IPART

Independent Pricing and Regulatory Tribunal

New South Wales

Cost allocation guide

Water Industry Competition Act 2006

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The Independent Pricing and Regulatory Tribunal (IPART)

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1 Introduction

The *Water Industry Competition Act 2006* (the WIC Act) came into operation on 8 August 2008.[1] The WIC Act provides for private sector participation and competition in the NSW water and wastewater industry.

A key aspect of the WIC Act (under Part 3) is the establishment of a state-based third party access regime for water industry infrastructure. Under the WIC Act, a service provider or access seeker may apply for 'coverage' of an infrastructure service.[2] The relevant Minister[3] may then make a coverage declaration in relation to that infrastructure service, provided that it meets certain criteria.[4] A coverage declaration provides for third party access to the declared infrastructure, including the option of arbitration where terms of access cannot be negotiated.

1.1 Requirements for a cost allocation manual under the WIC Act

Section 42 of the WIC Act requires that, within three months after an infrastructure service becomes the subject of a coverage declaration, the service provider:[5]

- must keep separate accounts for its infrastructure services that are the subject of the declaration, and
- must submit a cost allocation manual to IPART in relation to that infrastructure.

1.1.1 IPART's role in relation to cost allocation manuals

IPART's role in relation to cost allocation manuals is also set out in section 42 of the WIC Act:

- IPART may approve a service provider's cost allocation manual as submitted, or may require the service provider to amend it and resubmit it for approval.[6]

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1 WIC Act Historical Notes.

2 Access seekers may only apply where they have tried, but failed, to obtain access to the service or a change to some aspect of their access. The Minister may also apply, in the case of an infrastructure service provided by a public water utility. IPART receives and reports to the Minister on coverage applications.

3 The relevant Minister is currently the Premier.

4 Under section 22 of the WIC Act, the infrastructure in question must be situated in, on, or over land in a 'scheduled area' (ie, referred to in Schedule 1 of the WIC Act).
Further, under section 23 of the WIC Act, the 'declaration criteria' are:
a. that the infrastructure is of State significance, having regard to its nature and extent and its importance to the State economy,
b. that it would not be economically feasible to duplicate the infrastructure,
c. that access (or an increase in access) to the service by third parties is necessary to promote a material increase in competition in an upstream or downstream market,
d. that the safe use of the infrastructure by access seekers can be ensured at an economically feasible cost and, if there is a safety requirement, that appropriate regulatory arrangements exist,
e. that access (or an increase in access) to the service would not be contrary to the public interest.

5 WIC Act s42(1). The WIC Act Dictionary defines 'service provider', in relation to an infrastructure service, as the person who has, or is to have, control of the water industry infrastructure by means of which the service is, or is to be, provided, whether or not the person is a licensed network operator.

- A cost allocation manual may only be varied with the consent of IPART.[7]

1.1.2 Additional WIC Act provisions or requirements in relation to cost allocation manuals

Section 42 of the WIC Act further provides or requires that:

- A cost allocation manual must be in the form of a document that sets out the basis on which the service provider proposes to establish and maintain accounts for its infrastructure services that are the subject of a coverage declaration.[8]
- The Minister may from time to time, by order published in the Gazette, establish rules for the preparation of cost allocation manuals.[9]
- From three months after IPART approves a service provider's cost allocation manual, the service provider must ensure that costs are allocated between each of those services, and between those services and its other activities, in accordance with the manual.[10]
- A service provider must make its cost allocation manual publicly available.[11]

1.1.3 Voluntary access undertakings

The WIC Act access regime also has a framework for infrastructure owners to submit voluntary access undertakings. This allows businesses to proactively put forward binding terms, conditions and prices under which access seekers will be provided access.

Under the WIC Act, IPART also has the following roles in relation to voluntary access undertakings:

- to review applications for access undertakings, and decide whether to approve the access undertakings,[12] and
- to arbitrate certain disputes regarding access to infrastructure services.[13]

We note that the cost allocation manuals required under the WIC Act apply only to declared infrastructure, and not to infrastructure covered by voluntary access undertakings.[14] A voluntary access undertaking is a document prepared *voluntarily* by a service provider. It sets out terms and conditions under which a third party can access a service, unless different terms and conditions are negotiated. If IPART accepts the access undertaking, the Minister

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6 WIC Act s42(4).
7 WIC Act s42(6).
8 WIC Act s42(2).
9 WIC Act s42(3). The Minister has not established any such rules. Any rules established by the Minister for the preparation of cost allocation manuals would prevail over IPART's *Cost allocation guide* (the Guide). We will review this Guide if such rules are established.
10 WIC Act s42(5).
11 WIC Act s42(7 & 9).
12 WIC Act s38.
13 WIC Act s40.
14 WIC Act s42(1).

can no longer determine a coverage declaration for the services covered by that undertaking.[15]

1.2 Purpose of this Guide

We have prepared this *Cost allocation guide* (the Guide) to assist service providers in preparing cost allocation manuals in relation to their declared infrastructure services. It has been prepared under section 92 of the WIC Act.[16] This Guide outlines our views on:

- principles that should be used by a service provider in allocating costs and developing its cost allocation manual, and
- what a service provider's cost allocation manual should include, as a minimum.[17]

If a service provider deviates from this Guide in preparing its cost allocation manual, it should justify why it has done so and demonstrate that the deviations would not cause material detriment to end-users.

Whether or not a service provider has adhered to this Guide in developing and submitting its cost allocation manual to us for approval, we may require the service provider to amend the manual and re-submit it to us before we consider it for approval.

1.3 Purpose of a cost allocation manual

Cost allocation relates to the attribution and allocation of a service provider's costs to its declared and other services. Under the WIC Act, a cost allocation manual must set out the basis on which a service provider intends to establish and maintain separate cost accounts for each of its declared services.[18]

The WIC Act does not specify the purpose or intended use of a cost allocation manual. We consider a key purpose of a cost allocation manual is to improve transparency and help overcome information asymmetry between the service provider and potential access seekers. This can facilitate the commencement of negotiations between the service provider and access seekers on the terms of access.

We consider that access should be priced in a manner that leads to appropriate incentives for entry in the provision of services potentially open to competition, and that is in the long-term interest of end-users. The cost allocation manual should therefore demonstrate that the costs allocated to a service provider's declared services:

- reflect efficient, attributable costs, and
- do not unduly favour the service provider in the provision of potentially competitive services.

