## **Provision of services**

Some ICDs provide services to State Water that are not provided by other irrigators. In particular, they provide access to infrastructure, such as canals and escape points. State Water currently pays some ICDs for the use of their infrastructure. For example, State Water pays Murray Irrigation Limited for the use of the Mulwala Canal and Finley escape. Whether this charge is cost reflective is a matter that is up for debate, however, the case remains that compensation is warranted where services are provided to State Water.

# 3

## *Assessment of wholesale discounts*

A CASE EXISTS FOR DISTINGUISHING BETWEEN CUSTOMERS IN PRICING ARRANGEMENTS on the basis of quantifiable differences in the cost of service provision, definable systemwide benefits, and the provision of services and information by ICDs to State Water. How much recognition is justified depends on the quantitative implications of these arguments. The following analysis attempts to quantify each component of the case for price differentiation, taking a step-wise approach to estimating the total 'value' of ICDs to State Water, DNR, and other river pumpers.

### **The base case: existing price differentiation**

Before assessing the appropriate level of any discount or reimbursement for ICDs, it is important to clarify current discount arrangements. The discounts on entitlement charges for wholesale customers as they are currently quoted are not discounts on the prices that would be paid in the absence of a discount scheme. For instance, the 40 per cent discount for Murray Irrigation is not equivalent to a 40 per cent discount on the charges they pay for water relative to what they would pay if there were no discount scheme. As shown in table 3.1 if ICDs are a large part of the revenue base of a valley then removing the discount has much smaller impacts on customers than represented by the level of the discount. This is because the overall amount of revenue would remain unchanged and therefore the 'standard' price would go down. While this analysis uses prices from the 2004-05 determination without consideration of the impact of any other decisions that IPART might make, the principle is unchanged.

If the discounts were removed, Jemalong would face the largest increase in price out of the ICDs with its overall charges expected to increase by 20.5 per cent. The total charges paid by Murray Irrigation Limited and Colleambally Irrigation Limited would also be expected to rise by more than 10 per cent. However, the charges paid by some ICDs such as Eagle Creek and Western Murray Irrigation would fall. This reflects the larger discounts being given to other ICDs in the same valley.

### 3.1 Level of discount and impact of removing all discounts

	<i>Current discount on entitlement charges</i>	<i>Increase in entitlement charges if discount removed</i>	<i>Increase in overall charges if discount removed<sup>a</sup></i>
	%	%	%
<b>Lachlan</b>			
Jemalong Irrigation Limited	27.0	31.7	20.5
Non-ICD	0.0	-3.8	-2.6
<b>Murray</b>			
Murray Irrigation Limited	40.0	18.8	15.2
Western Murray Irrigation Limited	27.0	-2.4	-2.0
West Corurgan	35.0	9.6	7.9
Moira Irrigation Scheme	30.0	1.8	1.4
Eagle Creek Scheme	25.0	-5.0	-4.0
Non-ICD	0.0	-28.7	-23.2
<b>Murrumbidgee</b>			
Murrumbidgee Irrigation Limited	29.0	9.3	7.9
Colleambally Irrigation Limited	32.0	14.2	12.1
Non-ICD	0.0	-22.4	-18.6

<sup>a</sup> Based on average long term usage and revenue from 2004-05.

Source: CIE calculations.

### Comparison to the 1997-98 discount

Since IPART first established the proportional discount on bulk water charges, the basket of costs that have been included in bulk water charges has increased while the proportional discount has remain unchanged. If the case for bulk discounts has not changed since the discounts were originally established, this raises the question 'what would the base case discount be today if the level of discount remained unchanged in real dollar terms?' The results of this proposition are shown in table 3.2.

### 3.2 Maintaining an unchanged real dollar discount

	<i>Low security entitlement charge 2005-06</i>	<i>Estimated unchanged real discount</i>	<i>Current wholesale discount</i>
	\$/ML	%	%
Murray Irrigation Limited	5.28	22.0	40.0
Western Murray Irrigation <sup>b</sup>	5.28	10.0	27.0
West Corurgan	5.28	17.4	35.0
Moira Irrigation Scheme	5.28	15.9	30.0
Eagle Creek Scheme	5.28	12.6	25.0
Murrumbidgee Irrigation Corporation	4.06	17.0	29.0
Coleambally Irrigation Corporation	4.06	17.2	32.0
Jemalong Irrigation Limited	4.83	13.6	27.0

<sup>a</sup> Initial discount is calculated using the fixed wholesale charge and the proportional discount from IPART 1998. The CPI used is the change in the weighted average of eight capital cities from 1996-97 to 2004-05. This is equal to 22.2 per cent. <sup>b</sup> Western Murray's original discount appears to have been only 19 per cent according to IPART (1998) rather than the current 27 per cent.

