

BENEFIT-COST ANALYSIS OF RECLAMATION LOAN GUARANTEE PROGRAM UNDER PROPOSED RULEMAKING

1. Introduction

The following benefit-cost analysis is provided to fulfill the requirements of Executive Order 12866. This analysis consists of a statement of need for a Bureau of Reclamation (Reclamation) guaranteed loan program, a summary of the provisions of the proposed rules for the program, and an analysis of the benefits and costs of the program. The cost of work financed under the program is not the subject of this analysis; in most cases, Reclamation's stewardship responsibilities for federal assets require that the work be performed. A loan guarantee program will assist water users with the statutory requirement that they pay for extraordinary maintenance and rehabilitation work as it is incurred.

Much of the analysis is necessarily descriptive of the anticipated effects of the program under the proposed rule. The benefits of loan guarantees under the program are very difficult to measure given readily available data. Such data may become easier to obtain as projects to be financed are identified with greater certainty and detailed plans and costs estimates are prepared for them. Given the data limitations, benefits are described qualitatively, with an example Reclamation project serving as a proxy to indicate what the potential magnitude of benefits could be.

Many of the costs are quantified. Assuming that loan guarantee authority will be exercised to facilitate the financing of extraordinary maintenance and rehabilitation work, the costs of accomplishing the given benefits are compared for two alternative approaches. Consequently, this analysis is most useful as a cost effectiveness illustration.

Loan Guarantees under the proposed rules would be made for projects in the 17 western Reclamation states. The period of analysis covers Fiscal Years 2008 through 2011. While Reclamation's authority to issue loan guarantees extends through 2016, potential program activities for the period beyond 2011 are of sufficient uncertainty as to render their inclusion in the analysis unwarranted.

As a part of activities during 2006 associated with its *Managing for Excellence* activities, Reclamation met with a number of its customers to gauge the level of interest in a potential loan guarantee program, and discuss alternatives used presently by these customers. Some of the information received during these meetings has been incorporated into this analysis.

2. Statement of Need

Projects built by Reclamation during the past century represent a Federal investment of approximately \$250 billion, and make Reclamation the largest wholesaler of water in the country. These projects bring water to more than 31 million people, and provide one out of five Western farmers (140,000) with irrigation water for 10 million acres of farmland that produce 60 percent of the nation's vegetables and 25 percent of its fruits and nuts.

Collectively, Reclamation projects are also the second largest producer of hydroelectric power in the western United States. The 58 project power plants annually provide more than 40 billion kilowatt hours, generating nearly a billion dollars in power revenues and producing enough electricity to serve 6 million homes.

Much of this critical infrastructure was built in the early 1900s and is at or nearing its design life. Routine, annual operation and maintenance is conducted thoroughly and efficiently for most Reclamation projects. The loan guarantee program will not assist in

performing routine maintenance; no such assistance is needed. However, due to their age, even with the excellent routine maintenance they have received, many Reclamation project facilities are currently in need of extraordinary maintenance work, rehabilitation, or replacement. Although Reclamation law assigns responsibility for these costs to project beneficiaries before or as they are incurred, many are smaller entities with limited cash flow relative to the magnitude of costs associated with extraordinary maintenance and rehabilitation of project facilities.

It is of paramount interest to Reclamation and the public that these facilities be properly and safely maintained, and that this critical infrastructure not be allowed to deteriorate. However, the agency has no authorization to expend funds for extraordinary maintenance and rehabilitation needs of these facilities without advance payment from the appropriate project beneficiaries. These requirements are established in various Reclamation laws, beginning with the Fact Finders Act of 1924. From 1949 until the early 1990s, Reclamation water users were able to obtain financing for this extraordinary maintenance and rehabilitation work under Reclamation's Rehabilitation and Betterment Program. During the early 1990s, reviews of the program's cost effectiveness, and the belief of many parties in the Federal government that project beneficiaries should seek private capital to fund this type of work, led the Department of Interior to discontinue the program and the supporting appropriations requests. The water users are currently expected to seek private funding sources. However, in most cases, private lenders are unwilling to lend to the water users, even at higher rates of interest. One reason for this is because they have no physical collateral; the United States holds title to the facilities. Reclamation has sought to transfer title to some of these facilities. The effort was recently the focus of a team involved with

Reclamation's *Managing for Excellence* initiative, which has recommended ways to facilitate additional title transfers. However, it is anticipated that title to a significant number of these facilities will remain with Reclamation for some time.

In addition to the title issue, some water user organizations also face uncertain future revenue streams, due to significant, unpredictable variations in water supply. While this affects only a subset of Reclamation water users, substantial, readily available data on fluctuating crop prices, rising farm input costs, and the effects of drought on water supplies attest to the uncertainty of farm revenues as a viable repayment source. An effort by Reclamation to shoulder some of the risk of lending to project beneficiaries is expected to greatly facilitate the ability of these entities to obtain private capital to finance the needed work.

Public Law 109-451 grants the Secretary of the Interior authority to provide loan guarantees to assist in the financing of (A) rural water projects, (B) extraordinary maintenance, rehabilitation and replacement of Reclamation project facilities, and (C) improvements to water infrastructure directly associated with Reclamation projects. These will hereafter be referred to as Type A, B, and C projects, respectively. The proposed rules contemplate all three project types. However, specific eligibility criteria, application requirements, prioritization and oversight of project execution may differ substantially for Type A projects as compared to Type B and C projects.

