

Water today, water tomorrow

Future access pricing in the water sector A discussion paper





About this document

This document introduces some of the terminology, concepts and issues we will need to consider in developing a new charging rules framework for access pricing for the water sector in England and Wales. It describes:

- what access pricing is and why it matters;
- some of the key issues we will need to consider around access pricing;
- which costs could be considered in setting access prices; and
- the lessons that we can learn from other sectors.

The UK Government's Water Bill, published in June 2013, will extend the role of competition in the sector in England. This will mean new companies will have access to the systems and services provided by monopoly water and sewerage and water only companies. The Water Bill also requires us to prepare rules that monopoly companies will need to follow in setting the prices they will charge for providing access.

Contents

1. Why does access pricing matter?	4
2. What are the main issues?	8
3. Which costs should we consider?	12
4. What lessons can we learn from other sectors?	15
5. Next steps	26
6. Further information	27

1. Why does access pricing matter?

Most people in England and Wales receive their water services from one of 19 licensed regional monopoly companies and their sewerage services from one of 10 companies. Some customers also receive services from licensed local companies (new appointments). Only certain non-household customers can choose their supplier.

Each monopoly company currently provides a 'source to tap' business in its area to household and non-household customers (it is 'vertically integrated'). It controls:

- customer-facing ('retail') services such as reading water meters and sending bills to customers; and
- less customer-facing ('wholesale') services such as collecting and treating water and wastewater.

And in June 2013, the UK Government published draft legislation (the Water Bill) to achieve this vision. Once the changes in the Bill become law, it will – among other things – allow:

- all non-household customers in England to be able to choose their retail supplier ('retail reforms'); and
- new companies – called 'new entrants' – to become licensed to supply particular wholesale services ('upstream reforms'). They would not have to provide any retail services to end customers as they do under the current water supply licensing (WSL) framework. They would also be able to provide sewerage services.

Together these reforms will encourage:

- greater competition in providing certain services;
- the delivery of improved services, and lower prices to end consumers;
- greater innovation; and
- increased transparency of costs leading to more informed decision making around environmental trade-offs, in turn leading to improved environmental outcomes.

In particular, the UK Government has estimated there could be overall benefits of £2 billion to customers, the economy and the environment from its reform of wholesale services.

The Water Bill

The Water White Paper ('Water for Life'), which was published December 2011, described the UK Government's vision for future water management in England in which:

- the water sector is resilient;
- all water companies are more efficient and customer focused; and
- water is valued as the precious resource it is.

Water supply licensing

In 2005, the water supply licensing (WSL) framework was introduced to encourage competition in water retailing activities and upstream water resource activities.

Under WSL, new companies can supply any non-household customer that uses more than five million litres of water a year (50 million litres a year in Wales).

Companies can only supply retail services or combined retail and wholesale services. So they are unable to specialise in offering particular services. This limits the scope for them to innovate and deliver lower prices or improved services.

Access to what?

If new entrants are to provide wholesale services, then they will need to interact with the existing monopoly water and sewerage companies. This may involve the monopoly companies charging new entrants a price for using ('accessing') their infrastructure.

Access to a monopoly company's water supply and sewerage infrastructure may include access to:

- networks;
- storage facilities; and
- treatment works.

For example, a new entrant could apply for a 'wholesale authorisation', which would enable it to introduce water into the supply system of an existing monopoly company. So, the monopoly company will charge a price for moving the new entrant's water through its pipe network.

A new entrant may also wish to purchase a range of other services from the monopoly company.

What price?

In the past, prices that monopoly companies could charge for access to their infrastructure have been calculated by using the 'costs principle'. But the costs

The costs principle

Historically, the costs principle has been interpreted as requiring monopoly companies to charge access prices based on 'ARROW' costs. These are costs that, as a result of being replaced as the supplier, the monopoly company:

- avoids;
- reduces; or
- recovers in other ways.

principle has been widely criticised as being anti-competitive and for giving little incentive to monopoly water companies to become more efficient.

The Water Bill seeks to remove the costs principle from legislation, and in its place give Ofwat the ability to issue new charging rules.

New charging rules

The Water Bill proposes that we should set charging rules for access pricing that cover:

- the types of charges that may be imposed;
- the amount (or the maximum amount), or methods for determining the amount (or maximum amount), of any type of charge;
- principles for determining what types of charges may or may not be imposed; and

- principles for determining the amount of any charge that may be imposed.

Alongside charging rules, we will set rules in the form of codes of practice ('market codes'), with which all parties will have to comply. These codes will describe what is expected of all market participants, which will enable the market to operate efficiently in customers' interests. We set this out in further detail in our discussion document on 'Water market governance arrangements', which we published in October 2013.

Bulk supplies

Closely linked to access pricing is the pricing of bulk supplies. A bulk supply is a supply of water from one monopoly company to another. Bulk supplies are sometimes referred to as 'water trades' as they are a way for companies to trade water.

The Water Bill also seeks to provide Ofwat with the ability to set charging rules for bulk supplies. So it may be desirable for us to consider the charging approach for bulk supplies alongside access pricing, as there are many similar issues to be resolved across these two areas. This includes:

- sending efficient price signals;
- encouraging environmentally sustainable outcomes; and
- ensuring efficient companies can finance their functions.

What should the charging rules deliver?

As an economic regulator we have a range of duties. Our primary duties are to:

- protect the interests of consumers, wherever appropriate by promoting competition;
- ensure that the companies properly carry out their functions; and
- ensure that the companies can finance their functions.

The Water Bill also proposes to give us a new primary duty to ensure resilience of water and sewerage services.

Our secondary duties include:

- promoting economy and efficiency;
- ensuring that no undue preference or discrimination is

The UK Government has estimated there could be overall benefits of £2 billion to customers, the economy and the environment from its reform of wholesale services

shown by companies in the fixing of charges;

- contributing to the achievement of sustainable development; and
- having regard to the principles of best regulatory practice.

We also need to have regard to the framework – and specific guidance – from the UK and Welsh Governments.

