March 19, 2007

Targeting Water Conservation to Households

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Findings & Key Recommendations

- Households differ in their abilities to conserve water.
- Targeted campaigns can save significant water and money with reduced effort.
- Target installations of water-efficient appliances to households that will save the most $$ and water—households most likely to adopt.

Estimated adoption and water savings for households in Amman, Jordan

Household conservation action	Likely adoption (%)	Est. water savings (% of use)
Low-flow showerhead	38.6%	10.0%
Kitchen faucet aerator	33.8%	6.0%
Dual flush toilet	24.8%	5.0%
Collect rainwater	18.0%	1.8%
Greywater system	19.6%	1.6%
Xeriscape	0.4%	1.0%
Drip irrigate	1.4%	0.6%
Spray nozzle on hose	4.0%	0.5%
Automatic laundry	0.0%	0.0%

Monte-Carlo simulations of 306,000 households
Current use is 47.4 TAF/year (58.5 MCM/year)

Identifing Households Likely to Adopt

1. Indicators—large family size, water appliance use, landscape area, or water use that correlate to water savings.
2. Survey—is the household willing to adopt?
3. Household visits—observe indicators, estimate potential savings, suggest actions, motivate…
4. Return visits to verify water savings over time.

Estimating a Household's Potential Water Savings

1. Calculate potential savings from household indicators, i.e., Shower Water Savings = (Family size)(Shower freq.)(Shower time)(Current flow rate – Low flow rate).
2. Optimize to identify the cost-effective mix of public water, alternative supplies, and conservation actions to meet the household's current water needs.

Further Required Work

- Verify that estimated water savings translate to actual savings.
- Monitor if/how appliance uses change after installations.
- Apply and verify for U.S. households in arid regions (with continuous supplies).

Additional Information

- David Rosenberg (2007) "Probabilistic Estimation of Water Conservation Effectiveness." *ASCE-J. of Wat Res Pl & Mngmt.* 133 (1), pp. 39-49.
- David Rosenberg *et al.* (2007) "Modeling Integrated Water-User Decisions in Intermittent Supply Systems." *Water Resources Research*.
- David Rosenberg *et al.* (in press) "Intermittent Water Supplies: Challenges and Opportunities for Residential Water Users in Jordan." *Water International*.
- http://www.engr.usu.edu/cee/faculty/derosenberg/