CASE STUDY

Los Angeles Department of Water & Power

Achieves Demand Management Goals with Unique Volumetric Rate Structure and Long-Term Planning
SUMMARY

The Department of Water and Power (DWP) serves the City of Los Angeles and some small adjacent areas and is the one of the largest municipal utilities in the nation. The City’s increasing block rate was developed from a Citizens Blue Ribbon Committee in 1993 and was widely noted for several innovative features—a seasonal increasing block rate structure based on marginal cost pricing principles¹, elimination of fixed charges (resulting in a 100 percent commodity-based revenue generation), an intensive home survey program that accompanied the roll out of rates², rate adjustment mechanisms to balance revenue, and an ongoing public involvement and outreach program. This latter public involvement process brought about the evolution from a generic block rate structure—where each block is defined by a fixed amount of water—to adoption of a rate structure in 1995 that uses information on lot size, weather zone, and household size to define block size.

The DWP rate structure has been widely seen as a success that helped flatten water demand in spite of a growing population and economy. Figure 1 below, taken from DWP’s 2010 Urban Water Management Plan illustrates the combined effect of their water budget-based rate structure and a portfolio of innovative conservation programs. DWP’s rate structure has maintained required utility revenues, reinforced incentives to use water efficiently, and has achieved broad customer acceptance within a major metropolitan area having a diverse customer base.

Figure 1 - Historical Water Demand

Source: LADWP 2010 Urban Water Management Plan

UTILITY OVERVIEW

The DWP service area receives approximately 12 inches of precipitation in an average year. The DWP obtains 40 percent of its supply from surface sources and 10 percent from ground sources (with up to 30 percent during droughts), with the residual being purchased from the Metropolitan Water District of Southern California. The DWP has a service area of 469 square miles and serves a population of almost 4,000,000. It has approximately 490,000 residential customers, 130,000 multi-family residential customers, 59,000 commercial customers, 6,000 industrial customers, and 7,000 governmental customers. About 72 percent of total water consumption is accounted for by residential customers, 22 percent by commercial and governmental sectors, and seven percent was served to industry and irrigation meters. (The remaining amount was used for fire-fighting, or lost through evaporation, system leaks, and breaks).

IMPLEMENTATION PROCESS

DWP’s rate structure found its impetus in response to California drought of the late 1980s and early 1990s. The voluntary and mandatory curtailments of this period, increased concern about water reliability, and the need to promote water conservation through rates were cited as reasons for rate reform. A Citizen’s Blue Ribbon Committee recommended adoption of a seasonal increasing block rates structure and other rate reforms in 1993 after more than a year of work. A further need for rate revision came both from the lingering drought and a need to address the issue of how to fairly allocate shortage. The environmental community pointed out that customers who conserve should not be punished with a higher price or imposed curtailment. (Percentage curtailments unfairly punish those customers who have already invested in water use efficiency measures.)

Interestingly, water budgets had been initially considered but were set aside due to feasibility concerns. A series of public outreach workshops were held after the adoption of the increasing block rate and during the initial rollout phase. Feedback from customers participating in these workshops was instrumental in bringing about reconsideration of the application of a single usage block definition to DWP’s diverse residential customers. Specifically, customers in hotter/dryer weather zones or with bigger properties said they could not stay within the “one-size-fits-all” usage block. Customers in cooler weather zones/smaller lots had pointed out that they did not need all the water allocated by a generic block rate structure. The Mayors’ Blue Ribbon Committee reconvened public hearings to gather input—using a formatted comment card. The tabulated comment cards documented the most frequently cited concerns about the then existing rate structure—customer’s property size, climate zone, household size. Thus the idea of using a water budget to define different usage blocks throughout the diverse service returned, using these three factors as the basis for sizing block width.