15 WIC Act s26(1)(a)(ii).

16 Section 92 of the WIC Act provides that IPART may issue guidelines as to the manner in which it exercises its functions under this Act, and that these guidelines must be publicly available.

17 Section 2 draws partly on the Australian Energy Regulator's *Electricity transmission network service providers – Cost allocation guidelines*, September 2007.

18 WIC Act s 42(2).

Finally, a transparent cost allocation manual would assist an arbitrator (eg, IPART) if it were called upon to arbitrate a dispute between a service provider and an access seeker, and consequently was required to make a determination on the terms on of access. However, even where a service provider's cost allocation manual has been approved by us, the arbitrator (whether IPART or another third-party) is not bound to a particular cost allocation method or access pricing approach when determining terms of access. The arbitrator is bound by the pricing principles set out in section 41 of the WIC Act (see Box 2.1).

The contents of this Guide and cost allocation manuals approved by us under the WIC Act also do not bind us in relation to our retail or wholesale price determinations.

The *Water Industry Competition (Access to Infrastructure Services) Regulation 2007* requires the service provider to make available an information package to access seekers on request. [19] We require the service provider's cost allocation manual to be included in that package.

1.4 Processes for approving cost allocation manuals

The WIC Act specifies that a service provider must submit a cost allocation manual to us within three months of an infrastructure service becoming the subject of a coverage declaration under the WIC Act.[20]

The service provider must submit an electronic copy of its proposed cost allocation manual to us for approval. We will publish the submitted cost allocation manuals on our website and seek comments from stakeholders. We will consider the service provider's cost allocation manual and any stakeholder submissions before deciding whether to approve the manual, and we may approve the manual as submitted or require it to be amended and resubmitted to us before we reconsider it for approval. Once approved, we will publish the approved manual on our website.

1.5 Revisions to this Guide

We intend to review the Guide periodically to ensure that its contents remain up to date and relevant to the nature of the service providers and the information requirements of access seekers. However, stakeholders are welcome to provide comment on the Guide at any time, using contact details available on our website.

Following the commencement of the WIC Act in 2008, Sydney Water Corporation (Sydney Water) was required to submit a cost allocation manual to us by November 2008, covering the three wastewater networks noted in Box 3.1 below. To date, no other service providers have been required to submit a cost allocation manual to us. If infrastructure services of other service providers become the subject of a declaration under the WIC Act, we may review the content of this Guide.

We will consult with stakeholders when we review the Guide.

19 *Water Industry Competition (Access to Infrastructure Services) Regulation 2007*, cl 8(2)(d); IPART *Negotiation protocols – Water Industry Competition (Access to Infrastructure Services) Regulation 2007*, Schedule 1, cl 2(e).

20 WIC Act s41(1)(b).

1.6 Structure of this Guide

The remainder of this Guide is structured as follows:

- Section 2 outlines the key elements that we require to be included in cost allocation manuals, and the required format of the manuals.[21]
- Section 3 sets out the guiding principles to be applied in the cost allocation process.
- Section 4 describes the minimum detail of the cost allocation method that we require to be included in cost allocation manuals.
- Appendix A contains a consolidated list of requirements to assist service providers in the preparation of cost allocation manuals.
- Appendix B provides some worked examples of attributing direct costs and allocating indirect costs.

21 This section draws partly on: Australian Energy Regulator, *Electricity transmission network service providers – Cost allocation guidelines*, September 2007.

2 Format and contents of cost allocation manuals

The service provider's cost allocation manual should include the information set out below.

2.1 Scope of the cost allocation manual and contextual information

The cost allocation manual should clearly outline its scope and purpose. It should also contain relevant contextual and background information. At a minimum, the service provider should include a detailed description of its operational structure, including:

- its major service delivery systems and the key services within these systems
- its declared services and how they relate to non-declared services, and
- its corporate functions and how they relate to declared and non-declared services.

In accordance with the requirements of the WIC Act, the subject of a service provider's cost allocation manual is its **declared infrastructure services**. However, a cost allocation manual may need to extend in scope beyond the declared services, depending on the cost allocation method adopted. For example, the cost of declared services could be calculated as a residual cost after deducting the cost of non-declared services from total cost:

$$Cost\ of\ Declared\ Service = Total\ Cost - Cost\ of\ Non\text{-}Declared\ Services$$

In this case, the subject of a service provider's cost allocation manual is still its declared infrastructure services, but they are costed as a residual of some or all of non-declared services. Therefore, the cost allocation manual would need to describe how costs are allocated to the non-declared services.

Allocating costs in this manner may support access pricing approaches such as a 'retail-minus' approach, where the price of accessing a service is generally based on the service provider's retail price minus the avoided or avoidable costs of the potentially contestable services (ie, non-declared) upstream and downstream of the declared services.

A 'retail-minus' avoidable cost approach was favoured by the Australian Competition and Consumer Commission (ACCC) in its determination of the access dispute between Sydney Water and Services Sydney Pty Ltd in 2007 (see Box 2.1).[22]

More recently, IPART determined that water and wastewater wholesale services provided by Sydney Water and Hunter Water Corporation (Hunter Water) for on-selling by a wholesale customer should be priced using the *retail-minus 'reasonably efficient competitor cost' plus net facilitation costs* approach.[23] This involves setting wholesale charges by taking Sydney Water's (or Hunter Water's) retail tariff, adding the incremental costs (or cost

22 Australian Competition & Consumer Commission, *Access dispute between Services Sydney Pty Ltd and Sydney Water Corporation*, *Arbitration Report*, 19 July 2007.

23 IPART, *Prices for wholesale water and sewerage services – Sydney Water Corporation and Hunter Water Corporation*, June 2017.

savings) it will incur by providing the wholesale service and subtracting the 'reasonably efficient' costs it would avoid by not directly supplying the wholesaler's end-use customers (eg, retailing costs).[24]

In general, we favour a cost allocation method and access price that ensures there are incentives and opportunities for efficient entry in the market for the provision of potentially competitive services 'upstream' or 'downstream' of the declared services, and that is in the long-term interest of end-users.

Box 2.1 Cost allocation and 'retail-minus' pricing

Under a 'retail-minus' pricing approach, the price of accessing a service is generally based on the service provider's retail price minus some component. For example, a retail-minus access price is sometimes calculated by taking the service provider's retail tariff, adding the incremental costs incurred as a result of providing access, and subtracting the avoided or avoidable costs of the potentially contestable services upstream and downstream of the declared services.