So we will need to deliver an access pricing framework that helps enable:

- greater efficiency in the provision of services, leading to lower bills for customers (our customer duty, and our efficiency duty);
- more choice and flexibility in the provision of services, leading to greater sector-wide resilience (our yet to be enabled resilience duty); and
- greater transparency around costs, leading to more informed decisions being able to be made

around environmental trade-offs (our sustainable development duty).

We will also need to ensure that the various stakeholders involved in water and sewerage service delivery have appropriate controls and accountability on the quality of water delivered to customers and discharged into the environment. This is likely to be enforced through a combination of market codes, licence conditions, and/or other subsidiary documents.

How will we develop new access pricing rules?

We plan to consult on our preferred approach in due course. But we want to begin the debate with our stakeholders now on how to develop the best approach to access pricing, and would welcome your views.



2. What are the main issues?

There are a number of issues we will need to consider in developing our approach to access pricing. We explore some of them in more detail below.

Preventing monopoly abuse

The water sector in England and Wales is dominated by vertically integrated companies. This may give these companies the incentive (and the ability) to discriminate against new entrants in favour of their own operations.

This is a fundamental concern that we will need to address through access pricing and by using other tools such as market codes.

Selecting the right level of cost information

If we are to ensure monopoly companies recover no more than their costs of providing access, we will need to make sure they base their access prices on their costs. And to do this, cost data will be required that are suitably fit for purpose for each of the relevant charges.

The more detailed the cost information used, the more effective the price signals that access pricing could send. But asking companies to collect

detailed information about their costs would also place a burden on them – and ultimately customers, who will pay these costs through their bills.

One potential compromise would be for us to require companies to develop cost models based on their average costs of providing access, but with factors that

cause a change in their local costs ('cost drivers'). But:

- this is provided it was more efficient for companies to capture data on drivers rather than their specific costs; and
- producing and maintaining such models could still involve companies using a significant amount of time and resources.

The cost information that monopolies provide

Over the past few years, we have required monopoly companies to provide us with data about the different activities ('business units') that they carry out.

This means they report the accounts (costs, revenues, assets and liabilities) for their different business units to us separately. We call this accounting separation.

Accounting separation has helped us improve significantly the way we regulate the companies.

We want to take steps in the next price control period to improve the way we regulate companies' monopoly network when we next set prices in 2019, through the phased introduction of two new tools:

- **network plus** – designed to reveal information about costs and revenues related to companies' network and treatment activities; and
- **network management** – designed to reveal information about companies' network management policies, practices and cost drivers.

These new tools will reveal information about companies' costs, and could help enable effective access prices to be set.

De-averaging

In order to set efficient access prices, it is likely that localised costs will need to be considered, rather than simply using a company's average costs.

Some stakeholders have raised concerns that this may result in significant de-averaging of customers' bills. However, this is not necessarily the case. Companies' end household charges will still be regulated.

Independent expert George Yarrow has stated that:

“...so long as transportation of the relevant commodity remains a regulated monopoly, there is no reason to think that the introduction of competition into other activities undertaken in a sector will give rise to any immediate and direct pressures for a major change in the geographic pattern of pricing”.

RCV discount

A company's regulatory capital value (RCV) is the capital base

used in setting price limits. Initially, it represented the value of companies at privatisation. Over time, companies' RCVs have been increased by their capital investments and inflation, and decreased in line with the depreciation of their assets. However, RCVs do not relate to any specific asset.

In setting allowed revenue for most licensed companies' wholesale services, Ofwat allows a return based on companies' RCVs. Companies require such a return in order to finance investment in wholesale services and supporting infrastructure. The value of replacing assets with those of similar capabilities is reflected by modern equivalent asset values (MEAVs), which can be identified for each asset.

Companies' MEAVs are significantly higher than their RCVs. The total industry's RCV is about 12% of the total net MEAV because of the way in which the industry was privatised.

If access prices were to be set with the return based on RCV, there is the potential for charges to be set below the efficient level due to the heavy RCV discount. However, setting access prices without directly considering companies' RCVs, may – in the future – create a risk of companies either over- or under-recovering contributions to their

overall allowed return from the relevant wholesale services.

To ensure that individual wholesale charges are consistent with the revenue requirement, the RCV-based return could be 'allocated' to regulated charges for different services, which in aggregate summate to a company's total revenue requirement.

One challenge associated with this approach is that the RCV is not attributable to the costs incurred in providing specific wholesale services – that is, the RCV is a construct that represents the capital associated with a wholesale water or wastewater business in aggregate. Therefore, to apply this approach, a means of allocating RCV-based return to different wholesale services would be required.

One way of doing this could be to allocate the RCV-based return to different services proportionate to the MEAV identified to those services. We call this an 'unfocused' allocation. The risk associated with this approach is that it could restrict the provision of efficient price signals and hence the development of effective competition. This is because the return to wholesale services in the contestable parts of the wholesale value chain would reflect the large RCV

discount, so that incumbents would be able to price lower than efficient entrants purely as a result of the legacy of privatisation.

An alternative could be to adopt a 'focused' allocation. This would involve making a decision about how the RCV-based return should be allocated to different services. For example, most of the RCV-based return could be 'allocated' to contestable services in setting limits on the prices for different services (for example via ex ante sub-limits or charging rules), which would generate higher charges less biased by legacy privatisation outcomes for the contestable areas and offsetting lower charges for the monopoly areas, and hence increase the scope for effective competition.

Alternatively, the RCV approach could be maintained for setting price limits for services provided by the core monopoly parts of a company's business, and alternative methods for setting prices could be used in the more contestable areas. This would extend the approach we have already taken for contestable retail services.

Care would need to be taken to avoid inefficient asset stranding in the process, which would drive up the costs of financing investment above efficient levels.

Helping the environment

Setting access prices for monopoly services will help enable water trading to be undertaken on a consistent basis with aligned bulk supply prices – and help reveal the value of this resource, which varies widely across England and Wales due to localised supply and demand conditions.