Source: CIE Calculations.



This shows that the size of the discount in terms of per cent on the low security entitlement charge would have been about half the current level in 2005-06 if the discount remained the same in real dollars. If the cost base for State Water and DNR rises again, then an unchanged real discount would be even smaller in 2006-07.

## Quantifiable differences in the cost of supply

Estimating the component of justifiable price differentiation due to differences in the cost of supply requires an analysis of the cost drivers of DNR's and State Water's costs. Given time and information constraints facing this study, this analysis has relied on input from each of these agencies to estimate the cost items for which customer numbers are relevant, and the proportional impact of customers as a cost driver.

It is worth noting that many ICDs have commented on the lack of transparency in the costs of both DNR and State Water and the inability to determine the factors that impact on these as part of the consultation process for this review.

### *Drivers of water resource management costs*

In terms of DNR costs, only costs relating to water resource management (WRM) are passed onto ICDs and reflected in the entitlement charge. Hence WRM costs are the only DNR costs that are relevant to this review.

The WRM activities that are undertaken by DNR include:

- surface water information provision;
- groundwater information provision;
- coastal and estuary information provision;
- surface water and groundwater analysis;
- water modelling and impact assessment;
- water sharing plan implementation;
- WRM planning;
- river management works (non-capital);
- water consents administration;
- water consents transactions;
- business administration; and

- WRM systems capital program.

All of these activities excluding those relating to water consents transactions are reflected in entitlement charges. Costs associated with water consents transactions are recovered through transaction fees (fee for service) not WRM entitlement charges.

In consultations with DNR, DNR indicated that none of its WRM costs depend on the number of customers, nor are they affected by the presence of ICDs. This implies that there is no case for differential pricing among customers with respect to the WRM costs of DNR.

For instance, it states that there is no actual interface with individual licence holders in managing, monitoring and administering provisions and rules in the water sharing plans. In terms of WRM planning, for the development of Macro plans, GW plans and specific plans (such as for Sydney Metro, Border Rivers, Patterson River and Bega River) that have not yet commenced, the complexity of plans is a function of the specific issues in each of the valleys, not the number of users in the valley. For the development of floodplain harvesting plans that will make provisions for licensing, managing and monitoring the level of extractions from the floodplain in line with whole of system cap limitations, policy development is not a function of the number of users in the valley. Costs for environmental water management planning to optimise the use of environmental water is a function of the complex environmental requirements within each valley, not the number of users in the valley.

In terms of activities to support administration of the water consents regime (head office costs, compliance etc), there is minor variability between the number of licence holders and the cost of consents administration, however, the larger, more complex consents involve correspondingly greater support than the (smaller) mainstream consents.

Costs associated with DNR's metering and billing activities apply only to unregulated river & groundwater customers, and are not included in the entitlement charge. The metering and billing activities relevant to the ICDs in regulated systems are undertaken by State Water.

ICDs have commented that the activities they undertake to comply with their licensing conditions provides information that can be utilised by DNR in undertaking its WRM activities. However, DNR claims that this does not mitigate or reduce the cost of its WRM functions. On balance, the proposition of this review is that there is insufficient grounds for differential pricing with respect to DNR's WRM costs.

### *Drivers of State Water costs*

With respect to some State Water costs, there does appear to be scope for economies of scale that would warrant some form of differential pricing for ICDs.

State Water contends that this is not the case. In its submission to IPART it notes that 'State Water's costs to supply a 10 ML order to a river pumper are the same as supplying 1000 ML to an irrigation company'.<sup>2</sup> This statement appears to refer to the fixed costs that State Water faces, and to the notion that fixed costs should not be allocated differentially. However, State Water's statement indicates that economies of scale do exist in terms of the per ML cost of supplying ICDs compared with smaller irrigators. As several ICDs have highlighted, in this example the unit cost per ML for the river pumper would be \$10, and the unit cost for the ICD would be 10 cents per ML of entitlement. Where economies of scale do exist, there are equity implications if they are not recognised in pricing arrangements.