A 'retail-minus' avoidable cost approach was favoured by the Australian Competition and Consumer Commission (ACCC) in its determination of the access dispute between Sydney Water Corporation and Services Sydney Pty Ltd in 2007.[a] Under this approach, the costs subtracted from the retail prices would be the average or 'building block' costs of the service provider's contestable services.

a Australian Competition & Consumer Commission, *Access dispute between Services Sydney Pty Ltd and Sydney Water Corporation, Arbitration Report*, 19 July 2007.

Some declared services may be non-standard in nature and dependent on the unique circumstances of a third-party access proposal, such as interconnection services. For such services, the cost allocation manual should, at a minimum:

- define 'typical' such services
- describe in detail the nature of these services
- identify any investments the access seeker may be responsible for – eg, to connect new sewers at different points of interconnection, and
- provide principles for how the service provider would determine the proposed costs of these services.

2.2 Governance arrangements

The service provider's cost allocation manual should include detailed information on its governance arrangements in relation to the manual, including:

- A statement signed and dated by the service provider's Managing Director/Chief Executive Officer and Chief Financial Officer, attesting that the information contained in the cost allocation manual is accurate and that the service provider intends to comply with the cost allocation method.

24 We set system-wide prices that only apply to new wholesale arrangements involving entities licensed under WICA, which are: on-selling Sydney Water's or Hunter Water's water or sewerage services to their own customers, and do not have a recycled water plant. In the case of existing arrangements and where a recycled water plant is present, the wholesale supplier and customer can enter into an unregulated agreement or request that IPART determine a scheme-specific price.

- A version history and date of issue for the document.
- A description of how the service provider will monitor its compliance with the cost allocation method specified in its cost allocation manual.
- A description of how the service provider will review its cost allocation method and, if necessary, update its cost allocation manual. In the case of a service provider subject to retail price regulation, this review should occur at least once every determination period, immediately following a determination of its retail prices. The service provider should report the outcome of this review to IPART within six months of the commencement of the review.
- A description of how and where the service provider will maintain records of its allocation of costs to services, so that the allocation could be audited or otherwise verified by a third party, including IPART, if required.
- Details of accountabilities within the service provider for the cost allocation method and manual, including the key roles responsible for:
  - maintaining the manual
  - applying the method and maintaining separate accounts for declared infrastructure,[25] and
  - internally monitoring and reporting on the application of the method and the maintenance of separate accounts.
- For stakeholders who have questions related to the service provider's cost allocation manual, adequate details on appropriate contacts within the organisation, including names, postal and email addresses and telephone numbers.

2.3 Cost allocation method and rationale

The service provider's cost allocation manual should describe its cost allocation method, and should provide detailed information on the principles and policies used for attributing costs directly to, or allocating costs between, its systems and services (we discuss this further in Section 4). The service provider should also clearly outline the rationale for its proposed cost allocation method. Numeric information on actual/forecast costs is not required.

We consider that the pricing of access should ensure there are incentives and opportunities for efficient entry in the market for the provision of potentially competitive services 'upstream' or 'downstream' of the declared services, and should also be in the long-term interest of end-users.

Accordingly, the cost allocation manual should describe how the cost allocation method relates to:

- the development of efficient entry and competition in services upstream or downstream of the declared services
- each of the WIC Act pricing principles (section 41) listed in Box 2.2
- the long-term interest of end-users, and

25 As required under WIC Act s42(1)(a).

- any relevant prevailing pricing determinations (eg, retail price determinations and wholesale price determinations).

As noted in Section 1.3, we consider a key purpose of the cost allocation manual is to facilitate the commencement of negotiations between service providers and access seekers. When used for the purpose of setting access prices, the cost allocation method would therefore be expected to be applied to a service providers' *forecast* costs. Where IPART has made a retail or wholesale price determination for any part of the period under consideration for an access agreement or determination, forecast costs should be allocated such that the annual sum of all allocated costs reconciles with the service provider's total annual revenue requirement allowed by IPART at the prevailing price determination.

If any part of the access period falls outside a determination period, the service provider would be required to forecast costs, revenues and relevant changes to allocators using robust and well-justified methods. The cost allocation manual should set out principles and outline methods that the service provider would use to forecast key costs, revenues and allocators.

Box 2.2 The WIC Act's principles for infrastructure access prices

Section 41 of the WIC Act requires that when deciding whether or not to approve an access undertaking or determining a dispute in relation to the pricing of access to an infrastructure service that is the subject of a coverage declaration, IPART must have regard to the following pricing principles:

a) the price of access should generate expected revenue for the service that is at least sufficient to meet the efficient costs of providing access to the service, and include a return on investment commensurate with the regulatory and commercial risks involved

b) the price of access should allow multi-part pricing and price discrimination when it aids efficiency

c) the price of access should not allow a vertically integrated service provider to set terms and conditions that discriminate in favour of its downstream operations, except to the extent to which the cost of providing access to other operators is higher

d) the price of access should provide incentives to reduce costs or otherwise improve productivity.

Section 41(3) also requires that:

> These principles must be implemented in a manner that is consistent with any relevant pricing determinations for the supply of water and the provision of sewerage services, including (where applicable) the maintenance of 'postage stamp pricing' (that is, a system of pricing in which the same kinds of customers within the same area of operations are charged the same price for the same service).

2.4 Supporting information

The cost allocation manual should include:

- For each of its major service delivery systems, a description of key assets and non-financial data that can inform cost allocation (eg, water and/or wastewater flows per system, system capacity and connections per system).
- A description of the service provider's information systems and the financial and non-financial information contained in these information systems that can inform cost allocation.

3 Cost allocation method and principles

Cost allocation is a step-by-step process that generally involves:

- identifying and defining the cost objects to which costs will be assigned
- identifying and classifying costs as direct or indirect
- tracing direct costs and attributing them to the cost objects, and
- identifying and choosing a method of relating indirect costs to the cost objects – ie, allocating these to cost objects using appropriate allocators or cost drivers.

In setting out its cost allocation method, the service provider should:

a) follow the steps outlined below and clearly present the requested information, or

b) if an alternative approach to cost allocation is proposed, provide justification and a detailed explanation of the alternative approach.

3.1 Identifying and defining cost objects

Cost allocation is the process of identifying, aggregating, and assigning costs to specific cost objects. A **cost object** is any activity or item for which costs are separately measured. Cost objects can be a:

- product or service
- production process
- sales region
- department or division of a company
- specific job, contract or customer, or
- organisational segment.

