

WATER METERING: IN SEARCH OF A MORE CRITICAL DEBATE

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ABSTRACT

This paper argues that the envisaged role for domestic metering in conserving and reducing the demands placed upon water resources should be subject to more open and critical debate. Such debate is central to ensuring that related financial resources are targeted in the most effective and efficient way possible. The paper challenges the ability of metering to regulate water demand in an effective, ethical, and equitable manner. In particular, attention is drawn to: the disproportional impact metered charging can have upon lower income groups; the long-term effects of domestic metering being poorly understood; the vacuous bubble within which the economic rationale underpinning metering exists, and how this bubble in turn ignores the reality of daily politics; the costs of fitting and then renewing meters; and the inaccessibility of meters being such that they do not readily remind the consumer of their usage levels.

It is concluded that policy makers should reflect carefully on the use of metering, particularly when financial resources are subject to competing demands in relation to the need to improve the quality, access, and availability of water resources within society. While it is not suggested that domestic metering is abandoned altogether, it is argued that more careful consideration should be given to when and where households are metered. Instead, it is asserted that the consumers of water services should have their water usage controlled by stealth and lower cost methods. They should also be exposed to increased education in relation to the benefits of using water efficiently. Stealth measures are interpreted as referring to a more assertive role for government regulation in relation to the water efficiency of households, and the development of new water resources.

KEY WORDS:

Accessibility; demand management; economic costs; water metering; politics; water efficiency.

INTRODUCTION

With world demand for water resources constantly increasing and showing no sign of abatement, the metering of domestic water supplies is often heralded as being central to reducing the demand for water resources (Chambouleyron, 1995; EC, 2002; UNESCO, 2003; WaterVoice, 2004). Within the context of the United Kingdom, none more so are

¹ *Disclaimer* The views expressed, and research undertaken for this paper, are independent and are not necessarily representative of the Consumer Council for Water, of which the author is an appointed committee member for the Thames Region.

water resources under particular strain than in the south-east of England (Anon, 2006a and b; CCWater, 2006). In the context of developing countries, and the poorer societal sections of developed countries, expenditure on drinking water accounts for a larger percentage of financial outgoings (Ekins and Dresner, 2004). This in turn raises an ethical issue of how the world's governing institutions should be seeking to provide the poorest sections of society with access to drinking water if, as proven, metered charging adversely affects poorer sections of society.

The fundamental criticism of metering has been cited to rest in the potential impact universal metering can have on those on low incomes (NCC, 2002; Ofwat, 2005; MTP, 2006). The costs involved in universal metering would mean increased charges for all consumers with heavy usage being penalized by increased charges. While many would be able to manage these increased charges and be willing to pay them, there will be certain sections of society (for example, those with large families and those with certain medical conditions) that may be unable to meet increase charges. Indeed, is it equitable, or ethically right, that the poorer and less able sections of society should pay proportionally more for something that is regarded by many as a right (see McDonald and Jehl, 2003; Holland, 2005).

Even if it is accepted that metering is suitable and we should pay in accordance with our usage, how can water allowances be adjusted to take account of an individuals changing needs and aspirations, even when their ability to pay remains restricted. However, as this paper contends, the criticisms surrounding metering go much deeper. It is argued that the envisaged role for domestic metering in conserving and reducing water demand is flawed in numerous respects. In particular, it is argued that metering is flawed because its long-term impacts are unknown, it is costly, and it is devoid of the political realities that surround water usage. A series of alternative measures, such as a water efficiency appliance rating scheme and the subsidization of water efficient devices are outlined as alternatives to metering. It is concluded government and the water industry should play a much stronger role in encouraging and forcing increased water efficiency by stealth.

