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Tariff Turmoil

How Utilities Can Swim, Not Sink
When Raising the Price of Water



- The Truth behind Siemens' Water Sale
- Utility Management: Tariffs
- Wastewater Reuse Made Popular in Australia
- Pump/Energy Relationship Explored
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- WaterWorld Middle East Show Preview

December/January 2012-2013 - Vol. 27, Issue 6

www.wwinternational.com

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Money Makes the (Water) World Go Around

In the first of a series of new articles designed to give water utilities practical advice, the politically charged topic of tariffs is addressed head on. David Zetland discusses why water, money and politics are intrinsically linked and the importance for water managers to remain transparent. Case studies will show success in Australia and challenges in Las Vegas.

Raise your hand if you want to pay less for things – less for beer, bread, shoes, fuel. Anyone? Everyone? Of course you want to pay less. Everyone wants to pay less. Lower prices leave more money for other goodies, for other necessities, for unexpected expenses that arrive sooner or later. Now raise your hand if your local merchant wants to charge you more – for beer, bread, shoes, or gasoline. Any one? Everyone?

So now that we've agreed on the obvious, let's get to the interesting question: how is it that we manage to buy goods when we want to pay less and merchants want to charge more? It's because we have choices of where to shop and what to buy and our freedom forces merchants to compete for our custom. Clever, hard-working merchants stay in business. We pay them because we feel competitive prices are fair; we buy from them because our valuations exceed their prices.

THE RIGHT PRICE OF WATER REFLECTS LOCAL CONDITIONS

The price for sustainable water services that deliver clean pressurized drinking water to your home and remove wastewater for disposal should include the cost of building, financing, operating and maintaining the water and wastewater networks; the cost of water supplies that vary

services and monitor them on behalf of customers, to keep prices down and quality up. The regulatory reality is often different. Value for money falls when lazy or corrupt regulators fail to oversee public or

“But what about the benefits of cheap water? Frankly, there are none. Customers pay less attention to service quality and use more”

from cheap, clean groundwater in Scandinavian countries to expensive, polluted seawater in the Gulf states; and the cost of treating wastewater to local standards before directing it to the environment or reuse.

These costs will be the same when production uses the same technologies, chemicals and energy sources but vary with the local costs of labor, land and – most important – regulations (Zetland and Gasson, 2012).

Water services are regulated because they are performed by organisations with monopoly power. In theory, regulators (whether politicians or bureaucrats) tell water utilities how much to charge for

investor-owned utilities. Aggressive regulators may keep prices too low for the standards they enforce. Some regulations favor certain customers. The resulting struggle among water managers, regulators and customers may leave all sides dissatisfied with an outcome that cannot be measured against an agreed target.

Outcomes vary widely. Controlling for fixed costs, a cubic meter of Copenhagen's drinking water costs Danes \$4.30 but Saudis in Riyadh can get the same amount for only \$0.03 – one day per week. But price alone is only one component in functions that combine costs, quality, culture, politics and other forces.

They are not relevant unless we put them in context: are they eco-



Moneyball: While water costs will be the same when they use the same technologies, chemicals and energy sources, they vary with the local costs of labor, land and – most important – regulations

nomicallly, socially and environmentally sustainable?

TRANSPARENCY BUILDS CREDIBILITY

Water utilities that want to show they are delivering high-quality services at the lowest possible cost need to allow their customers and regulators to audit them continuously, in the same way that co-ops or open book businesses do (Economist, 2012). Such transparency would make it easier for managers to recover costs, since they would be able to show they were not wasting customers' hard-earned cash on padded payrolls, featherbedded expenses and gold-plated systems.

Customers who understand costs will accept increases (or decreases!) in prices. This idea may seem redundant to those who assume regulators know all about utility costs, or it may seem invasive to managers who dislike the idea of outsiders auditing their books or watching their workers, but it's neither. Regulators have a negotiated relationship with utilities, setting prices based on a limited set of semi-audited, semi-useful data. Water monopolies cannot lose secrets to non-existent competitors or make more or less than targeted returns in the long run (Zetland, 2011a).