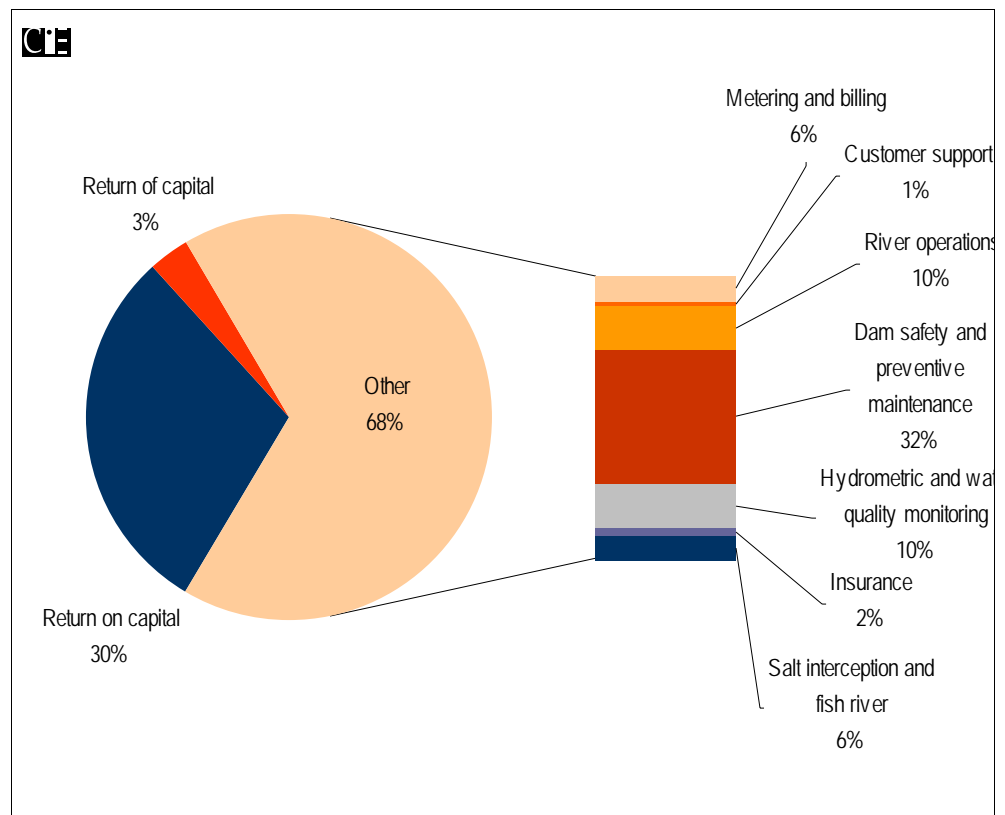
Chart 3.3 provides a broad breakdown of State Water's costs. From such a broad aggregation it is difficult to identify what drives each type of cost. Costs such as metering and billing are more clearly customer based, but it is unclear how the number of customers would impact on other costs.

State Water's cost allocation model is not currently set up to comprehensively analyse cost drivers. That said, discussions with State Water indicated that approximately 90 per cent of metering costs, all billing costs and 10 per cent of river operations costs are likely depend on the number of customers. All other cost categories are believed to be fixed. While this estimation is not the result of independent scrutiny of State Water's costs, it is reasonable to expect that only the nominated cost categories would be materially impacted by customer numbers. In total, this would mean that just over 6 per cent of State Water's costs, or \$4.3 million (in 2006-07) according to State Water's submission to IPART would be driven by the number of customers.

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<sup>2</sup> State Water 2005, p. 125.

## 3.3 Forecast Costs for State Water 2006-07



Data source: State Water Submission to IPART (September 2005).

Even if the additional cost category of customer support was included, along with all metering and billing costs and, for example, 20 per cent of river operations costs, this would amount to only 9.1 per cent of State Water's costs. The level of any compensation that could be justified by the economies of scale argument would be of roughly the same order as the proportion of costs driven by customer numbers if all customers are assumed to drive customer costs equally.

This means that the discount justified by economies of scale arguments is approximately 6.3 per cent of State Water costs in 2006-07 and none of the costs of DNR with respect to water resource management. If the discount were only offered on the entitlement charge (as currently structured) it would need to be slightly higher than these levels given that only a part of State Water revenue is collected from entitlement charges. This discount estimate is only a lower bound estimate for the cost savings brought about by ICDs, as it captures only the economies of scale benefits to State Water relating to dealing with ICDs (and assumes none accrue to DNR).