This paper is split into four main sections that seek to highlight the inability of metering to regulate water demand in an effective, ethical, and equitable manner. Firstly, the paper challenges the ability of metering to control demand in the long-term. The second section of the paper focuses on the vacuous bubble in which the proponents and the rationale for metering exist. Particular attention is drawn to the impact of politics on the management of water resources. The third section of the paper highlights water metering to be one of the most expensive ways to control the demand for water, which is argued to be an inefficient allocation of financial resources. Finally, the paper argues for an alternative approach to be adopted in controlling water demand and encouraging more sustainable usage of water resources. To facilitate the development of an alternative approach, a series of measures are proposed to encourage increased water efficiency in a more efficient and equitable manner.

A LONG TERM VISABLE SOLUTION?

The long-term effects of domestic metering are poorly understood (NCC, 2002; Ekins and Dresner, 2004; Marshallsay and Godley, 2005). In the context of the United Kingdom for example, it has been found that the metering of domestic users can reduce initial water consumption by about 10 per cent (National Metering Trials Working Group, 1993). However, what happens to water consumption in the long term, particularly when people become used to metering, and when it does not form a particularly burdensome part of domestic financial outgoings, is far from certain (Ekins and Dresner, 2004).

Although the fitting of a water meter may encourage consumers to restrict their water usage initially, as time passes they may become less concerned about their usage (NCC, 2002). This situation is complicated by many meters being fitted in inaccessible locations that do not remind the reader of their presence, nor facilitates ease of access that encourages the user to closely monitor and subsequently manage their usage. The estimation of water usage by water companies can then be argued to further exacerbate the disinterest of consumer in monitoring their water usage. If consumer have had a meter fitted, water companies should lead by example and frequently bill people for their actual usage. To estimate usage could be interpreted by consumer as the water company not being overly concerned about water usage thereby reinforcing consumer disinterest in their water usage. This situation could be assumed to become exacerbated when the costs of water services form a relatively insignificant part of household financial outgoings and not an area of outgoing to be overly concerned about (NCC, 2002). The impact the frequency of billing, the usability and accessibility of meters have on domestic demand, appears to be absent from the literature and is an area worthy of further research.

OPERATING IN A POLITICAL FREE BUBBLE

Although metering has been shown to regulate demand in the short-term (see WIRL, 1998; NCC, 2002), it must be recognised, far more openly, that in reality the economic rationale underpinning metering is flawed in two key respects. Firstly, it is questionable whether it will ever be politically acceptable to price water at such a level that discourages use, particularly when politicians seek the support of the electorate to govern, and in turn manage, what many see as a right and not a need (Barlow, 2003). Secondly, if governments refuse to disconnect people for non-payment (Louma, 2004), which to many is socially just, the economic rationale of increasing charges to discourage use is fundamentally undermined, for people can simply refuse to pay for the services provided. Even where disconnection is an option to force payment for water services, such an approach does not sit well with the United Nations Millennium Development Goal (MDGs) of halving the proportion of people without sustainable access to safe drinking water by 2015, for it is these people who are amongst the poorest and least able to pay (Hayward, 2002; WHO, 2004). While governments have set out to address the issue of meeting essential water needs before metered charges become applicable, such measures are subject to controversy (Barlow, 2003). For example, how do you determine and justify the basic water needs of individuals. Such needs are influenced by differing levels

of economic development which in turn affect water consumption and, more importantly, shapes what society views as constituting a basic water need.

Claims of political unacceptability in relation to the cost of water provided by metering are theoretically grounded, not flights of fantasy. The management of water and the associated policy process is concerned with reconciling competing and conflicting interests, which, if left unmanaged, may result in scarcity and contamination of a resource crucial to the functioning of society (Carson, 1963; Nicolson, 1993; Dzurik, 1996; Morris, 1996). Water, much like any other natural resource, is exploited to meet various human needs. Within the context of rational and public choice theories resulting conflicts are not too surprising. Rational choice theory views individuals' decisions as being designed to get the most for least (Barnes, 1994a). In other words, individuals have limited resources at their disposal and adopt strategies that best facilitate their objectives, which can lead to conflict (Barnes, 1994a; Weale, 1992). For example, it is argued that in times of declining economic growth spending on social projects will be reduced, regardless of need, due to the predominance of economic priorities and desire of government to protect the wider economy (Walker, 1982).