The declared infrastructure services are the primary cost objects of the cost allocation process. For illustration, in the case of Sydney Water, the primary cost objects are currently its North Head, Bondi and Malabar sewage reticulation networks (see Box 3.1). However, a service provider may choose to identify subcomponents of their declared services as the cost objects in its cost allocation manual.

For any costs that cannot be directly attributed to a specific declared service (ie, indirect costs), the cost allocation manual should clearly explain and justify how costs are allocated:

- between declared and non-declared services, and
- among declared services, by geographic system.

Box 3.1 Sydney Water's declared sewerage services

Three of Sydney Water's sewage reticulation networks (Bondi, Malabar and North Head) were 'declared' from the outset of the WIC Act. Under Schedule 4 of the WIC Act, the following services are taken to be the subject of a coverage declaration from the commencement of the WIC Act:[a]

- connection of another party's works to Sydney Water's Bondi Reticulation Network; and conveyance of sewage through Sydney Water's Bondi Reticulation Network from the premises of another party's customers to the points where the Network connects with the other party's works
- connection of another party's works to Sydney Water's Malabar Reticulation Network; and conveyance of sewage through Sydney Water's Malabar Reticulation Network from the premises of another party's customers to the points where the Network connects with the other party's works
- connection of another party's works to Sydney Water's North Head Reticulation Network; and conveyance of sewage through Sydney Water's North Head Reticulation Network from the premises of another party's customers to the points where the Network connects with the other party's works.

[a] WIC Act Schedule 4 s2.

3.2 Cost classifications

At an aggregate level, costs can be classified as either *direct* or *indirect*. Direct costs are costs that can be directly traceable to a specific cost object. Costs that cannot be directly traceable to a specific cost object are the remaining indirect costs.

Indirect costs can be further categorised as either common costs or joint costs:[26]

- joint costs arise when a single and indivisible process gives rise to several products or services and where therefore the production or delivery of one product or service is dependent on the production and delivery of another, and
- common (shared) costs arise when a single process gives rise to several products or services, even though they can be produced independently.

Most indirect costs for water businesses are common costs. The most notable are corporate overheads. Joint costs are also relevant for many water businesses, and may need to be considered. For example, biogas from the wastewater treatment process can be used to operate cogeneration assets and produce electricity. Biosolids are also a major by-product of the wastewater treatment process, used (and potentially sold) as soil conditioner.

Relevant here is another type of basic cost classification—that involving fixed costs and variable costs. In general, fixed costs do not change with the volume of output. Costs like rent, capital costs and overhead costs are often considered fixed costs. Variable costs do change with the volume of output, and include costs such as energy costs, labour costs and cost of materials used in the production process. We note that over long time-horizons or if there is a very substantial change in output, some fixed costs could become variable. The

26 Pardina, M.R., Rapti, R.S., and Groom, E. (2008), *Accounting for Infrastructure Regulation*, The World Bank (Washington), p 49.

cost allocation manual should explain the extent to which costs are fixed or variable, the horizon over which the costs may be fixed, and the drivers that may cause the costs to be varied.

3.3 The causality principle in allocating costs

Costs should generally be allocated to services on the basis of *causality*. That is, costs should be allocated to the cost objects that causes the costs to be incurred. However, establishing clear cause-and-effect relationships between costs and cost objects is not always possible (in particular without undue cost and effort), complicating the cost allocation process. We provide further detail below.

3.3.1 Identifying direct costs and tracing them to cost objects

Identifying and allocating direct costs causes no allocation problems, as no portion of these direct costs relate to another cost object. Many costs for water businesses are direct costs. The service provider should clearly identify all key direct costs in its cost allocation manual.

3.3.2 Identifying indirect costs and allocating them to cost objects

The difficulty arises with indirect costs (ie, joint or common costs), as the allocation of these costs can involve degrees of subjectivity. These costs are ideally assigned to cost objects on the basis of cost drivers (or allocators). Cost drivers (allocators) should have cause-and-effect relationships with the indirect costs being incurred. Cost drivers (or allocators) can be divided into the following three types:[27]

- **Input based**. Allocation is based on the share of the other attributable inputs (eg, direct labour or direct materials).
- **Output based**. Allocation is based on output indicators such as a given product's share of production or sales volume relative to the total output of the company.
- **Revenue based**. Allocation is based on revenues generated by the product in question.

An appropriate allocator is one which is transparent, simple and measurable, and where there is a high degree of correlation between the cost and the allocator. Information for the chosen allocator should also be available without undue cost and effort – that is, the cost and effort of obtaining the required information should be in proportion to the resulting improvement in the accuracy of the cost allocation.

There may be causal cost drivers (allocators) where quantifying the precise nature of the cause-and-effect relationship is impractical. In these instances, the cost allocation manual should still describe the nature of the cause-and-effect relationship and the reasons why it is impractical to measure and use as an allocator.

27 Pardina, M.R., Rapti, R.S., and Groom, E. (2008), *Accounting for Infrastructure Regulation*, The World Bank (Washington), p 57.

Several tiers of allocation (and allocators) may be required. For instance, to allocate indirect corporate costs to cost objects, a service provider might:

- first allocate these costs across its water, wastewater, stormwater and recycled water divisions (eg, on the basis of proportion of total connections or customers)
- then allocate the portion of 'wastewater' corporate costs to specific geographic wastewater systems (eg, also on the basis of connections or customer numbers)
- then allocate these costs to cost objects (services) within each geographic system (eg, on the basis of proportion of direct costs attributable to each cost object).

For the purpose of cost allocation, indirect costs are often pooled on the basis that the cause-and-effect relationships between several indirect costs and the relevant cost objects are identical or very closely related. Once the indirect costs have been allocated to appropriate cost pools, these cost pools can then be allocated to cost objects using a single cost driver or allocator.

In some cases, indirect costs may need to be allocated on a non-causal basis. This may be, for example, if a common cost is immaterial, if a causal relationship cannot be established without undue cost and effort, or if there is another economic argument for non-causal allocation (eg, based on willingness to pay). In these instances, the basis for allocation should still be transparent and defensible, and should be clearly explained in the cost allocation manual. The cost allocation manual should also explain why a non-causal approach has been adopted.

