

Economic and Financial Costs of Saving Water and Energy: Preliminary Analysis for Hidalgo County Irrigation District No. 2 (San Juan) – Replacement of Pipeline Units I-7A, I-18, and I-22



Abstract

Initial construction costs and net annual changes in operating and maintenance expenses are identified for a three-component capital renovation project proposed by Hidalgo County Irrigation District No. 2. The proposed project primarily consists of replacing aged mortar-joint pipe in pipeline units I-7A, I-18, and I-22 with new rubber-gasketed, reinforced concrete pipe. Both nominal and real estimates of water and energy savings and expected economic and financial costs of those savings are identified throughout the anticipated useful life for the proposed project. Sensitivity results for the cost of saving water are presented for several important parameters. Annual water and energy savings forthcoming from the total project are estimated, using amortization procedures, to be 485 ac-ft of water per year and 179,486,553 BTUs {52,604 kwh} of energy per year. The calculated economic and financial cost-of-saving water is estimated to be \$385.46 per ac-ft. The calculated economic and financial cost-of-saving energy is estimated to be \$0.0010735 per BTU {\$3.663 per kwh}. In addition, expected real (vs. nominal) values are provided for the U.S. Bureau of Reclamation's three principal evaluation measures specified in U.S. Public Law 106-576. The aggregate initial construction cost per ac-ft of water saved measure is \$510.92. The aggregate initial construction cost per unit of energy saved measure is \$0.0013798 per BTU {\$4.708 per kwh}. The aggregate ratio of initial construction costs per dollar of total annual economic savings is estimated to be -2.53.

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