## The value of systemwide benefits

The notion of systemwide benefits is a broad one. It is not about the relative cost of servicing an ICD compared with non-ICD customers. Rather it can refer to the impact of ICDs on the cost to State Water of running the overall system. It also captures the qualitative improvements in information and system efficiency that affect the immediate and longer term sustainability of water services delivery, affecting State Water and DNR alike.

Quantifying the value of any systemwide benefits provided by ICDs is more difficult and controversial than quantifying economies of scale. In terms of the benefits to State Water's systems, ICDs pointed to the way in which the control of water within their own systems leads to reliable information being passed on to State Water. This in turn reduces the stringency with which State Water must monitor usage of other irrigators. Conversely, State Water indicates that ICDs are a driver of river operations costs rather than a means of alleviating such costs.

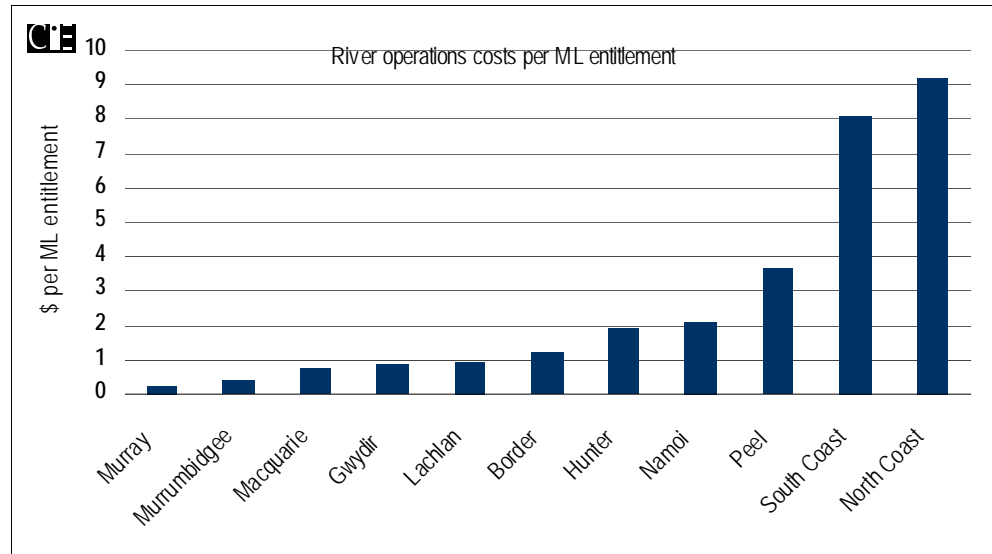
Systemwide benefits are expected to exist, although they are likely to vary among ICDs. For example, a small irrigation corporation or private irrigation district is unlikely to generate the same level of systemwide benefits as might be generated by Murray Irrigation or Murrumbidgee Irrigation.

Bringing evidence to this question is difficult. To get an indication of the order of magnitude of the potential gains from systemwide benefits, one approach is to break down the costs of irrigation corporations to isolate cost items that are likely to have a systemwide benefit component. This review has been significantly assisted by irrigation corporations in this regard who provided such cost breakdowns at very short notice. This information indicated that the ICDs water management costs of an average of about \$4 per ML of entitlement might have systemwide benefits in addition to providing value to the corporation itself. The costs referred to that would have a systemwide benefit component include those associated with water ordering and channel control that increase the reliability of diversion (both forecast and actual) provided to State Water. The difficulty is in knowing how big the systemwide benefit component of these costs is.

Another approach to placing a value on the systemwide benefits generated by ICDs is to examine State Water's forecast river operations costs for each valley to test whether the presence of ICDs in the Murray, Murrumbidgee and Lachlan valleys might lower the cost of river operations for State Water relative to other valleys. At first glance, those valleys in which ICDs operate do tend to have lower river operations costs per ML of entitlement

(chart 3.4). In particular, the Murray and Murrumbidgee have river operations costs of \$0.20 to \$0.40 per ML of entitlement. On average, State Water's river operations costs per ML of entitlement in valleys with ICDs are \$0.39. The valleys in which ICDs do not operate have an average cost of \$1.31 per ML of entitlement.