3.4 Cost allocation relative to a service provider's annual revenue requirement

As we noted in Section 2.3, when used for the purpose of setting access prices, the cost allocation method would be applied to the service provider's *forecast* costs. Where IPART has made a retail or wholesale price determination for any part of the period under consideration for an access agreement or determination, forecast costs should be allocated such that the annual sum of all allocated costs reconciles with the service provider's total annual revenue requirement allowed by IPART at the prevailing price determination.

However, if any part of the access period falls outside of a determination period, the service provider would be required to forecast costs, revenues and relevant changes to allocators using robust and well-justified methods as outlined in the cost allocation manual. The cost allocation manual should set out principles and outline methods that the service provider would use to forecast key costs, revenues and allocators.

3.5 A cost should only be allocated once

The service provider should not allocate the same cost more than once. This means that:

- the same cost may not be treated as both a direct cost and an indirect or shared cost
- a direct cost may only be attributed once to a single cost object, and
- an indirect cost may only be allocated once between cost objects.

The cost allocation manual should explain how the cost allocation method ensures that there is no double-counting and that the same cost item is allocated only once.

3.6 The basis for cost allocation should be reviewed periodically

As noted in Section 2.2, the service provider should periodically review its cost allocation method and manual to ensure the basis for allocation remains relevant. In the case of a service provider subject to retail price regulation, this review should occur at least once every determination period, immediately following a determination of its retail prices. The service provider should report the outcome of this review to IPART within six months of the commencement of the review.

Under the WIC Act, any amendment to a service provider's cost allocation manual requires consent from IPART.[28]

28 WIC Act s42(6).

4 Detail required on the cost allocation method

As noted above, a service provider's cost allocation manual should detail the principles, policies and methods applied in attributing or allocating costs to the declared services. The cost allocation manual should be sufficiently detailed so that, if using the same input data, IPART (or another third party) could replicate the service provider's allocation of costs to declared services.

Accordingly, the service provider should clearly identify the **specific** operating and maintenance costs (direct and indirect) allocated to **each** of the declared services. It should also clearly outline the relevance of these costs to the declared services (ie, why they are directly related to each declared service or the cost drivers used to allocate the indirect costs).

The service provider should also identify which capital assets relate to **each** declared service and outline how these assets are valued and subsequently how the capital costs are calculated. For most regulated businesses, this will involve clearly outlining the method used to allocate the Regulatory Asset Base (RAB) (or capital costs) to cost objects to establish the initial asset values for each declared service.

For clarity, we note that the cost allocation manual is **not** intended to include actual/forecast cost information. The cost allocation manual requires a description of types of costs – eg, a description of the type of operating or capital cost being directly or indirectly allocated to the cost object or declared services. The remainder of this section outlines the detail of the cost allocation method that we expect service providers to include in their cost allocation manuals.

4.1 Direct operating and maintenance costs

Direct costs are costs that can be directly traceable to a specific cost object. Materials, energy and labour directly used when producing a specific good or delivering a specific service are examples of direct costs.

For each direct operating and maintenance cost associated with a relevant cost object,[29] the cost allocation manual should describe and explain:

- the nature of the cost, including the extent to which it is fixed or variable, the horizon over which the cost may be fixed, and the drivers that may cause the cost to be varied
- the characteristics that associates it uniquely with the cost object – ie, the basis for classifying it as a direct cost
- the system(s) used to collect and record the cost, including how these systems are maintained, reviewed and updated (including frequency of review/update).

29 Relevant cost objects are those that pertain to a declared service.

4.2 Indirect operating and maintenance costs

Indirect costs are costs that cannot be assigned directly to a specific cost object or service. Indirect costs are also called shared, common or joint costs. Indirect costs need to be allocated to cost objects, using appropriate cost drivers or allocators.

4.2.1 Cost objects and indirect costs

For each of the indirect operating and maintenance costs associated with a relevant cost object,[30] the cost allocation manual should describe/explain:

- the nature of the indirect cost or cost pool[31], including:
  - the extent to which the cost or cost pool is fixed or variable, the horizon over which the cost may be fixed, and the drivers that may cause the cost to be varied
  - if a cost pool, the costs included in the pool, and the reasons why the costs can be grouped together for the purposes of allocation
- the cost objects between which each indirect cost or cost pool is to be allocated, and the characteristics that associates the cost or cost pool with the cost objects
- the system(s) used to collect and record the costs, and
- how these systems are maintained, reviewed and updated (including frequency of review/update).

4.2.2 Cost drivers or allocators for indirect costs

For each of the indirect operating and maintenance costs associated with a relevant cost object, the cost allocation manual should describe/explain:

- the nature of the allocator(s) to be used for allocating the cost or cost pool to the cost objects, including the relationship between the cost or cost pool, the allocator(s) and the cost object
- where a causal cost driver (allocator) exists, but where quantifying the precise nature of the cause-and-effect relationship is impractical, the nature of the cause-and-effect relationship, and the reasons why it is impractical to measure and use as an allocator
- where a non-causal allocator is used, the reasons for choosing a non-causal allocator
- where another suitable allocator is available without undue cost and effort, the reasons for choosing the selected allocator over any other suitable allocator
- where a chosen allocator is a numeric quantity or percentage that will remain unchanged until the next review of the manual:[32]
  - details of the numeric quantity or percentage of the allocator, and

30 Relevant cost objects are those that pertain to a declared service.

31 A cost pool is a collection of indirect costs that have similar drivers and/or allocators, and are therefore pooled together to simplify allocation.

32 In the case of a service provider subject to retail price regulation, we require its cost allocation manual to be reviewed and updated (if necessary) at a minimum once in every determination period.

- how the numeric quantity or percentage has been calculated, the source of data used in the calculation, and the reasons why it will remain unchanged until the next review of the manual
- where a chosen allocator is a numeric quantity or percentage that is likely to change from time to time, how the numeric quantity or percentage will be calculated, and the source of data used in the calculation.

4.3 Capital costs

Under IPART's current building block approach to determining total allowed costs and setting retail prices for metropolitan water agencies,[33] capital costs comprise a return on assets and a return of assets (regulatory depreciation), plus return on working capital.

The return *on* assets represents the opportunity cost of capital invested. It is derived by multiplying the value of the utility's Regulatory Asset Base (RAB) by an appropriate rate of return. The return *of* assets (depreciation) represents the costs of maintaining the capital base. It is calculated using straight line depreciation of the RAB. Therefore, the RAB is an important determinant of capital costs under the building block approach.