Public choice theory, when applied to various groupings in a political context (e.g. political parties, industry, environmental lobby groups or the government of the day), assumes that such groups act to protect their own interests (Barnes, 1994b). As Margaret Thatcher (2002: 415) summarised, the core idea in public choice theory is that '*there is a vested interest behind every government act*'. There are two versions of public choice theory that are of use in explaining the actions of government and the associated bureaucracy. They include the versions developed by Downs (1967) and Niskanen (1971). Anthony Downs (1967) essentially argues that decision making is informed by self-interest that has at its centre the pursuit of power, money income, prestige, and a desire to serve in the public interest for example (Parsons, 1999). In contrast to this psychological motivation, William Niskanen's (1971) model draws upon neo-classical economic theory in attempting to explain the actions of governments. As a consequence, he suggests that those working in bureaucracies seek to maximise their budgets as a way of maintaining their self-interest (Parsons, 1999). In essence, rational and public choice theories suggest that the actions of government in relation to water resources will be shaped by the pursuit of self-interest designed to meet varying government objectives.

Fundamental to the effective functioning of water metering is the ability of providers to increase charges to control demand (Chambouleyron, 2003; Chambouleyron, 2004). However, the application of rational and public choice theories suggest that such price increases threaten the pursuit of self-interest, as such price increase would be subject to hostility from consumers (see Downs, 1967; Niskanen, 1971). Therefore, if the providers of water services were to increase the cost of water services to such an extent so as to limit the pursuit of individual self interest (that is the consumption of water), such a move runs the risk of consumers calling upon government to act accordingly. Therefore, it is questionable whether any government, which is ultimately responsible for regulating water services and dependent upon the electorate to govern, would allow the demand for water resources to be controlled by pricing a fundamental human requirement beyond the

reach of consumers. This situation is exacerbated in water scarce areas, such as the south-east of England, where the problem of water shortages are not necessarily caused by over usage but by the underdevelopment of sufficient resources. Therefore, to fail to meet demand within the context of a free market democracy, and then to try to rectify this failure by pricing a key commodity out of the reach of consumers, increases the risk of a public backlash that will force politicians to act if they wish to continue to govern. The decision of the economic regulator (Ofwat) in England/Wales is meant to be independent. However, the serving government minister is potentially able to influence price charged for water services. This is evidenced by the guidance reports issued. For example, the principal guidance document issued for the current price review states:

'The main decisions on Government policies for this periodic review have been made in this guidance and they will stand. Companies' final business plans, the draft price limits published by Ofwat and their implications for customers' bills, any further advice from the regulators and the regulatory impact assessment that Defra will prepare will inform any further adjustments that the Secretary of State may choose to make to policies in the final guidance planned for Autumn 2004' (DEFRA, 2004: 9).

The claim that government can and will aim to control the decisions of the economic regulator, is reinforced by the comments of the current Labour Government:

'Ministers are better placed than an independent economic regulator to consider the acceptability of social impact on consumers' (DETR 2000: 2.18)

The above discussion has shown, metering and its proponents live in a political free bubble. The existence of party politics and consumer politick calls in question the ability of metering to effectively control water demand in the long-term. It will not be politically justifiable to price water out of the reach of consumers, particularly if water companies are shown not to have developed sufficient resources to meet demand.

WASTING A PRECIOUS RESOURCE

Just as much as safe and accessible drinking water is not limitless, so are the financial resources of the water industry. More importantly, the financial resources of consumers are not limitless. Such consumers have the right to expect water services to be delivered at least cost, particularly in a society underpinned by markets economics (see for example, Jacobs, 1991; Hodge, 1995; Dixon *et al.* 1996; Dryzek, 2005).