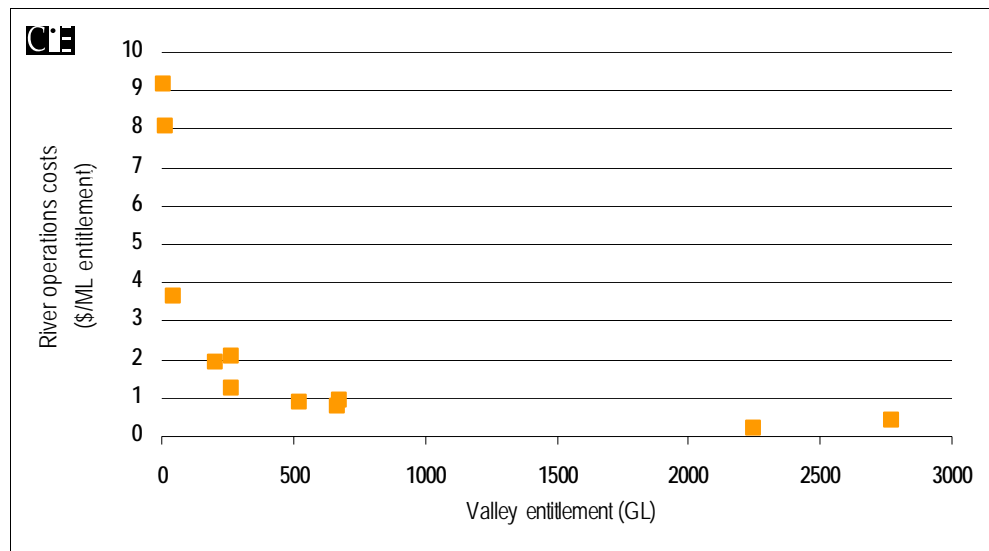
### 3.4 State Water river operations costs in each valley



Data source: CIE.

However, the valleys in which there are large ICDs also tend to be the valleys with greater overall entitlements (chart 3.5). This makes it difficult to determine whether the valley based differences in State Water river operations costs are attributable to the presence of ICDs or the scale of entitlement.

### 3.5 Entitlement level and river operations costs



Data source: CIE.

If *all* of the difference in river operations costs in the Murray and Murrumbidgee were due to the ICDs then this would imply that the presence of ICDs could lower State Water's river operations costs by around \$0.90 per ML of entitlement, which is a potential 70 per cent difference in river operations costs between valleys with and without ICDs. This implies an implicit saving in river operations costs of \$4.9 million in 2006-07 (equivalent to 70 per cent of total river operations costs). For the Lachlan, Jemalong takes up only 15 per cent of entitlement, hence its impact in terms of river operations costs is likely to be much smaller.

A second form of positive externalities may occur in relation to environmental information collected by ICDs as part of their business, which also has value to DNR and State Water. A survey of ICDs indicated that such information could cost the ICDs up to \$0.50 per ML of entitlement. Estimating the systemwide benefit component of that amount is difficult, particularly given DNR's contention that the environmental information provided by ICDs does not materially offset its WRM costs (inferring that the systemwide benefit component is negligible).

## Estimated value of licensing information

ICDs provide information in excess of that provided by other irrigators and beyond that required for their business operations. ICDs have indicated that collecting and providing environmental information that is *not* required as part of their business costs approximately \$0.50 per ML of entitlement. While this cost should reflect the additional risk to natural resources that an irrigation corporation imposes, it is expected that some component of this has public good characteristics.

# 4

## *Conclusions*

THE CURRENT SYSTEM OF WHOLESALE DISCOUNTS provides an inadequate guide to the benefits provided by ICDs relative to non-ICD customers extracting water from regulated rivers in the same valleys. It is also unlikely to deliver an efficient and equitable distribution of costs across ICDs.

- It is inconsistent in its application, not only in terms of differences in the level of discount, but in imposing higher costs on some ICDs compared with a 'no-discount' scenario with no apparent justification.
- It lacks transparency, providing no clear indication as to the reasons for the discount or for differences in discounts across valleys and among licence holders within valleys.
- The monetary level of the discount may be too high, having been inflated by the growth in the underlying cost base without examination of the change in benefits brought about by ICDs relative to other river pumpers.

