

## BMP 3: HIGH EFFICIENCY CLOTHES WASHER REBATES

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High efficiency clothes washer rebates provide cash incentives to utility customers in all sectors to retrofit their clothes washer with a high water-efficient machine. All utility customers in single-family residential, multi-family residential and non-residential sectors qualify for one rebate per clothes washer (Hazen & Sawyer 2003).

### SINGLE FAMILY RESIDENTIAL

For the single-family residential sector (SF) the *Guide* quantifies water savings per utility account and assumes an account to have one clothes washer. Each single family residence qualifies for one rebate (Hazen & Sawyer 2003).

The average baseline use of a non-conserving clothes washer is estimated to be 40.2 gallons per load (gpl) for SF homes and savings to be 15.7 gpl with a retrofit. The baseline estimate comes from a residential water use study conducted in Pinellas County, FL (Mayer et al. 2004) and the savings from a retrofit study conducted in Bern, Kansas (Tomlinson et al. 1998). These averages are consistent with the baseline and savings volumes found in the East Bay Municipal Utility District (Mayer et al. 2003), across North America (Mayer et al. 1999) and confirmed by the Pacific Institute (2003). Estimating 1.04 loads per day (lpd) by measured water use in the SF sector, savings are 16.3 gallons per account per day (gpad) (Hazen & Sawyer 2003).

### MULTI FAMILY RESIDENTIAL

A multi-family account, in the context of this BMP, is defined by the number of units in a utility account (normally an apartment or condominium complex) that are affected by the water savings potential of the BMP (Hazen & Sawyer 2003). The number of applicable accounts is the number of units and it is assumed there is one clothes washer per unit (Hazen & Sawyer 2003).

To estimate water conservation potential, the *Guide* makes a distinction between multi-family residences that have individual appliances in their apartments ('in-unit') or if the residents share a common washer ('common'). If a utility does not know the distribution of multi-family subsectors, the *Guide* uses the Multihousing Laundry Association (2003) estimate that 62% of apartments have access to a common-area laundry room, 26% have in-unit washers, and 12% do not have access to washers in their building (Ayres 1998) (Hazen & Sawyer 2003).

The volume of the load by multi-family clothes washers are assumed to differ by sector. Those that are 'in-unit' operate with a similar volume per load as single-family washers, and 'common area' multi-family washers are comparable in volume to commercial washers. The loads per day, which affects savings per unit, will change by the difference in measured water use. Estimating 0.69 lpd per unit for MF<sub>in-unit</sub> residents at a savings rate of 15.7 gpl, standard savings are 10.8 gallons per unit per day (gpud). Estimating 0.31 lpd per unit for MF<sub>common</sub> residents at a savings rate of 12 gpl, standard savings are 3.7 gpud (Hazen & Sawyer 2003). For both MF<sub>in-unit</sub> and MF<sub>common</sub> there will be multiple units per utility account. The MF<sub>in-unit</sub> and MF<sub>common</sub> lpd estimates come from the National Research Center (2002). The estimates seem reasonable but should be verified for accuracy.

## COMMERCIAL NON-RESIDENTIAL

In the commercial non-residential sector (NR) the clothes washer rebates apply only to commercial coin-operated clothes washer facilities. The *Guide* assumes there are 19 clothes washers per account which is inconsistent with the estimate cited by Hazen & Sawyer (2003). According to Ayres (1998), the Coin Laundry Association found an average of 32 clothes washers per facility for the Southeastern region of the U.S. and a range of 3 to 8 lpd. The *Guide* uses an average of 19 washers, 4 lpd, and a savings volume of 12 gpl, which results in a savings of 912 gpud (Hazen & Sawyer 2003). In effect, the *Guide* presents a conservative estimate of the water savings achieved through a NR clothes washer retrofit.

## AGGREGATE SAVINGS


The *Guide*'s water savings rates are slightly more conservative than the general estimate of 40 to 50 percent (Gleick et al. 2003). The potential savings should encourage utilities to incorporate washing machine programs into their conservation programs. Hazen & Sawyer (2003) suggest utilities focus on providing rebates to the NR and/or MF<sub>in-unit</sub> sectors because the savings rates are greater than for the SF and MF<sub>common</sub> sectors. A utility could estimate the potential penetration ability of the rebates for their district by estimating the size of the various sectors. EBMUD found 73% of SF residences to own clothes washers (Gleick et al. 2003), which indicates a large conservation potential in the SF sector. It is more difficult to estimate the number of MF units per account and the aggregate conservation potential in that sector is unknown.

## METRICS

The water efficiency of individual clothes washers is standardized by their relative "water factor".

$$\text{Water Factor} = \frac{\text{gallons of water used}}{\text{volume capacity of machine}}$$

The water factor can be used to compare the water efficiency of various products in the market. The California Urban Water Conservation Council (CUWCC) provides a list of high efficiency clothes washers by their water factor (CUWCC 2007). A utility can use this information to develop an effective rebate program.



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