Access pricing could help send more efficient price signals around transporting water, which can be an energy-intensive activity. It could also more clearly reveal the cost of leakage on different parts of the companies' networks.

This, in turn, could help inform decisions on how and where best to reduce the volume of water taken out of the environment ('abstracted') by companies in areas where this does cause damage. This would help protect the environment and result in more efficient investment.

The UK Government plans to carry out a fundamental reform of the way the abstraction of water is paid for and managed in the coming years. So, in developing an access pricing framework, we may need to stay flexible to accommodate future abstraction reforms. However, before abstraction reforms take place,

we may need to write market codes with environmental considerations in mind.

We may also wish to consider explicitly reflecting environmental costs can be a subjective exercise, albeit one which the sector must undertake on a regular basis (for example to prepare water resource management plans, river basin management plans, and business plans). There is also a fundamental question of who should bear which costs, which the Government is considering in 2015 in the context of river basin management plans.

Interactions with the 2014 price review

In 2014-15, we will decide the price and service package (the 'price controls') that each of the monopoly water and sewerage and water only companies in England and Wales must deliver in each of the five years between 2015 and 2020.

In 'Setting price controls for 2015-20 – final methodology and expectations for companies' business plans' (our 'methodology statement'), which we published in July 2013, we confirmed that we will use a range of innovative regulatory rewards and penalties ('incentives') to encourage

companies to deliver efficient and sustainable services to customers and the environment. These include:

- a total expenditure (totex) approach to cost assessment and revenue recovery;
- incentives to encourage companies to trade water where it makes economic sense;
- an abstraction incentive mechanism (AIM) to encourage companies to reduce over-abstraction; and
- proposals for companies to reveal more information about their upstream value chains during the price control period.

In developing an access pricing framework, we will need to ensure that there is suitable alignment to our price control incentives. This is so that there are no unintended distortions in the incentives that companies face.

Interactions with the Open Water programme

Ofwat, the UK and Welsh Governments, companies, and other regulators have formed a High Level Group. The group is directing the work necessary to prepare for the implementation of markets proposed by the UK Government's Water Bill (the 'Open Water programme').



Setting access prices for monopoly services will help reveal the value of this resource, which varies widely across England and Wales

Among other things, the Open Water programme will:

- develop market codes;
- identify the necessary data, processes and systems; and
- establish arrangements to encourage interaction with the competitive market for retail

water and sewerage services in Scotland.

There are many key interaction points between any decisions we make with regard to charging, and what the Open Water programme will need to deliver.

3. Which costs to consider?

In developing an access pricing framework, we will need to consider the type of costs that are used to set access prices. There are many different types of costs involved in providing a service, and they can be considered in different ways depending on:

- the time period to which they relate;
- the products and services (the scope) they cover; and
- their economic nature (see below).

Choices in these areas will determine the incentives that exist for new entrants and existing companies – and how they will behave as a result. Ultimately, this will affect how well markets operate, and the benefits that are delivered to customers, the environment and the wider economy.

Below, we discuss each of the three areas – and the choices that can be made within them.

Time period of costs

Prices can be set by considering monopoly companies' historic, current, or forward-looking costs.

Arguably, forward-looking costs are the most effective at sending

Cost recovery at the 2009 price review

In 2009, when we set the limits on the prices that monopoly companies could charge during 2010-15, companies were:

- allowed to earn a return on their asset bases, which reflected their historic and forecast investment;
- funded their depreciation charges on these assets based on current cost accounting; and
- funded their operating costs based partially on:
 - their expenditure in a particular year ('base year'), minus an efficiency challenge; and
 - forecasts about how specific costs would move to meet expected future demand.

price signals about efficient future investment. This is because they are intended to reflect the costs that companies will incur to meet demand. But setting prices on a forward-looking basis can create issues of companies either recovering too much or too little of the revenue they need to finance their functions overall, as prices would be one step removed from the costs companies currently incur in financing their functions.

In setting the prices that monopoly water and sewerage companies could charge their customers in the past ('price reviews'), we used a combination

of historic, current, and forward-looking costs.

Scope of costs

Infrastructure networks can be complex. Allowing access to a new entrant may result in an existing company incurring additional localised operating costs. Potentially, it may also require them to reinforce their network in other areas.

The extent to which a price reflects direct and indirect costs is often referred to as the 'depth' of the charge.

Charges could also be solely or partially based on the amount of capacity that a monopoly company provides a new entrant, rather than solely on an absolute volume of a service or commodity.

In some cases, it can make more sense to allow monopoly companies to set their prices based solely on capacity rather than the short run costs incurred – for example, if the provision of the capacity is the main cost driver for the company.

But excluding all short run costs can lead to inefficient operating practices, as companies are shielded from the effects of their short-term decisions.

Economic nature of costs

There are a number of different types of economic classifications of costs. These include the following.

Fixed and variable costs. Costs can vary with different measures of demand. But some costs do not vary at all and are fixed. When considering which costs are fixed and which are variable the relevant time period is key. In the short term, some costs (particularly capital costs) are fixed. The shorter the time period considered, the more costs are likely to be fixed. In the very long term, all costs are considered to be variable, although in the water sector some network assets have lives of 100 years or more.

Incremental cost. This is the cost of producing a specified additional amount ('increment') of product, service or output over a specified time period. Another way of expressing this is that the incremental costs of a service are the difference between the total costs in a situation where the service is provided and the costs in another situation where the service is not provided. Incremental costs are often assessed where particular investment decisions are being considered (for example, to serve new customers).

Short run marginal cost (SRMC). This is the additional cost of providing an additional unit of service or product in the short term, assuming there is no change to companies' fixed assets. SRMCs are often used where maximising the use of existing capacity is identified as a key objective. Setting prices at SRMCs ensures that anyone wanting to buy a particular product or service is able to do so at a price that will cover the short-term costs of providing that service. But SRMC pricing means that prices will not cover a company's fixed costs. As well as potentially creating financing issues for existing assets, this can lead to limited incentives for companies to invest in new assets.

