

Process Evaluation of the Bonneville Power Administration Irrigation Hardware Retrofit Program

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Executive Summary

A. Introduction

The Bonneville Power Administration has been operating conservation programs for agricultural irrigation since 1979. The first effort was a pump test program that evolved into the Pilot Program in 1982. The Pilot Program evaluated irrigation systems and provided an incentive for implementing efficiency improvements on irrigation equipment. By 1987, the Pilot had evolved into the full-scale Hardware Retrofit Program. By the end of 1989, 33 utilities, primarily east of the Cascades, were offering the program's audits and incentives to their irrigation customers.

A process evaluation of the Pilot Program was prepared by Minimax Research Corporation at the end of 1986, and an impact evaluation was conducted by Battelle-Pacific Northwest Laboratory in 1987. In 1989, ERCE was retained by Bonneville to conduct a process evaluation of the Hardware Program. The process evaluation reviewed the development and implementation from 1986 through 1989. This report presents the results of the evaluation.

B. Program Achievements

A total of 2,575 irrigation systems had Stage I audits performed under the two programs: 1565 during the Pilot Program (1982-1986) and 1,010 during the Hardware Program (1987-1989). Together, these audits represent a



penetration of about 10% of all irrigation accounts in the territories of participating utilities. Of these, 421 customers went on to do Stage II retrofit work under the programs, 144 during the Pilot and 277 during the Hardware Program. Combined, this represents a penetration of about 1.7%. The conversion ratio of all State I audits to Stage II projects is 16%. However, if systems without potential savings (about 30% of all audits) are dropped out, the conversion ratio rises to 20%. For individual utilities, penetration ranges from 0% to 57% for Stage I audits and from 0% to 12% for State II projects.

From 1982 through the end of fiscal year 1989, a total of about \$4.7 million was spent by Bonneville on the two programs. About \$1.9 million was spent during the Pilot and about \$2.8 million during the Hardware Program. Half of the total expenditure was for incentives and rebates.

C. Key Findings

The 1986 Minimax report recommended a number of program changes, many of which have been implemented. Professional consultants have been fully integrated into the Hardware Program, from contacting the irrigators to conducting audits and post-installation pump tests.

The audit process has been overhauled and standardized and variations in procedures established for simple vs. more complex systems. A guaranteed minimum incentive was established to allay participant fears that they may not receive the estimated incentive if the post-installation test does not show sufficient savings.

Several Minimax recommendations have not been fully implemented at this time. They include expansion of the audit to larger, more complex systems; increased participation by consultants and utilities in the Stage II

implementation process; and the establishment of a more responsive review process for eligibility and for program changes.

D. Conclusions

The program has gone through significant changes over the years, resulting in a well-received, workable program. Professionalization through the use of established irrigation consultants has helped enhance the credibility of the program while improving the quality and accuracy of audits and recommendations. Current incentives and administrative reimbursement levels are generally considered to be sufficient by utilities and consultants.

The goals of the program have not been clearly articulated, enabling the various participants to apply their own goals, though these have not been found to be contradictory or mutually exclusive.

The shift of program management from Bonneville's central office to the Snake River Area Office has generally worked and been well received by participating utilities. However, a number of problems have resulted. Specifically, program records are not complete or centrally located; the central office has not been fully informed of program activities or involved in program changes; and there is a perception among utilities and irrigation consultants that the program does not have strong central office support.

According to more than half the utilities contacted, there is not a high level of interest in the program among their customers. Most utilities felt that participation has stabilized over the past few years. The program has not achieved significant participation in the Stage II retrofits, the point at which actual energy savings are obtained. The conversion ratio of eligible Stage I audits to Stage II retrofits is around 23%, and most utilities feel they are

a long way from saturation in their territories. However, nearly three-quarters of the utilities contacted want to see the program continue at current levels.

Limited participation is likely the result of a number of factors working together. These include the poor economic condition of farmers during the 1980s; relatively low electricity costs for irrigators; uncertainty over the amount of incentive that will be paid after savings are measured; difficulty obtaining financing to pay for the up-front costs of the retrofit; the irrigators' perceived hassle of being responsible for all aspects of the retrofit work; and possible hold-over effects from poor quality audits conducted early in the program.

The major program benefit to the utilities was perceived to be good customer relations and public image. Few utilities see energy savings as a program benefit. The major benefit to irrigators as perceived by the utilities is learning about their systems and understanding the relationship between the system's condition and water and energy use.

E. Recommendations

Based on the evaluation findings, a number of recommendations are suggested for program enhancement.

- Identify and clearly specify the program goals in writing. If possible, establish targets for Stage I and Stage II projects.
- Strengthen ties to the Bonneville central office and management to increase support and commitment, and help convey this impression to the utilities and the irrigation community.
- Continue efforts to streamline program reporting requirements by identifying the minimum information needed for management and evaluation. Project data should be processed on a regular basis.

- Follow up with irrigators after the audit results have been delivered to assist them with Stage II work. Ideally, consultants should review final work plans and oversee the installation process.
- Establish an irrigation program advisory committee to identify needs in the irrigation sector and monitor program progress, resolve problems, provide marketing recommendations, and propose and review program changes.