Although the installation of water meters has the potential to encourage a more efficient usage of water, it is not the most cost effective approach (NCC, 2002). According to the National Consumer Council discussion report entitled '*Towards a Sustainable Water Charging Policy*', the demand management cost of compulsory water metering is 94 pence per cubic meter, with voluntary metering costing 113 pence per cubic meter. These costs contrast markedly with the costs for other demand management measures. For example, the cost of converting a nine litre lavatory cistern to seven and a half litres costs 27.2 pence per cubic meter, with the conversion of a nine litre cistern to a dual flush costing 17.2 pence per litre (NCC, 2002).

The costs associated with fitting domestic meters have not remained stable. Fitting costs have increased by a staggering 63 per cent between 2000/01 and 2005 (Ofwat, 1998; 2005). For 2000/01, Ofwat estimated that the average cost of fitting an optional meter to be £119 pounds (Ofwat, 1998). However, by 2005 Ofwat estimated that the average cost of an optional meter to be around £194 pounds outside the south east. In the south east the average cost was higher at £226 (Ofwat, 2005). Therefore, the increased fitting of water meters does not appear to be lowering the unit cost associated with such fittings. Further underlining the costs associated with fitting water meters, a 2004 Ofwat report highlighted that water company forecasts in England/Wales to include capital expenditure of £239 million to provide 1.3 million meters on request. This cost was accompanied by an increase in annual operating expenditure of £11 million between 2003-04 and 2009-10 (Ofwat 2004). It is important to remember that the costs associated with metering are not one-off but recurrent. The average life span of a meter is 10 years (NCC, 2002).

Encouraging domestic water users to have a meter fitted because it could save them money is to misrepresent the economic and obligatory rationale behind charging consumers in relation to demand. While it is perfectly correct to suggest that a single occupant living in a property with a high ratable value will save money (Ofwat, 2006), this financial saving does not automatically translate into increased water efficient behaviour. Indeed, the more economically astute individual might very well increase their usage of water because they have become used to spending a certain amount of their disposable income on water services. Indeed, over a period of time, because their water bill may have initially fallen they may become less concerned about their usage because they know that used to pay more, and that expenditure on water services forms a relatively small part of their financial outgoings. Indeed, research by Massarutto and Berbeka (1999) challenges the assumption that by increasing the cost of water you will decrease demand. In particular, they highlighted that a one per cent increase in volumetric charges would only produce a decrease in consumption of 0.1 per cent (see NCC, 2002). As a consequence of this elasticity of domestic demand, it is also unlikely that an individual will be encouraged to further lower their consumption of water by fitting water saving devices as their water bills have already fallen without having to do anything. The potential returns on any such expenditure will then be relatively small and will in turn not act as an incentive for further water saving measures.

Finally, if the industry is intent on fitting ever more meters, industry and government must become more aware of how a consumer driven market economy works and what the consequences of failure are. Where people are forced to have meters fitted, as in the supply area of the Folkestone and Dover water company in the United Kingdom, consumers in a market based democracy will have the expectation that their water needs will be met, particularly if usage is determined by ability to pay. To fail to meet demand while the individual is able to pay is clear sign of failure. Metering does not remove the obligation to meet consumer needs, it merely increases it. You can not, in a free market economy impose restrictions on water usage if this in turn restricts an individuals ability to operate effectively in a market economy. For example, it is incomprehensible to imagine that gas and electricity companies might restrict demand regardless of an individual's ability to pay. Metering does not remove the obligation on water providers to develop

new resources to be able to meet demand. Being a monopoly industry is no defence. If the industry wants to operate in a free market system, it must ensure it can meet demand. It can not pick and choose what aspects of the economic system it wants without considering the needs of the consumer. For the water industry to ignore its consumer obligations is to challenge its right to operate.