Long run marginal cost (LRMC). This is the additional cost of providing an extra unit of service or product in the long term. But LRMC pricing creates a disconnect between the costs a company currently faces (driven by its existing network) and the prices it sets (reflecting potentially different future network decisions). This can create issues of companies either recovering too much or too little of the revenue they need to finance their functions overall.

Long run incremental cost (LRIC). This is the additional cost of meeting a defined sustained increment of demand for services or products in the long run. For example, it would include the capital and operating costs of a new asset required to meet demand over the long term.

Fully allocated cost (FAC). This is an accounting approach under which all of a company's costs are distributed between its various products and services. This ensures that companies do not recover too much or too little of the revenue they need to finance their existing functions overall.

Stand-alone cost (SAC). This is the cost of meeting a defined demand for a particular service on its own. These are the costs incurred by a new entrant in a given market with no existing customers for the service concerned. It is therefore often important to consider the SAC when considering whether it is possible for an alternative company to enter a market and provide a given service.

Distributed long run incremental cost (DLRIC). This is a cost measure related to the LRIC of a given product or service that forms part of a broader service (or product). The DLRIC of an individual service is equal to the LRIC of the service plus a share of the costs that are common between different services in the broader package (for example a regulated company as a whole). The sum of the DLRICs of all the individual sub-services is equal to the LRIC of the overall package of services.

Distributed stand-alone cost (DSAC). The DSAC of an individual service provided as part of a broader package of services can be calculated by distributing the SAC of the broader package between all the individual services within the package arising from providing the package of services together. So each individual service takes a share of the common costs. The sum of the individual service DSACs is equal to the SAC of the broader service.

4. What lessons can we learn from other sectors?

Other regulated sectors have their own access pricing frameworks. Some aspects of other sectors are not directly comparable to the water sector. But there are still a lot of useful lessons available to us in developing an access pricing framework that allows new entrants effective access to monopoly assets or services. Studying access pricing in other industries reveals that:

- approaches to access pricing can be complex;
- a range of pricing and governance approaches can be used depending on the specific issues at hand; and
- approaches can evolve and develop over time.

In this chapter, we consider the access pricing frameworks in the:

- water industry in Scotland;
- post in Great Britain;
- rail in Great Britain;
- telecoms in Great Britain;
- gas in Great Britain;
- electricity in Great Britain;
- airports in England; and
- water industry in Australia.

We also set out some of the lessons we learn from them in developing a future access pricing framework for the water sector in England and Wales.



The water industry in Scotland

In Scotland, all non-household customers can choose their supplier for water and sewerage retail services. Competing retailers buy wholesale services from Scottish Water to sell on to their end customers. Scottish Water also has a retail business ('Business Stream') that competes with other retailers to supply customers.

This is a form of access pricing, as third parties are buying a monopoly's services.

Scottish Water (the only wholesale company) publishes a series of wholesale charges and the associated methodology for calculating them. This is then available to entrants and potential entrants.

The risk of Scottish Water abusing its dominant position is mitigated by:

- the Water Industry Commission for Scotland (WICS) – the economic regulator – setting the company's allowed revenue; and
- Scottish Water being legally separated from its non-household retailing activities.



The Water Bill does not propose for the monopoly companies in England and Wales to be legally separated, which places an even greater importance on developing an effective access pricing framework.

Scottish Water's wholesale charges comprise a number of different components. Some charges are split in terms of a charge for operating and a charge for availability. Some charges are levied on a capacity basis, while others are single unit charges.

Potential lessons

We could require monopoly companies to publish their wholesale charges alongside a detailed charging methodology.

Wholesale water and sewerage access charges can include availability and capacity components.

Post in Great Britain

In the postal sector, third parties can insert mail downstream (closer to the point of final delivery – that is either avoiding pillar boxes, or avoiding pillar boxes and the outward functions of mail centres) in Royal Mail's value chain. As in water in England and Wales, Royal Mail is a for-profit vertically integrated provider of services in both wholesale and retail markets.

Ofcom – the economic regulator – does not directly regulate the access prices that third parties are charged by Royal Mail. Instead, it uses a test (an 'ex ante margin squeeze' test) to ensure that the difference between the access price and the equivalent retail price will cover the incremental cost of the company providing the service.

Royal Mail and the third parties have some degree of flexibility in negotiating the terms and conditions of access agreements within a code subject to regulatory oversight. A process is used to resolve disputes where they cannot agree.

Ofcom considers that long run incremental cost (LRIC) structures provide correct signals for entry in the market, and that Royal Mail should set its prices to maintain a minimum LRIC margin



between its access prices and the equivalent retail prices.

Royal Mail has yet to produce robust LRIC models. In the interim, a proxy for LRIC has been assumed to be 50% of fully allocated costs (FAC).

Potential lessons

There is regulatory precedent not to set detailed rules, instead defining an appropriate set of checks and balances where industry participants are able to take the lead in negotiating detailed terms.

A LRIC-based approach can be seen to provide effective signals for market entry.

Rail in Great Britain

Network Rail owns and operates most of the rail network assets in Great Britain. Train operators are separate companies that pay Network Rail to use the network. Network Rail is not allowed to compete in the train service markets and is a company limited by guarantee with debt backed by Government.

The Office of Rail Regulation (ORR) – the economic and health and safety regulator – determines overall limits on the revenue from access charges through its periodic review process, and also approves the charges in individual access agreements (for example for new train franchises within the periodic review period).

In accordance with EU legislation, variable track access charges are calculated on the basis of costs

directly incurred. This is interpreted as being the short run marginal cost (SRMC) of using the network (that is, costs that vary with traffic).

Variable access charges are levied that include the following.

- A variable usage charge to reflect the cost of damage (wear and tear) that trains operating on the network do to the underlying infrastructure.
- A capacity charge whereby train operators are compensated by Network Rail for reductions in their revenue when they experience service delays caused by Network Rail or otherwise beyond their control. As traffic on the network increases, the likelihood of these delays occurring increases. The capacity charge

is also designed to compensate Network Rail for increases in volume-related payments.