However, it is generally not possible to identify the specific regulatory values of pre-2000 assets within the RABs of metropolitan water agencies currently regulated by IPART. This is because, rather than being based on valuation of individual assets, the initial 'line in the sand' RABs were calculated in 1999 as the net present value of future cash flows, assuming they would continue.[34] This means Sydney Water's RAB, for example, is less than the replacement value of its assets.

Therefore, it may also not be possible to directly attribute capital costs associated with many existing assets to specific services within the water and wastewater supply chains (eg, sewage transport, treatment, disposal and retail services) or to specific geographic water and wastewater systems. As a result, the RAB (and hence capital costs) has to be initially allocated across these services/systems. This initial allocation can then be rolled forward over time to incorporate the known subsequent efficient capital expenditure for each cost object (or water or wastewater service) less any disposals, capital contributions and depreciation applicable to these services.

33 These water agencies currently include: Sydney Water Corporation, Hunter Water Corporation, Central Coast Council, and Essential Water.

34 For example, rather than being based on the replacement value of its assets, Sydney Water's opening RAB (which was established for the 2000 metropolitan water price determination) was aligned with Sydney Water's revenues for 1998/1999. That is, for the 2000 metropolitan water price determination, IPART took a 'line in the sand' approach and calculated an opening RAB value based on the present value of cash flows in 1999, assuming they would continue. Since the line in the sand establishment of the RABs of water utilities regulated by IPART, actual prudent and efficient capital expenditure has been added to each utility's RAB.

4.3.1 Initial RAB allocation

Several options exist for initially allocating the RAB (ie, asset values) across services. For example, two such options are:

1. allocate the RAB to cost objects (declared and non-declared services) in proportion to the underlying depreciated replacement values[35] of assets providing these services, or
2. set the value of assets providing potentially competitive services (eg, water treatment plants, sewage treatment plants and retail assets) at their depreciated replacement values and allocate the remaining RAB[36] to other services (including the declared services).

Each of these approaches (and others) come with trade-offs that the service provider will need to consider in deciding on its approach. It is our preference that the cost allocation method allocates the RAB across services so as not to unduly favour the service provider in the provision of potentially competitive services.

The cost allocation manual should provide a detailed explanation and rationale for the service provider's chosen approach to allocating the RAB, including, for all key assets at a minimum:

- the means of valuing the assets, including key assumptions and the rationale behind the approach to valuation and behind the assumptions,[37]
- the means of allocating the RAB to assets and to cost objects, including key assumptions and the rationale behind the approach to allocating the RAB and behind the assumptions.

4.3.2 Calculating and allocating return on and return of assets

Once the RAB has been allocated to cost objects or services, the cost allocation manual should describe/explain:

- the calculation of the rate of return on assets, by asset and cost object, and assumptions underpinning this calculation (where relevant, this should be the weighted average cost of capital (WACC) adopted by IPART in the prevailing price determination, unless a strong case is provided otherwise)
- the calculation of the return of assets (depreciation), by asset and cost object, and assumptions underpinning this calculation (including assumed asset lives)
- how the service provider will attribute or allocate future efficient capital expenditure (direct and indirect costs), return on assets, depreciation, disposals and capital contributions to each cost object

35 In regulatory settings, forward-looking estimates of asset values are generally favoured. A commonly employed approach to estimating forward-looking asset values is to estimate the current replacement costs of the assets. Two such approaches to valuation are the modern engineering equivalent replacement asset (MEERA) values or optimised replacement cost (ORC).

36 Under this approach, the 'remaining RAB' could be allocated in proportion to underlying depreciated replacement values (but not *at* depreciated replacement values).

37 For example, if a depreciated replacement cost method is used to initially value an asset, a service provider should outline the assumed configuration, performance and asset life of the 'replacement' asset relative to the existing asset, and the reasons for these assumptions.

- how the asset base for each cost object will be calculated and rolled forward, taking into account future efficient capital expenditure, depreciation, disposal of assets and capital contributions
- the system(s) used to collect and record the capital costs, and
- how these systems will be maintained, reviewed and updated (including frequency of review/update).

4.4 Any other relevant costs or allowances

In addition to operating costs and the return on and return of assets, the service provider may need to allocate other costs to the declared services, including allowances for taxation costs and return on working capital. The cost allocation manual should clearly set out how the service provider allocates such other costs to cost objects.

Appendices

A Consolidated list of requirements

Table A.1 provides a consolidated list of requirements contained in this Guide, to serve as a checklist for the service provider in preparing its cost allocation manual. As noted in Section 1.2, this Guide outlines our views on:

- principles that should be used by a service provider in allocating costs and developing its cost allocation manual, and
- what a service provider's cost allocation manual should include, as a minimum.

Table A.1 Consolidated list of requirements

Guide Reference	Requirements
Section 2: Format and contents of cost allocation manuals	
2.1 Scope of the cost allocation manual and contextual information	
	The cost allocation manual should clearly outline its scope and purpose. It should also contain relevant contextual and background information. At a minimum, the service provider should include a detailed description of its operational structure, including: ▼ its major service delivery systems and the key services within these systems ▼ its declared services and how they relate to non-declared services, and ▼ its corporate functions and how they relate to declared and non-declared services.
	For non-standard declared services, such as interconnection services, the cost allocation manual should, at a minimum: ▼ define 'typical' such services ▼ describe in detail the nature of these services ▼ identify any investments the access seeker may be responsible for – eg, to connect new sewers at different points of interconnection, and ▼ provide principles for how the service provider would determine the proposed costs of these services.
2.2 Governance arrangements	
	A statement signed and dated by the service provider's Managing Director/Chief Executive Officer and Chief Financial Officer, attesting that the information contained in the cost allocation manual is accurate and that the service provider intends to comply with the cost allocation method.
	A version history and date of issue for the document.
	A description of how the service provider will monitor its compliance with the cost allocation method specified in its cost allocation manual.