Water utilities must move from a world in which professional engineers manage meters to a world in which the people behind those meters can observe their every move. They pay the bills, and they are not going to pay more (or anything) unless they trust their priorities are respected and money well spent.

SUCCESS IN SANTA BARBARA

Most water managers quietly and competently go about their business – pipes sealed, machines whirring and water flowing – but some face crises that wreck their plans. It's at these times that customers see if their managers are professionals who can deliver.

Consider the situation after four years of drought in Santa Barbara, California. Falling water levels in the reservoir threatened to dry out the wealthy coastal town. There was no time to build a desalination plant or connect to canals on the other side of the hills. There were too many people to serve with trucks or ships. Demand had to fall so managers pursued a two-pronged strategy of raising prices and educating citizens to use less water.

Increasing block rate tariffs tripled from one tier to the next (up to a maximum of \$9.50 per m³) and block-widths were reduced. Local television stations highlighted reservoir levels nightly, people were told how to reuse greywater, and brown lawns symbolized community solidarity.

Demand dropped by 50% relative to pre-drought levels (Loaiciga and Renehan, 1997). When rains returned, prices and restrictions fell, but demand returned only to 60% of pre-drought levels.

More important for managers, citizens had seen the light: they allocated money to connect to the State Water Project and build a desalination plant. Although this plant was later decommissioned as surplus (demand destruction can be surprisingly persistent), the fact that it was approved, funded and built without controversy shows that customers trusted their managers.

A variation of this story took place in Australia's major east coast cities during their recent decade of drought. Public communication and community responsibility reduced demand dramatically. Billion dollar desalination plants were built.

Although these plants are controversial at the moment (they have been mothballed because returning rains refilled reservoirs), there's no doubt that they were approved and built only after people believed it was better to be safe than sorry in predicting the return of rains.

These examples are not textbook cases of success from a financial planning perspective, but they were successful to managers and citizens: water supplies were not cut off; demand and supply were managed transparently; everyone paid to keep the system going and life continued despite disruptive shocks.

AND NOT SO SUCCESSFUL IN LAS VEGAS AND RIYADH

Many examples could be listed of where poor water management has damaged customer health and happiness, randomized business opening hours and increased conflict among neighbours chasing scarce water.

Many of them occur in poor countries where a lack of money and “capacity” might be blamed for problems. These excuses are harder to make in places like Riyadh, Saudi Arabia and Las Vegas in the US. The problem in Riyadh is clear: water is available only one day in seven (or ten) because prices cover only 1%. This outcome cannot be blamed on water managers who have been ordered to sell water for next to nothing. Speaking of deserts, we have to consider the ongoing failure to provide sustainable services to the people of Las Vegas, where water is notoriously cheap – only \$0.31 per cubic meter for the first 0.84 m³ per day – and scarcity is a big problem.

Pat Mulroy has managed water in Las Vegas for 20 years and she and her managers claim that a shortage of water has forced them to spend nearly a billion dollars drilling a “third straw” into their local reservoir (Lake Mead). Such an expense allows them to withdraw water as levels drop below their existing intakes but does nothing to expand supplies.

Other plans – pipelines to take neighbors' groundwater, a desalination plant in Mexico in exchange for Colorado water rights, even a pipeline sucking water from the Mississippi – are just as costly and desperate. Are these supply-side efforts in the interest of existing customers? Are those customers willing to pay more without an improvement in reliability? We'll never know because they have not been asked. Mulroy tells them that their future depends on growth and cheap water. Such a message is one that land developers and political boosters like to hear.

“Regulators have a negotiated relationship with utilities, setting prices based on limited data”

It's ironic that these same boosters were responsible for Vegas's recent improvement in water reliability: demand dropped when the housing bubble popped and unemployed workers left behind a glut of vacant houses. But water management in Vegas is neither logical nor sustainable from an economic perspective.