- A charge that recovers the costs of providing electricity for traction purposes.
- A coal spillage charge is levied only on freight operators carrying coal, which recovers the costs associated with coal spillage on the network.

EU legislation also permits ‘mark ups’ (recovering those costs exceeding SRMCs) to be levied on track access charges, as long as they comply with various principles and provisions.

Fixed costs are recovered in regulated fixed access charges from passenger and freight train operators; some franchised passenger train operators are subsidised by Government. The fixed charges help to cover Network Rail’s net revenue requirement.

In addition Network Rail itself receives grant funding directly from Government.



Potential lessons

There is regulatory precedent to set prices based on SRMCs with specific mark-ups.

Prices have been set for a variety of different key cost drivers where there are different types of users requiring access to, and sharing, the same fixed network.

Telecoms in Great Britain

Oftel – originally the economic regulator of the sector before Ofcom – initially set BT's access prices based on fully allocated cost (FAC) charges on a historic cost accounting (HCA) basis. However, in 1997 this was changed to LRIC-based prices set on a current cost accounting (CCA) basis. A core rationale for this was to set efficient price signals to encourage new entrants to enter the market.

BT's LRIC model uses its CCA accounting values. BT is responsible for publishing its LRIC models, taking into account any updates.

In 2005, Ofcom switched from CCA to HCA for the pricing of access to network assets that existed before Oftel had switched to CCA-based charging in 1997. This was due to an appreciating asset base, and subsequent concerns that BT would over-recover revenue (initially it was anticipated that competition would hold prices in check). For these assets, Ofcom established a regulatory asset value (RAV) that represented the remaining HCA value of these assets. The assets that were put in place after 1997 continue to be valued on a CCA basis.

In changing the approach, there were significant revenue

Potential lessons

Approaches to access pricing can develop over a sustained period of time.

A range of different economic approaches can be used to address different challenges.

increases and decreases for different asset types depending on a variety of factors, including forecast input prices and technological change. Unlike the glide-path approach Ofcom uses in other price controls, this methodology change resulted in some step changes in access prices.

The charging methodology was based on top-down LRIC models, which were adjusted according to the findings and challenge of a bottom-up engineering model. All costs were geographically averaged; however, there are

now two markets where there is some degree of geographic cost de-averaging.

In testing for cost orientation for individual charges, Ofcom uses DLRIC floors and DSAC ceilings as benchmarks. However, these are not intended to be used totally deterministically; rather they serve as a first test when investigating whether or not a given charge is anti-competitive or excessive.



Gas in Great Britain

The gas industry has a number of features in common with the water sector, such as the transportation of a physical commodity through a pipe network. However, the gas industry is vertically separated, with retail, distribution, transmission, and the provision of the actual commodity all operating as separate entities. The transmission network and retail markets are national, and the distribution networks operated by separate regional companies.

Transmission

Charges for access to the National Transportation System (NTS) are based on a system of entry-exit charges. The methods and principles on which transmission transportation charges are derived are set out in the Uniform Network Code (UNC) – Transportation Principal Document (TPD).

Charges cover the transmission operator's (TO) allowed revenue and the system operator's (SO) allowed revenue. The TO's allowed earnings are calculated using standard regulatory building

blocks (depreciation, opex and return relating to a regulatory asset value), while the SO's allowed earnings are set in reference to costs and incentive schemes.

The TO's allowed revenues mainly comprise a capacity component and a commodity component, while the SO's allowed revenues comprised primarily just a commodity component.

TO entry capacity is allocated using auctions, reserve prices for which are set using the NTS transportation model, and the entry capacity charges reflect auction outcomes. Discounts for short-term and interruptible capacity products help ensure that spare capacity is used, to complement the auctions.

The NTS transportation model calculates the LRMC of transporting gas from each entry point to a 'reference node' and from the reference node to each 'off-take' point. In general, the further the entry or exit point is from the reference node the higher the LRMC estimate. The unit costs that underpin the

LRMC estimates are based on the physical distance between the entry/exit point multiplied by an expansion factor which is an estimate of building additional NTS capacity of a given length of pipe.

Commodity charges comprise charges per unit of gas transported at exit and entry points.

National Grid Gas implements the charging methodology in accordance with its licence obligations. National Grid and other parties such as the relevant shippers can propose modifications to the methodology. These modifications are implemented if the relevant industry panel approves them and if Ofgem gives its consent. Ofgem can make a modification proposal only in certain circumstances.

Distribution

There are eight gas distribution networks (GDNs), which each cover a separate geographical region of Great Britain. Four of the GDNs are owned by National Grid Gas, the incumbent network

operator. There are also a number of smaller networks owned and operated by Independent Gas Transporters (IGTs).

The GDNs levy charges on network users to collect the revenues they are entitled to as determined by the price control framework. All GDNs are required to maintain a 'use of system' (UoS) charging methodology, which must explain to customers the principle of and methods used to calculate charges. The gas transporter licence also requires that these methodologies achieve certain objectives – for example, that charges:

- are cost reflective;
- facilitate competition; and
- reflect developments in gas distribution.

Within a given region, UoS charges do not depend on customer location within a GDN but on customer size, which acts as a proxy for the distribution assets a customer uses. Charges contain both a capacity and a commodity element. The charges are heavily weighted towards the capacity component, as most of

the costs are driven by capacity investment.