Guide Reference	Requirements
Also Section 3.6	A description of how the service provider will review its cost allocation method and, if necessary, update its cost allocation manual. ▼ In the case of a service provider subject to retail price regulation, this review should occur at least once every determination period, immediately following a determination of its retail prices. ▼ The service provider should report the outcome of this review to IPART within six months of the commencement of the review. Under the WIC Act, any amendment to a service provider's cost allocation manual requires consent from IPART.
	A description of how and where the service provider will maintain records of its allocation of costs to services, so that the allocation could be audited or otherwise verified by a third party, including IPART, if required.
	Details of accountabilities within the service provider for the cost allocation method and manual, including the key roles responsible for: ▼ maintaining the manual ▼ applying the method and maintaining separate accounts for declared infrastructure, and ▼ internally monitoring and reporting on the application of the method and the maintenance of separate accounts.
	For stakeholders who have questions related to the service provider's cost allocation manual, adequate details on appropriate contacts within the organisation, including names, postal and email addresses and telephone numbers.
2.3 Cost allocation method and rationale	
Also Sections 3 and 4.	The cost allocation manual should describe the cost allocation method, and should provide detailed information on the principles and policies used for attributing costs directly to, or allocating costs between, systems and services. The manual should clearly outline the rationale for the proposed cost allocation method. Numeric information on actual/forecast costs is not required. See Sections 3 and 4 for detailed requirements.
	The cost allocation manual should describe how the cost allocation method relates to: ▼ the development of efficient entry and competition in services upstream or downstream of the declared services ▼ each of the WIC Act pricing principles (section 41) ▼ the long-term interest of end-users, and ▼ any relevant prevailing pricing determinations (eg, retail price determinations and wholesale price determinations).
Also Section 3.4	When used for the purpose of setting access prices, the cost allocation method would be expected to be applied to a service providers' forecast costs. Where IPART has made a retail or wholesale price determination for any part of the period under consideration for an access agreement or determination, forecast costs should be allocated such that the annual sum of all allocated costs reconciles with the service provider's total annual revenue requirement allowed by IPART at the prevailing price determination. If any part of the access period falls outside a determination period, the service provider would be required to forecast costs, revenues and relevant changes to allocators using robust and well-justified methods. The cost allocation manual should set out principles and outline methods that the service provider would use to forecast key costs, revenues and allocators.
2.4 Supporting information	
	For each of the service provider's major service delivery systems, the cost allocation manual should describe key assets and non-financial data that can inform cost allocation (eg, water and/or wastewater flows per system, system capacity and connections per system).
	The cost allocation manual should describe the service provider's information systems and the financial and non-financial information contained in these information systems that can inform cost allocation.

Guide Reference	Requirements
Section 3: Cost allocation method and principles	
	The service provider would be expected to follow the steps outlined below in developing its cost allocation method. If the service provider proposes an alternative approach to cost allocation, it should clearly explain the proposed approach and provide justification. Cost allocation is a step-by-step process that generally involves: ▼ identifying and defining the cost objects to which costs will be assigned ▼ identifying and classifying costs as direct or indirect ▼ tracing direct costs and attributing them to the cost objects, and ▼ identifying and choosing a method of relating indirect costs to the cost objects – ie, allocating these to cost objects using appropriate allocators or cost drivers.
3.1 Identifying and defining cost objects	
	The declared infrastructure services are the primary cost objects of the cost allocation process, although the service provider may choose to identify subcomponents of these services as the cost objects in its cost allocation manual.
	For any costs that cannot be directly attributed to a specific declared service (ie, indirect costs), the cost allocation manual should clearly explain and justify how costs are allocated: ▼ between declared and non-declared services, and ▼ among declared services, by geographic system.
3.2 Cost classifications	
Also Section 4	In describing the nature of costs, costs should be classified as direct or indirect (joint or common/shared) costs, and the cost allocation manual should explain the extent to which costs are fixed or variable, the horizon over which the costs may be fixed, and the drivers that may cause the costs to be varied.
3.3 The causality principle in allocating costs	
	Costs should generally be allocated to services on the basis of causality. That is, costs should be allocated to the cost objects that causes the costs to be incurred.
	The service provider should clearly identify all key direct costs in its cost allocation manual.
	For allocation of indirect costs, cost drivers (allocators) should have cause-and-effect relationships with the indirect costs being incurred.
	An appropriate allocator is one which is transparent, simple and measurable, and where there is a high degree of correlation between the cost and the allocator. Information for the chosen allocator should also be available without undue cost and effort – that is, the cost and effort of obtaining the required information should be in proportion to the resulting improvement in the accuracy of the cost allocation. There may be cost drivers (allocators) where quantifying the precise nature of the cause-and-effect relationship is impractical. In these instances, the cost allocation manual should still describe the nature of the cause-and-effect relationship and the reasons why it is impractical to measure and use as an allocator.
	When a non-causal allocator is proposed, the basis for allocation should still be transparent and defensible, and should be clearly explained in the cost allocation manual. The cost allocation manual should also explain why a non-causal approach has been adopted.
3.4 Cost allocation relative to a service provider's annual revenue requirement	
	See Section 2.3.

Guide Reference	Requirements
3.5 A cost should only be allocated once	
	The service provider should not allocate the same cost more than once. This means that: ▼ the same cost may not be treated as both a direct cost and an indirect or shared cost ▼ a direct cost may only be attributed once to a single cost object, and ▼ an indirect cost may only be allocated once between cost objects. The cost allocation manual should explain how the cost allocation method ensures that there is no double-counting and that the same cost item is allocated only once.
3.6 The basis for cost allocation should be reviewed periodically	
	See Section 2.2.
Section 4: Detail required in the cost allocation method	
	The cost allocation manual should be sufficiently detailed so that, if using the same input data, IPART (or another third party) could replicate the service provider's allocation of costs to declared services. The service provider should clearly identify the specific operating and maintenance costs (direct and indirect) allocated to each of the declared services. It should also clearly outline the relevance of these costs to the declared services (ie, why they are directly related to each declared service or the cost drivers used to allocate the indirect costs). The service provider should also identify which capital assets relate to each declared service and outline how these assets are valued and subsequently how the capital costs are calculated. For most regulated businesses, this will involve clearly outlining the method used to allocate the Regulatory Asset Base (RAB) (or capital costs) to cost objects to establish the initial asset values for each declared service. The cost allocation manual is not intended to include actual/forecast cost information. The cost allocation manual requires a description of types of costs – eg, a description of the type of operating or capital cost being directly or indirect allocated to the cost object or declared services.
4.1 Direct operating and maintenance costs	
	For each direct operating and maintenance cost associated with a relevant cost object, the cost allocation manual should describe and explain: ▼ the nature of the cost, including the extent to which it is fixed or variable, the horizon over which the cost may be fixed, and the drivers that may cause the cost to be varied ▼ the characteristics that associates it uniquely with the cost object – ie, the basis for classifying it as a direct cost ▼ the system(s) used to collect and record the cost, including how these systems are maintained, reviewed and updated (including frequency of review/update).
4.2 Indirect operating and maintenance costs	
	For each of the indirect operating and maintenance costs associated with a relevant cost object, the cost allocation manual should describe/explain: ▼ the nature of the indirect cost or cost pool, including: – the extent to which the cost or cost pool is fixed or variable, the horizon over which the cost may be fixed, and the drivers that may cause the cost to be varied – if a cost pool, the costs included in the pool, and the reasons why the costs can be grouped together for the purposes of allocation ▼ the cost objects between which each indirect cost or cost pool is to be allocated, and the characteristics that associates the cost or cost pool with the cost objects ▼ the system(s) used to collect and record the costs, and ▼ how these systems are maintained, reviewed and updated (including frequency of review/update).

