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**ECONOMIC EFFICIENCY OF RESIDENTIAL WATER CONSERVATION
PROGRAMS IN A PENNSYLVANIA PUBLIC WATER UTILITY**

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ABSTRACT: This study examines the economic efficiency of implementing a residential water conservation program for the Shippensburg (Pennsylvania) Borough Authority (SBA), a public water utility serving approximately 14,000 people. Local demographic data and results from similar programs in other communities were used to estimate potential water conservation for three programs: rebates for low-flow toilets, rebates for high-efficiency washing machines, and in-home water audits. Future water supply and wastewater treatment demand were estimated by projecting future growth. The net present value of constructing, operating, and maintaining new capacity infrastructure (water supply source, water storage tanks, and wastewater treatment plant capacity), as well as the costs of the conservation programs, was calculated for 270 scenarios that included a range of future conditions: five estimates of growth, three estimates of construction costs, three interest rates, and six levels of public participation in residential conservation programs. Results indicate that investing in residential water conservation would be cost effective for the SBA in a small number of scenarios that generally include a combination of higher growth rates, higher interest rates, higher construction costs, and relatively low public participation in conservation programs. The SBA has relatively inexpensive water supply costs due to high productivity of local aquifers. Water conservation programs may be cost effective for a much wider range of conditions in many other communities that have higher supply costs. We also recognize that there may be significant non-economic benefits of water conservation programs that were not assessed.

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