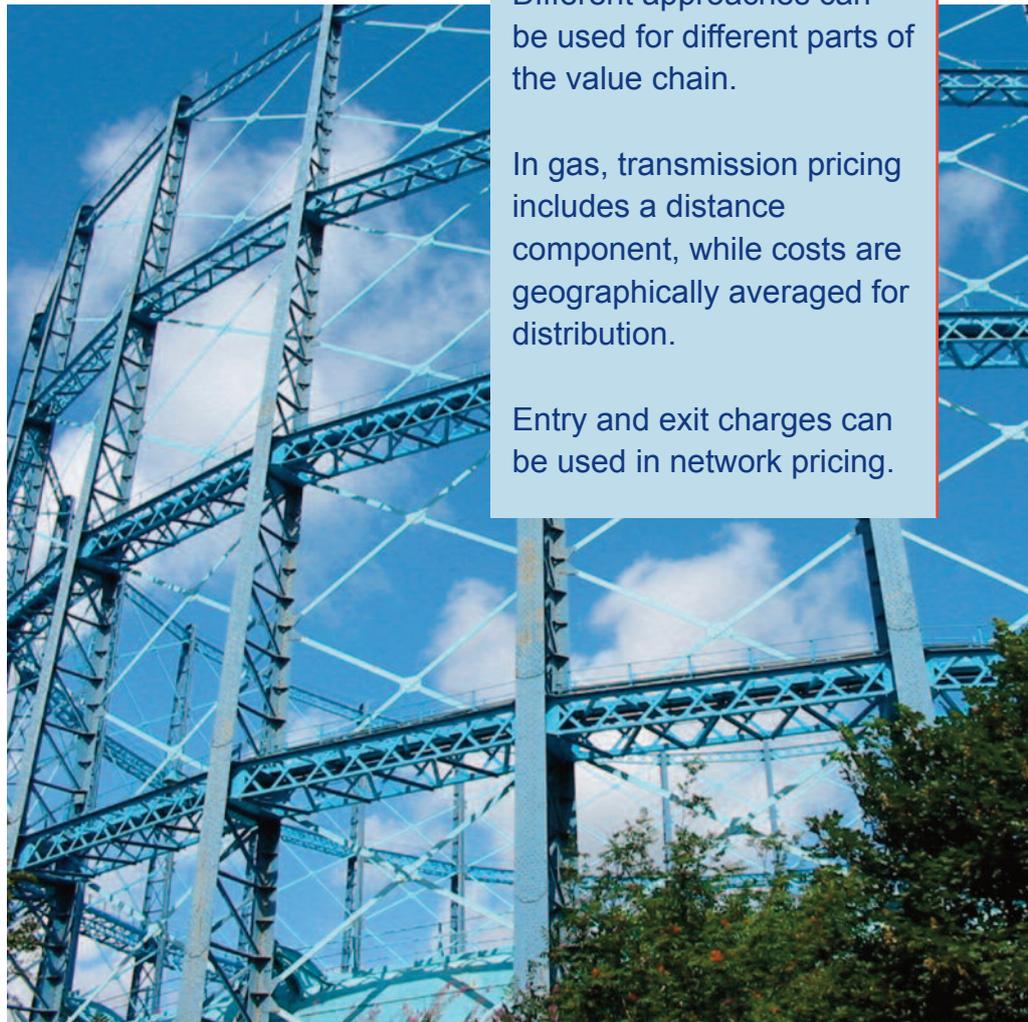
Distribution charges can be changed once a year on 1 April (unless Ofgem says otherwise). Indicative charges are published five months in advance (1 November) and actual charges are published two months in advance (1 February). Gas transmission charges can be changed twice a year on 1 April and 1 October.

Potential lessons

Different approaches can be used for different parts of the value chain.

In gas, transmission pricing includes a distance component, while costs are geographically averaged for distribution.

Entry and exit charges can be used in network pricing.



Electricity in Great Britain

Similar to the gas industry, the electricity industry in Great Britain is vertically separated, with retail, distribution, transmission, and the provision of the actual commodity all operating as separate entities, and levying charges for the various products and services that they provide.

Transmission

There are three distinct transmission areas each with their own transmission operators (TOs). National-level system operator (SO) activities are carried out by National Grid Electricity Transmission (NGET).

The primary requirement of the transmission licence is that the various charging mechanisms should achieve the 'relevant objectives' of:

- facilitating competition;
- reflecting costs incurred; and
- taking account of developments in the transmission and connection businesses.

Ofgem does not set or approve the level of individual charges, but does approve the form of the charging methodologies.

Distribution

There are 14 licensed distribution network operators (DNOs), each of which is responsible for a distribution services area. The DNOs are owned by six different groups. There are also four independent network operators, which own and run smaller networks embedded in the DNO networks.

Initially the DNOs all had their own charging methodologies. However, there was a move to adopt common nation-wide methodologies:

- the Common Connections Charging Methodology (CCCM) for connecting new customers;
- the Common Distribution Charging Methodology (CDCM) for customers at the lower voltages; and
- the EHV Distribution Charging Methodology (EDCM) predominantly for customers at the extra high voltage.

This move was enabled through a licence condition. Companies engaged with their customers in advance to make them aware of any incidence effects, but the effects themselves were brought

in as a step change as opposed to using a glide path.

The Distribution Charging and Methodologies Forum (DCMF) is the industry group that discusses charging issues. Proposed changes to the common charging approach are progressed through the Distribution Connection and Use of System Agreement (DCUSA) under open governance arrangements.

Potential lessons

Standardised methodologies can be reached over time, even where there are very different starting points.

Industry forums can play a role in developing charging methodologies.



Airports in England

Airport Charging Regulations (ACR) are set out in legislation.