As a consequence of the discussion above, a series of fundamental questions emerge. These questions challenge the presumption that water metering is in the interests of the consumer. This is particularly true in the context of England/Wales, where the consumer of water services must bear the full costs of water services without national or supranational government subsidies. As the fitting of meters do not represent the least cost solution to reducing demand for water resources, is it right that water consumers have compulsory water meters fitted? Is it right that water consumers be subject to an approach to demand management that appears to be subject to spiraling costs, particularly when the long term impacts of such technologies are unknown? It is right that consumers are not given the choice to adopt the least cost solution to control their usage of water, why force them into accepting the highest cost solution? Will it be justifiable to restrict demand once consumers are metered and consumption is controlled by ability to pay? Are the costs involved in metering not better allocated to more innovative lower cost solutions designed to bring about permanent water efficiency savings?

AN ALTERNATIVE VISION

So far this paper has argued that the metering of water users is fundamentally flawed. The criticisms leveled at metering leaves the author open to the fundamental criticism of being full of hot air, without having anything constructive to say. As a consequence, this paper argues that the consumers of water services should have their behavior modified by stealth. This should be carried out by government regulation, and initiatives, targeted at encouraging increased water efficiency.

It is proposed that the suppliers of devices that use water should be subject to a water efficiency labeling scheme. This scheme could be funded by curtailing the fitting of domestic meters to where absolutely necessary (i.e. to high end domestic users, such as those with swimming pools for example). The labels could be designed in similarity with the EU energy label scheme. This scheme awards electrical appliances a grade from 'A' (indicating most energy efficient) to 'G' (indicating the lowest energy efficient) (see Defra, 2005). Government should then set strict limits on the water usage levels of such devices, with economic incentives, such as reduced Value Added Tax (VAT) for devices that fall within the top water efficiency category. The users of water should also become entitled to a rebate from the water company if they have installed certain water efficient devices, such as the latest water efficient washing machine. A similar scheme, to the one outlined above, is already being operated by Sydney Water in Australia (Sydney Water, 2006). Consumers in the supply area of Sydney Water are able to buy a washing machine by ascertaining its water efficiency via a 'star' or 'A' rating system with 4 'stars' or 5 'A's' indicating the most water efficient washing machine. Consumers can then claim a rebate of approximately £60 pounds (Sydney Water, 2006). This water efficiency

measure will, it is estimated, save the average water user 21,000 litres a year (Sydney Water, 2006). In relation to encouraging and offering a rebate on low flush toilets, such a measure has the potential to reduce water demand by up to seven percent (NCC, 2002). The aforementioned water efficiency measures also have the benefit of being far more permanent than water metering. The impact of metering is subject to, as highlighted previously, the vagaries of consumer behaviour in relation to ability to pay and a concern for the wider water environment. If neither of these issues are accorded a high priority by the consumer, it is reasonable to expect that water meters will have little effect over the long term.

If the water industry is not willing to look at alternatives to water metering, and embrace more cost effective methods of reducing water consumption, then government should act accordingly. It should introduce schemes as outlined above. In relation to administering the water efficiency grading scheme, this could be delegated to the Consumer Council for Water which has been charged with encouraging the sustainable usage of water resources, by both the consumer and the water industry in England/Wales.

CONCLUSIONS

Policy makers should reflect carefully on the use of metering, particularly when financial resources are subject to competing demands in relation to the need to improve the quality, access, and availability of water resources within society. While it is not suggested that domestic metering is abandoned altogether, it is argued that more careful consideration should be given to lower cost solutions that are capable of bringing about permanent water efficiency savings. If the water industry is not willing to embrace more innovative solutions and to be proactive in this area, then government should act.

Government should seek to control water usage by stealth. Stealth measures are interpreted as referring to a more assertive role for mandatory regulation in relation to the water efficiency of key household appliances, and the development of new water resources. Consumers of water services should then be exposed to more effective and integrated education methods designed to increase their awareness of how to use water efficiently. It is not enough to engage in such education efforts when water resources are under strain. To further the ability of the water industry and government to encourage the more efficient use of water resources, at least cost and within the confines of a democracy dominated by market economics, further research needs to be undertaken.

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