That said, this analysis has shown that there is a case for some degree of price differentiation for ICDs relative to non-ICD customers with respect to the allocation of State Water costs. This means that a component of State Water costs could be efficiently and equitably allocated in a way that advantages ICDs relative to non-ICDs. However, this review has found no reliable basis for allocating DNR's WRM costs on a differential basis.

### **Summary of quantified gains associated with ICD activity**

The expected benefits to State Water and other stakeholders associated with ICD activity can be summarised as follows.

- Economies of scale related benefits associated with the (reduced) costs of metering, billing, and (to a lesser extent) undertaking river operations. These components of State Water costs that are positively affected by the presence and activities of ICDs represent 6.3 per cent of State Water's costs (or \$4.3 million in 2006-07).



- Systemwide benefits associated with the river operations of ICDs, such as those associated with qualitative improvements in information and the policing of water use within valleys, which are expected to result in lower river operations costs for State Water, valued at around 7 per cent of State Water's costs (or \$4.9 million in 2006-07).
- Benefits accruing to DNR and State Water associated with the environmental information collected by ICDs as part of their business operations, worth some unknown and unquantifiable component of \$0.50 per ML of entitlement.<sup>3</sup>
- The value to State Water and DNR of that part of licensing information that ICDs would not otherwise collect, again worth some unknown and unquantifiable component of \$0.50 per ML of entitlement.<sup>4</sup>

While some quantification has been provided in this report, some values are indicative only, and others are likely to vary across ICDs. The only estimate that directly maps the presence of ICDs to the cost base of State Water is that relating to economies of scale related benefits. That is, the applicable metering, billing and river operations costs that State Water incurs in each valley. Valued at \$4.3 million in 2006-07, the proposition of this review is that there are justified reasons for this part of the cost base to be allocated in a manner different to other components of the entitlement charge. In particular, the manner of allocation should result in differential pricing between ICDs and non-ICD customers such that ICDs are favoured. Table 4.1 shows the breakdown of the relevant costs by valley.

#### 4.1 Customer driven costs appropriate for differential pricing 2006-07

	<i>Metering</i>	<i>Billing</i>	<i>River operations</i>	<i>Total</i>
	\$'000	\$'000	\$'000	\$'000
Border Rivers	122	8	33	163
Gwydir	230	15	47	293
Namoi	316	19	55	389
Peel	112	13	18	142
Macquarie	303	21	52	376
Lachlan	522	20	62	604
Murrumbidgee	599	28	115	743
Murray	766	28	49	843
North Coast	4	3	8	15
Hunter	492	11	39	543
South Coast	4	3	12	19
MDBC	0	0	201	201
DBBRC	0	0	15	15
TOTAL	3 471	169	706	4 346

Source: CIE calculations using customer numbers provided by State Water and costs from State Water (2005).

<sup>3</sup> Estimated from ICD survey data.

<sup>4</sup> Estimated from ICD survey data.

If expressed in discount terms, these customer driven costs would result in different discounts to each ICD depending on their level of entitlement. The level of discount would also depend on IPART's decisions on total charges and the allocation between entitlement and usage components. On the basis of State Water's current submission, the approximate level of discount on charges from State Water would be around, but not more than 6.3 per cent. Even at this level, this analysis has shown that some ICDs would be better off under this arrangement than the current discount scheme.

It is not possible to indicate such a breakdown for any other quantified benefits. The estimated systemwide benefits have been *indicatively* valued at \$4.9 million in 2006-07, however, this represents an approximate average across all valleys, with insufficient evidence to indicate how such benefits might be distributed on a valley basis.

There is insufficient evidence to suggest that the benefits of ICDs with respect to their licensing and other environmental information amounts to a case for differential pricing. For instance, it is possible that in the range of \$0-0.50 per ML of entitlement, the value of licensing information is zero for most ICDs, given the need to impose more onerous licensing requirements on ICDs relative to other customers due to greater risks posed to land and water resources from more intensive irrigation.

## Pricing models for recognising the relative value of ICD customers

Once the level of compensation has been determined, there are a number of different pricing models which can be used to recognise the different types of benefits that ICD customers give rise to. Those that provide scope to map the source of the gain to an amount of reimbursement include:

- differential pricing;
- a per customer charge;
- fee for service; and
- fee for information.

A summary of the appropriate pricing models for each justification for compensation is shown in table 4.2 and discussed below.