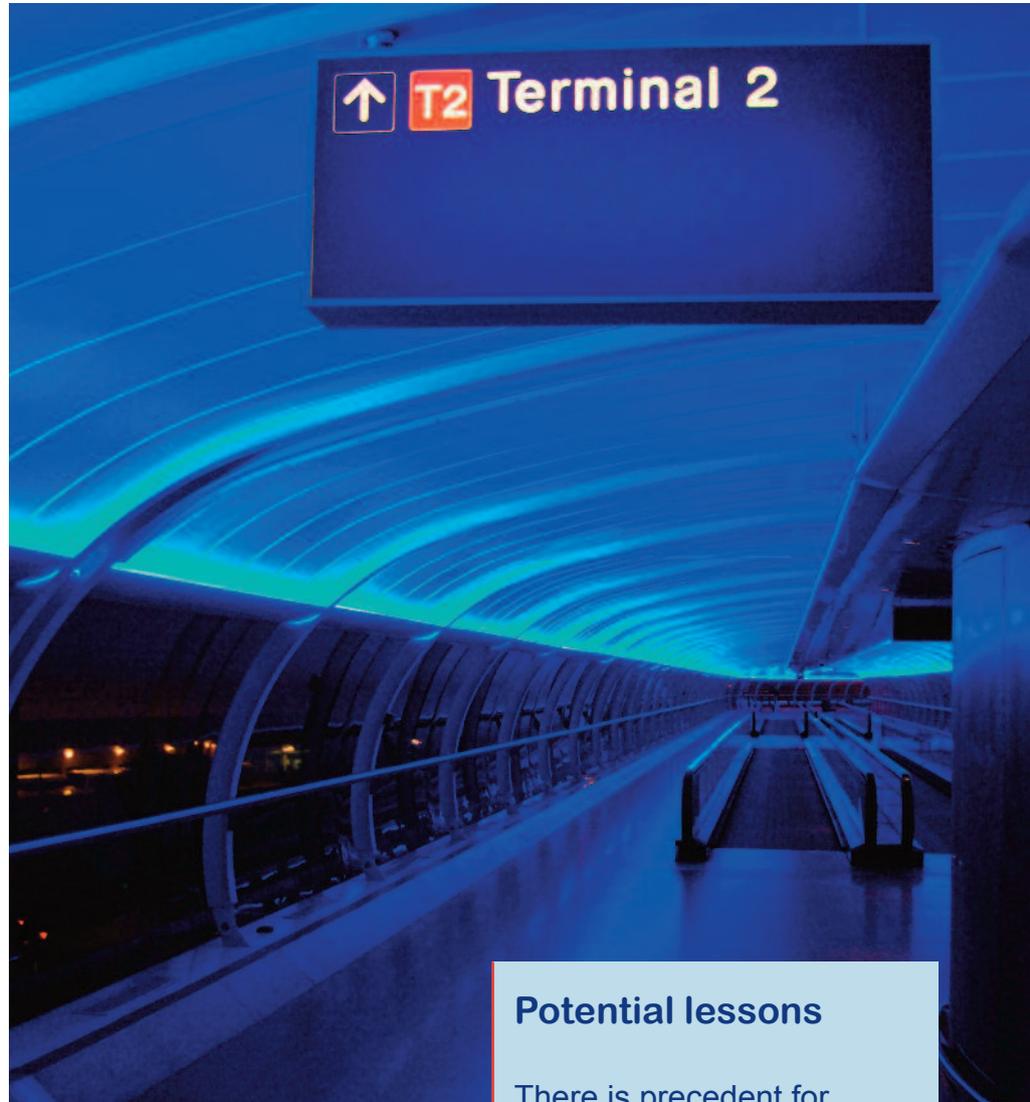
The ACR apply to airports with more than five million passengers in the two years before the current year. A regulated airport operator must supply to all airport users in relation to the regulated airport it manages:

- details of its intended future airport charges;
- details of the associated quality of service it intends to provide; and
- information on the components serving as a basis for determining the system or level of all charges proposed.

The Civil Aviation Authority (CAA) does not mandate or approve the structure of charges at airports. But it can investigate if an airport is failing to abide by the ACR. If it finds that an airport has breached the regulations, it can give that airport an order requiring it to take the appropriate steps specified in the order. This can include ensuring that the airport complies with the ACR, and remedying any loss or damages sustained.

Airports generally levy a range of charges on airlines. Those covered by the ACR are:

- runway charges (for departing and landing aircraft);
- per passenger charges (that generally cover terminal facilities and may include a separate security charge); and
- aircraft parking charges.



Charges can take account of various factors, such as:

- aircraft weight;
- destination of passengers; and
- time of day or season of the year.

Charges are often designed to reflect the external environmental costs associated with aviation for example with discounts for aircraft with lower noise and air quality impacts.

Potential lessons

There is precedent for allowing companies to develop their own charging schemes within a broader governance framework.

Different charges may require different governance frameworks.

The water industry in Australia

In Australia, water trading has developed over a number of years, with access rights now being unbundled from delivery rights.

Charging approaches have also developed over time. Recently, protocols have been put in place to replace the 'exit fee' charging system with 'termination fees'.

Termination fees and exit fees are payments to infrastructure operators associated with a reduction in the demand for and use of water delivery infrastructure. They are designed to manage the risk of 'stranded assets' that may emerge when irrigators terminate access to the delivery system and the operator is left with committed fixed costs, which threaten the financial viability of the delivery systems for remaining irrigators. Termination and exit fees differ in terms of the action that triggers their payment.

Termination fees are payable by an irrigator upon surrendering a delivery entitlement to the infrastructure operator (reducing use of or disconnecting from the network), with the corresponding removal of the rights and obligations associated with that delivery entitlement.