Guide Reference	Requirements
	For each of the indirect operating and maintenance costs associated with a relevant cost object, the cost allocation manual should describe/explain: ▼ the nature of the allocator(s) to be used for allocating the cost or cost pool to the cost objects, including the relationship between the cost or cost pool, the allocator(s) and the cost object ▼ where a causal cost driver (allocator) exists, but where quantifying the precise nature of the cause-and-effect relationship is impractical, the nature of the cause-and-effect relationship, and the reasons why it is impractical to measure and use as an allocator ▼ where a non-causal allocator is used, the reasons for choosing a non-causal allocator ▼ where another suitable allocator is available without undue cost and effort, the reasons for choosing the selected allocator over any other suitable allocator ▼ where a chosen allocator is a numeric quantity or percentage that will remain unchanged until the next review of the manual: – details of the numeric quantity or percentage of the allocator, and – how the numeric quantity or percentage has been calculated, the source of data used in the calculation, and the reasons why it will remain unchanged until the next review of the manual ▼ where a chosen allocator is a numeric quantity or percentage that is likely to change from time to time, how the numeric quantity or percentage will be calculated, and the source of data used in the calculation.
4.3 Capital costs	
	The cost allocation manual should provide a detailed explanation and rationale for the service provider's chosen approach to allocating the RAB, including, for all key assets at a minimum: ▼ the means of valuing the assets, including key assumptions and the rationale behind the approach to valuation and behind the assumptions, and ▼ the means of allocating the RAB to assets and to cost objects, including key assumptions and the rationale behind the approach to allocating the RAB and behind the assumptions. It is our preference that the cost allocation method allocates the RAB across services so as not to unduly favour the service provider in the provision of potentially competitive services.
	Once the RAB has been allocated to cost objects or services, the cost allocation manual should describe/explain: ▼ the calculation of the rate of return on assets, by asset and cost object, and assumptions underpinning this calculation (where relevant, this should be the weighted average cost of capital (WACC) adopted by IPART in the prevailing price determination, unless a strong case is provided otherwise) ▼ the calculation of the return of assets (depreciation), by asset and cost object, and assumptions underpinning this calculation (including assumed asset lives) ▼ how the service provider will attribute or allocate future efficient capital expenditure (direct and indirect costs), return on assets, depreciation, disposals and capital contributions to each cost object ▼ how the asset base for each cost object will be calculated and rolled forward, taking into account future efficient capital expenditure, depreciation, disposal of assets and capital contributions ▼ the system(s) used to collect and record the capital costs, and ▼ how these systems will be maintained, reviewed and updated (including frequency of review/update).
4.4 Any other relevant costs or allowances	
	In addition to operating costs and the return on and return of assets, the service provider may need to allocate other costs to the declared services, including allowances for taxation costs and return on working capital. The cost allocation manual should clearly set out how the service provider allocates such other costs to cost objects.

B Examples of attributing direct and allocating indirect costs

The following tables provide worked examples of cost attribution and allocation, to assist service providers in the preparation of cost allocation manuals. The examples are for illustrative purposes only. They do not form a comprehensive list of all direct and indirect costs that a business is expected to incur, and they do not prescribe particular approaches to cost allocation.

Table B.1 Example – direct costs attributed to services

Direct cost	Details on the cost	Basis for classification
Direct energy costs	This cost includes the energy metered separately for and consumed directly by the service or cost object (eg, a water or wastewater transportation network). It excludes energy costs incurred by business units that provide services to facilitate or support the operation of the service but which also support other services, such as energy consumed by corporate (eg, IT) business units. These are indirect costs, which need to be allocated to services using an appropriate allocator or cost driver (see examples below).	If energy for operating the service is metered separately, then the cost of this energy can be directly attributed to the service.
Direct chemical costs	This includes the cost of any chemicals used in operating and maintaining the declared service. It excludes the cost of chemicals used in ‘upstream’ or ‘downstream’ services (eg, a sewage treatment plant downstream of a declared wastewater reticulation network), or in providing services in other geographic systems.	The costs of chemicals that are used exclusively for maintaining and operating a service are direct costs (as they can be attributed directly to that service).
Direct labour costs	This includes labour costs incurred solely in maintaining and operating a service (eg, the costs of a maintenance crew devoted to a declared reticulation network). It excludes labour costs incurred by business units that provide services to support the operation of the declared service but which also support other services, such as corporate labour costs (eg, HR, IT and management labour costs). These are indirect labour costs, which need to be allocated to services using an appropriate allocator or cost driver.	Labour costs can be quantified where personnel are devoted solely to particular services and/or where labour time (eg, minutes or hours) is recorded rigorously against specific services. Where labour costs are incurred solely in providing a service, they should be attributed directly to that service.

Table B.2 Example – Indirect costs allocated to services

Indirect cost	Details on the cost or cost pool	Cost objects	Allocation method	Justification for method
Corporate costs	This includes the costs of business/service support functions, such as IT, HR, insurance and finance.	All services	As examples, these costs could be allocated to: ▼ A utility's overall wastewater division, based on number of wastewater customer connections (relative to the utility's total water, wastewater, recycled water and stormwater customer connections) ▼ Specific geographic wastewater systems, based on each system's proportion of total wastewater customer connections ▼ Services (eg, wastewater treatment, transportation and retail) within each of these wastewater systems, based on each service's proportion of total direct costs of the specific geographic wastewater system.	Number of customer connections is a reasonable determinant of a system's corporate costs, with a higher number of customer connections likely to incur greater costs (and vice-versa). A service's indirect costs are also likely to be highly correlated with its direct costs.