#### 4.2 Pricing models for different compensation cases

<i>Model</i>	<i>Differential pricing</i>	<i>Customer charge</i>	<i>Fee for service</i>	<i>Fee for information</i>
Customer costs	X	X		
Positive external benefits	X		X	X
Service provision			X	
Information differences				X

Source: CIE.

In structuring compensation arrangements, whether through price differentiation or otherwise, it is important that any arrangements meet a minimum set of criteria to ensure that they deliver an efficient and equitable outcome. In particular, any model to reflect compensation for ICDs should be:

- transparent – stakeholders should be able to see the link between the arguments for price differentiation and prices;
- efficient – provide incentives to reach economically efficient outcomes;
- equitable – in terms of the impact on customers and the ‘fairness’ of the allocation; and
- align with COAG requirements – such as the condition of State Water’s operating license that the usage-based component of charges is above 50 per cent by 1 July 2006 and above 60 per cent by 1 July 2008.<sup>5</sup>

### *Differential pricing*

Differential pricing, such as the current wholesale discount scheme, would set different prices for different customers. While offering a simple way of recognising cost differences between customers, as has been shown, it can be difficult to align the different prices with their justification.

It is possible to reform the wholesale discount so that it relates to established economies of scale benefits, perhaps with some allowance for systemwide benefits if deemed appropriate by IPART. However, to avoid existing discrepancies between the level of differentiation and benefits, the drivers of differentiation would need to be quantified at each review with the level of discount amended accordingly.

If differential prices were used to reflect the economies of scale justification, then the discount should apply to the entitlement charge, as it currently

<sup>5</sup> State Water, 2005, p. 117.

does, because the areas where economies of scale occur are related to costs that are fixed per customer rather than varying with usage levels.

Differential pricing would not be adequately suited to other benefits associated with ICDs, which are less likely to be consistent across ICDs and in some instances may relate to one off events.

### *Customer or metering charge*

Creating a customer or metering charge is a transparent way of recognising that there are per customer or per meter costs. It aligns the pricing structure to the cost structure and moves the debate onto the more useful grounds of how metering/billing costs might differ between customers.

Per customer charges have been put in place in many other regulated industries such as phone charges (landlines), electricity charges and gas charges. In some cases there is a different per customer charge depending on the type or location of the customer. In the case of State Water, per customer charges could be valley based. This would also provide appropriate benchmarks for metering and billing costs between valleys.

Customer charges would be revenue neutral, offsetting other charges faced by irrigators. The State Water operating license requirement to move to usage charges would mean that a customer charge would likely lower the entitlement charge rather than the usage charge.

If a customer charge was developed to recognise the economies of scale related benefits of ICDs, this would see:

- the removal of current wholesale discounts;
- a (small) reduction in entitlement charges as around 6 per cent of costs are removed from the cost base; and
- the introduction of a separate customer charge which would allocate customer driven costs on the basis of costs per customer.

Such an approach would remove the distinction between ICD and non-ICD customers in the pricing structure with respect to scale related costs. However, in treating customers equally irrespective of their entitlement, the charge for ICDs would be far less than it would otherwise be if such costs were allocated on a per megalitre basis.

Based on the components of State Water costs that relate to customer numbers identified in this study, costs per customer for each valley are shown in table 4.3.

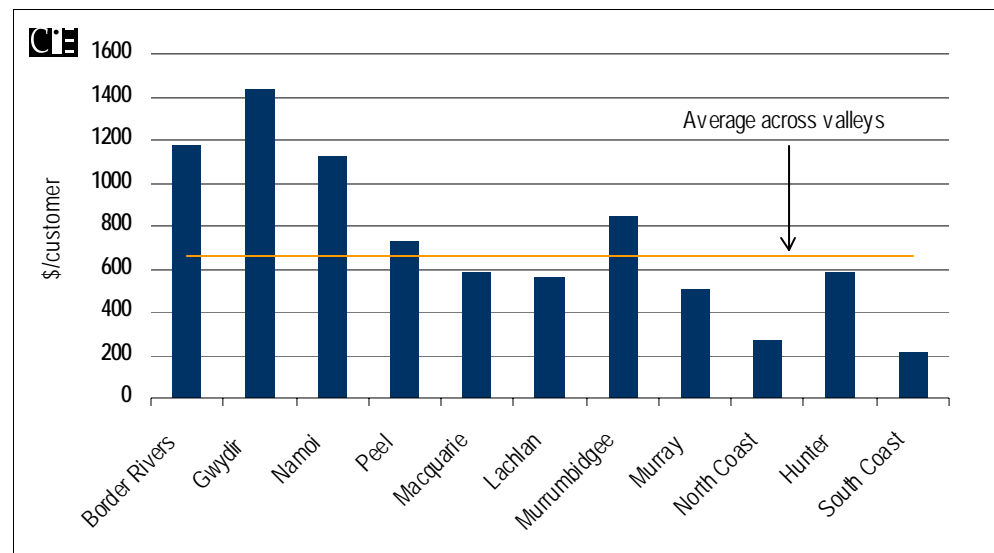
### 4.3 Estimated level of a 'customer cost charge' by valley 2006-07