Cheap water has fed excess demand for lawns, pools and power showers. The supply-side “solution” to the resulting scarcity promises to raise water bills by a considerable amount. Moving even a portion of those costs onto the variable price of water is likely to reduce the quantity of water demanded, perhaps by an amount sufficient to make additional supplies unnecessary. But such an outcome would be too late: money, once spent, will have to be repaid over decades.

It would have been easy to avoid that waste by raising prices to reduce demand (and rebating excess revenues). Such an option was not what land developers and politicians wanted: they benefit from promises of cheap water luxury in the desert – not reliable water service to existing customers.

PAYING THE PRICE OF SUSTAINABILITY

Prices below the cost of service require subsidies, borrowing, or capital and operational cutbacks. Subsidies have strings attached; loans drain cash and divert attention; undercapitalization reduces long-run service quality; undermaintenance leads to annoyances and sick customers. What about the benefits of cheap water?

Frankly, there are none. Customers pay less attention to service quality and use more water. Do they save money? Perhaps, but that money is spent on less important goods, such as food, heating, shelter and other necessities.

Of course customers would prefer to pay less for good quality water, just as they would prefer to pay less for mobile phones, clothes, and so on, but they pay the full price for those goods because they see value in them; it's the same for water: people will pay for value.

Activists espousing a human right to free water do not like these ideas but their position is weak. A "right" to water is worthless without a strong rule of law (Zetland, 2011b).

Managers are unlikely to expand systems and costs for zero revenue – and they are unlikely to get funds from strained municipal budgets. There's no point in providing free water in developed countries when people already spend less than 3% of their income on cheap water.

Many people in developing countries spend time and cash fetching dubious water from informal vendors or natural sources, but they are willing to pay when clean drinking water will save them time, money and sickness (Das et al., 2010). Most activists would think again if they had to live with the consequences of their convictions.

People pay the full cost of food, energy, clothes and shelter in competitive markets because they are willing to pay for quality. Would they pay the full cost of water services that are not provided in markets? They would if they could see that the price was fair.

WILLPOWER WILL DELIVER

Nobody wants to pay more for water but nobody wants an unreliable, unsafe water supply. Water managers around the world have the power to serve their customers by building and maintaining systems that deliver safe drinking water and discharge treated wastewater into the environment we all share.

They also have the power to sell water below cost – encouraging overuse, drying out ecosystems, and making shortage more likely in the future.

Politicians and regulators have the power to push managers towards either path. The ultimate job of steering, doing and coping rests with managers who have the expertise and standing to deliver

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the right results at the right price.

It's not hard to deliver value for money or charge full cost prices; it's hard to show customers that the days of cheap abundant water are over and that they need to pay for reliability. Increased education will take effort, patience and an unusual degree of transparency.

That education and the customer engagement that follows will deliver decades of economically-, environmentally-, socially-, and politically-successful water service. **WWi**

Continent comparison of low/high water tariffs

Table 1. As can be seen from the data below, costs for water services vary greatly globally. A quick cross reference between service costs in Denmark and Saudi Arabia show a considerable difference

Region/Continent	City, Country	Drinking Water (US\$/m ³)	Wastewater (US\$/m ³)
Europe	Belgrade, Serbia	0.52	0.13
	Copenhagen, Denmark	4.30	3.35
Middle East	Riyadh, Saudi Arabia	0.03	0.03
	Dubai, UAE	2.35	2.35
Africa	Dodoma, Tanzania	0.49	0.19
	Kampala, Uganda	0.69	0.48
Asia Pacific	Chandigarh, India	0.06	0.01
	Tokyo, Japan	1.40	1.15
	Adelaide, Australia	3.76	1.93
USA	Chicago, USA	0.53	0.46
	Columbus, USA	3.14	2.19
Latin America	Caracas, Venezuela	0.17	0.04
	Bogota, Columbia	1.41	0.87

“Data source: GWI”

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Enquiry No. 112