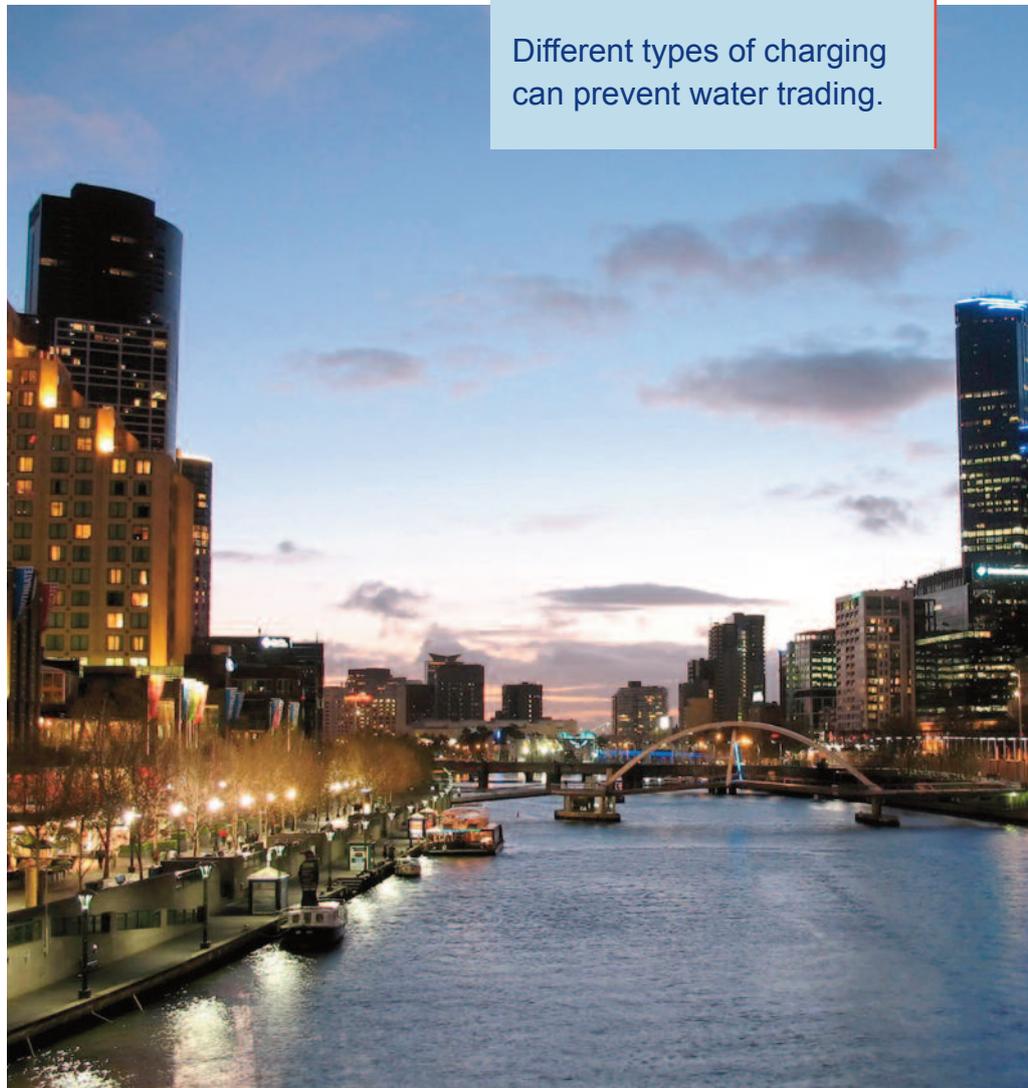
In contrast, exit fees are levied when a water entitlement is sold out of the infrastructure operator's network or district.

The Australian National Water Commission considered that exit fees could form an impediment to trading. They are now illegal in the Murray–Darling Basin.

Potential lessons

Exit and termination fees have been used in water charging.

Different types of charging can prevent water trading.



5. Next steps

We will need to consider carefully a range of technical issues in developing an effective future access pricing framework for the water sector. Studying access pricing in other sectors reveals that:

- approaches to access pricing can be complex;
- a range of pricing and governance approaches can be used depending on the specific issues at hand; and
- approaches can evolve and develop over time.

Because of the complexity of the issues involved, we will require significant engagement with the water sector and other stakeholders in designing the appropriate framework.

We will consult on potential approaches to access pricing once the UK Government has

produced draft charging guidance. But in the meantime, we welcome views from stakeholders on any of the issues we have raised in this document. In particular, we welcome responses to the following questions.

- Are there any key issues we have not identified in this document?
- Should we be considering fundamentally different charging approaches for different parts of the value chain?
- Do any of the charging approaches used in other sectors particularly lend themselves to the water sector?
- What are the different assets and/or services that may require specific access prices to be set?
- How prescriptive should we be in determining access charging rules?
- What types of cost should we

be considering for setting effective prices?

- What is the best way to gain the data and information required to develop effective access prices?

Please send your views to Tom Rogers at tom.rogers@ofwat.gsi.gov.uk.

6. Further information

Ofwat publications

'Ofwat's review of competition in the water and sewerage industries – part II', May 2008

'Valuing water – how upstream markets could deliver for consumers and the environment', July 2010

'A hypothetical model for upstream water markets in England and Wales – a technical paper', January 2011

Other relevant documents

'Water White Paper', UK Parliament, December 2011

'Water Bill 2013-14', UK Parliament, June 2013

'Independent Review of Competition and Innovation in Water Markets', Martin Cave, April 2009

'Markets in water: some issues surrounding policy development in a context of potentially increasing resource scarcity', George Yarrow, Regulatory Policy Institute, May 2010

'Scottish Water Wholesale Services', Scottish Water

'High level review of access charges', ORR, July 2010

www.gasgovernance.co.uk, Joint Office of Gas Transporters

'Distribution Charging Methodologies Forum', Energy Network Association

'Airport Charges Regulations', Department for Transport, November 2011

'Australian Government water pricing publications', Australian Government National Water Commission

Ofwat (The Water Services Regulation Authority) is a non-ministerial government department. We are responsible for making sure that the water and sewerage sectors in England and Wales provide consumers with a good quality and efficient service at a fair price.



Ofwat
Centre City Tower
7 Hill Street
Birmingham B5 4UA

Phone: 0121 644 7500

Fax: 0121 644 7533

Website: www.ofwat.gov.uk

Email: mailbox@ofwat.gsi.gov.uk

Photographs © Getty Images, Transport for London, Athewma, FlorinN, Jimmy Lemon, Krustee, Peej0e, Rafalus, Sardinelly, Tim Smith, Tiny
Printed on 75% minimum de-inked post-consumer
November 2013

ISBN 978-1-908116-46-8

© Crown copyright 2013

You may reuse this information (excluding logos) free of charge in any format or medium, under the terms of the Open Government Licence v2.0. To view this licence, visit <http://www.nationalarchives.gov.uk/doc/open-government-licence/version/2> or email psi@nationalarchives.gsi.gov.uk.

Where we have identified any third party copyright information, you will need to obtain permission from the copyright holders concerned.

Any enquiries regarding this publication should be sent to us at mailbox@ofwat.gsi.gov.uk.

This document is also available from our website at www.ofwat.gov.uk.