	<i>Customer driven costs</i>	<i>Customer numbers</i>	<i>Customer costs per customer</i>
	\$000	No.	\$/customer
Border Rivers	163	139	1 175
Gwydir	293	205	1 428
Namoi	389	345	1 129
Peel	142	197	721
Macquarie	376	642	585
Lachlan	604	1 082	558
Murrumbidgee	743	881	843
Murray	843	1 680	502
North Coast	15	55	269
Hunter	543	920	590
South Coast	19	88	211
MDBC	201		
DBBRC	15		
TOTAL	4346		

Source: CIE calculations using customer numbers provided by State Water and costs from State Water (2005).

Chart 4.4 compares the calculated customer charges for each valley, which average \$662 across the valleys. The costs per customer provide a basis for setting a customer charge that would be cost reflective.

### 4.4 Customer charges by valley



<sup>a</sup> The average across valleys is calculated by weighting by the number of customers in each valley.

Data source: CIE.

## Fee for service/information

A fee for service model is appropriate for considering services provided by ICDs that can be individually identified and costed and that vary through time and across ICDs. Such a system is already in place in some valleys to

manage State Water's use of an ICD's infrastructure, such as State Water's use of the Mulwala Canal owned by Murray Irrigation Limited. A fee for service model could also apply to information provision that was beyond the scope of normal business and licensing conditions for ICDs, although as alluded to earlier, it may be unlikely that any such circumstances would arise.

For a fee-for-service model to operate effectively, it is necessary for the ICD providing the service to have the ability to negotiate for appropriate payment. Given the monopoly position of State Water and DNR and the ability to change the regulatory conditions attached to a licence, this may be difficult for some ICDs. Indeed, a number of irrigators stated that they would support a fee for service arrangement only if IPART were to be part of any negotiations, indicating their inability to recover the commercial costs of service provision from State government agencies in the past. One option that may need consideration would be for IPART or another agency to assist with dispute resolution in the event that private negotiations fail.

# Appendix A

THE FOLLOWING TABLE OUTLINES the stakeholders who were contacted in the course of this review. The information provided by stakeholders at very short notice was very much appreciated.

## A.1 Stakeholders consulted

<i>Name</i>	<i>Organisation</i>
<b>Irrigation Corporation</b>	
Jenny McLeod, Manager Policy	Murray Irrigation
Murray Smith, Chief Executive	Coleambally Irrigation
John Howe, Brett Tucker, Chief Executive	Murrumbidgee Irrigation
Neil Toole, General Manager	Jemalong Irrigation
Jim Andrews, Acting General Manager	Western Murray Irrigation
<b>Private Irrigation District</b>	
Peter Wallis	West Corrgan
Allan Matthers	Eagle Creek
<b>Agencies</b>	
Abel Immaraj, Chief Executive; Dan Berry	State Water Corporation
Rob O'Neill, A/Manager, Water Policy Rick Rundle, Water Pricing	Department of Natural Resources

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## References

- IPART (Independent Pricing and Regulatory Tribunal of NSW) 1997, *Bulk Water Prices from 1 July 1997*, Determination no. 6 1997, September, Sydney.
- IPART 1998, *Bulk Water Prices for 1998/99 and 1999/00*, Determination no. 98-5, July, Sydney.
- 2005, State Water Corporation and Water Administration Ministerial Corporation Bulk Water Prices, Determination for 2005/06, Determination nos 8 and 9, August.
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- Murrumbidgee Private Irrigators 2006, *Discussion on Wholesale Discounts and Conveyance Losses*, Submission to IPART, January.
- State Water Corporation 2005, *Bulk Water Pricing: Submission to the Independent Pricing and Regulatory Tribunal of NSW*, September.