The most significant barriers to the program’s success, cited by staff, were the complexity of the reprogramming required by the water budget, reconfiguring billing system reports, and data task of matching addresses to obtain accurate lot size information. These barriers were largely overcome in a six to eight month time frame through the concentrated efforts of existing employees. In general, customers responded very well to the revised 1995 water rate structure that incorporated lot size (5 categories), household size, and temperature zone (3 zones). Of these three factors, staff cited the lot size adjustment as the most important—customers recognize and understand it, and contributed most to acceptance of two tier pricing with a large rate differential between tiers). The household size adjustment and temperature zone adjustments, while acknowledged, were less cited by customers.
The 1995 rate structure implemented in DWP, though amended with updated rate levels several times, is still in place: a seasonal increasing block rate structure (with two tiers) that applies to all customer classes. The first tier rate includes a revenue adjustment factor to assure generation of a targeted minimum revenue. It also includes “pass-through” adjustment factors for water procurement, water quality improvements, security, and Owens Valley regulatory. The second tier rate is based on marginal cost (set to an incremental cost of recycled water) and has a seasonal component. Peak second tier rates apply to usage in June through October; off-peak second tier rates apply to usage in November through May. The determination of allowed first tier usage for peak and off-peak periods varies with customer class.

For single-family residential customers, the breakpoint between first and second tier usage is based on lot size (five categories), temperature zone (three zones), and household size (the household adjustment involves a sliding scale of allowed extra first tier usage for households of seven to households of thirteen or more). Figure 2 below provides the definition of the first tier for single family customers during the high season.

**Figure 2 - First Tier Usage Block for the High (Peak) Season**

For multi-family residential customers, all usage in the off-peak period receives the first tier rate; usage in the peak period in excess of 125 percent of the previous average winter usage for December through March receives the second tier rate. A similar rate structure applies to commercial and industrial customers, as well as to governmental customers. However, non-single-family residential customers with high seasonal variation in usage as well as irrigation customers that have achieved maximum practical reductions in usage via water use efficiency practices may apply to have 95 percent of their usage in the peak period billed at the first tier rate. The Department of Public Works of the City of Los Angeles is responsible for setting wastewater rates; the sewage charge is generally based on metered potable water usage, with a standard exemption for water not returned to the sewers (that is, a standard amount assumed for outdoor usage). For residential customers with up to four dwellings on a single common meter, the sewerage charge is based on each customer’s lowest winter water use. A private water sub-meter program has also been offered, whereby a customer can install a private sub-meter per water meter to separately measure outdoor water use. The outdoor usage can then be then exempted from the sewerage charge.

DWP has historically had a lifeline rate available for low-income or senior/disabled customers. Income eligibility was determined by an Adjusted Gross Income (AGI) threshold, set to a household AGI of
twenty thousand five hundred dollars or less. To qualify, customers submitted a Lifeline Rate application to the City Clerk with a copy of the previous year’s tax return for verification.

BILLING SYSTEM AND SOFTWARE

Implementation of the DWP water budget rate structure was originally accomplished with existing billing software. Programming to the existing system was effectuated and new billing forms were created using an estimated 4 to 5 FTE for a period of six months. Publicly available tax assessor data constituted the data source to classify customers into lot size categories. Weather zones were broken into coherent zip codes for customer classification into temperature zones. Since the initial implementation the DWP water budget billing system has not required additional new staff to operate. Total implementation costs to develop both the 1993 and 1995 rate structures were estimated to be about $750,000 ($300,000 in direct consulting and expert costs and the remainder in customer in-kind contributions of time.) On a per customer basis, this amount worked out to be about $0.68 per customer and staff felt that the time and expense were well worth the rate reform enacted.

A sample water bill from DWP can be found below in Figure 3. Allocation information appears in the upper right hand box. Terms used in defining the rate structure appear to the left. The bill also displays information on the classified lot size and temperature zone. Directly within the “Water Charges” box on the bill the customer will find a usage history providing approximately 1 year of billing history. Below the “Water Charges” box of the bill is a display of the volume of water contained in each of DWP’s two rate tiers and a web link to explain the tiers.

Figure 3 - DWP Sample Water Bill

Source: LADWP
21 YEARS OF OPERATIONAL EXPERIENCE

The DWP rate structure has been in place for more than two decades and continues to be an effective billing methodology and water efficiency tool for the Department. Staff ranked its effectiveness as a “9” on a ten point scale.

LESSONS LEARNED AND RECOMMENDATIONS FOR OTHER UTILITIES

DWP staff provided a few recommendations to agencies considering implementing a water budget rate structure. These include:

- Public acceptance is critical. The public workshops permitted DWP to elicit customer feedback on the 1993 increasing block rate structure, construct adjustments to the rate structure and, with augmented customer outreach, win over more of its customer base.

- It is imperative that a water budget have a rational basis that can be clearly communicated to customers. By providing a rational basis for defining the width of tiers, water budget-based rate structures can be perceived by customers as being intrinsically fairer.