Many of the specific details regarding Type A projects will be developed in the future as supplements to the proposed rules. This benefit-cost analysis contemplates only Reclamation's estimates regarding Type B and C projects. When the details for Type A projects are added as supplements to the proposed rules, a benefit-cost analysis for those

types of projects will be developed at that time. Reclamation has prepared a 4-year projection of the need for Type B projects, and this benefit-cost analysis is based on those estimates of need. It is anticipated that some Type C projects could fit within this cost estimate, and that the costs of financing such projects would be similar to those for Type B projects, which were the basis for the benefit and cost estimates in this analysis.

3. Proposed Rule Summary

a. Organization

The proposed rule is divided into six subparts. Subpart A is an overview of the program, describing the purpose, definition of terms, types of entities and projects eligible for participation, steps and requirements for program participation, and contact information. Subparts B, C, and D discuss borrower, Reclamation, and lender roles and responsibilities, respectively. Subpart E provides loan terms and details, and Subpart F covers default procedures. Where more detailed provisions on Type A projects are to be provided in the future, sections have been reserved for this purpose.

b. Delivery

The following paragraphs summarize the rule by its four primary delivery mechanisms.

i. Eligibility

Under the proposed rule, three basic types of eligibility are identified -- project eligibility, borrower eligibility, and lender eligibility. Project eligibility is based on the nature of the activity and whether it meets the requirements set forth in The Twenty First Century Water Works Act (Title II of Pub L. 109-451). In addition, the project will be evaluated based upon other criteria set forth in more detail in Section 403.10 of the proposed rule.

Borrower eligibility is based on the borrower meeting two common requirements: it must be an entity authorized to borrow under the Act, and must not have outstanding delinquent debts with the United States.

Lender eligibility is based on whether or not the lender is a regulated or supervised lender meeting the definitions given in the Act and the proposed rule. A lender must be approved by Reclamation to participate in the program. If an eligible lender has an existing guaranteed loan portfolio with Reclamation, it will be considered “approved” for participation and would not be required to submit an application to Reclamation for approval to participate. However, prior to receiving additional loan guarantees from Reclamation, the lender would be required to submit certification showing it is in “good standing” with its regulator. If a regulated or supervised lender does not have an existing portfolio with the Agency, it must submit an application for lender approval to Reclamation.

ii. Guaranteed Loan Approval

If a project and the associated borrower and lender are determined to be eligible, and the lender has approved the borrower’s loan request, an application package will be submitted to Reclamation for determination of whether Reclamation will guarantee the loan. This determination will be based on the availability of required appropriations for the guarantees, and upon an evaluation of the proposed project’s merits relative to other projects based on the criteria set forth in Section 403.10 of the proposed rule.

iii. Servicing

Once the loan has been approved, the lender will continue to be responsible for servicing the entire loan. The activities included under loan servicing are those that take place once the loan note guarantee has been issued. This includes such activities as

processing payments, assessing any appropriate late fees, submitting notifications and status reports, reorganizations, transfers and assumptions, liquidations, litigation, and termination of the loan guarantee.

iv. Oversight and Monitoring

Under the proposed rule, Reclamation will conduct any and all oversight and monitoring activities necessary to ensure that lenders are originating and servicing guaranteed loans in a manner consistent with both Reclamation and lender standards. These tools include, but are not limited to, conducting lender visits and meetings and requiring various reports and notifications. The Agency will also use this oversight and monitoring to ensure that lenders maintain the qualification criteria for being an approved lender.

4. Baseline

The baseline against which the net economic benefits of Reclamation’s loan program is evaluated is the status quo, that is, the state of the world absent the loan guarantee program. Absent the availability of the loan guarantee program, some water districts would seek congressional funding for their rehabilitation projects, some would seek private financing, and some might choose to simply implement patchwork solutions. Districts that seek congressional funding or private funding would be likely to implement patchwork solutions during the time they are seeking this funding and after if such funding is not available. The material below provides further characterization of the baseline.

a. Private Funding/Financing – Yuma Example

Water users are legally required to pay for extraordinary maintenance work in advance of its performance. Thus, the net benefits of the loan guarantee program would be evaluated relative to the situation where water users obtained private financing to undertake

rehabilitation projects. Such financing could be obtained via capital markets, from reserve funds, or raised via districts' taxing authorities.

Reserve funds are required in many of Reclamation's contracts with project water users. However, while Reclamation is attempting to increase the amounts contractually required for these reserved funds, currently the funds are often insufficient to cover the extraordinary repair and rehabilitation to be financed under the proposed loan guarantee rules.

Financing is potentially available via capital markets. The extent to which districts are able to access these markets without loan guarantees depends on the strength of their balance sheets, credit rating, magnitude of capital needs, etc. Some districts have successfully raised capital to undertake rehabilitation projects, but for many districts this might prove difficult. It should also be pointed out that a number of western states have established "bond banks" for the purpose of assisting public entities that may not have credit ratings sufficient to obtain capital. The extent to which these bond banks are available to water districts that rely on federally constructed facilities is unclear. It should be noted that the strength of the incentive to seek private financing may be reduced with the potential availability of the loan guarantee program.

An example of which Reclamation is aware where an irrigation district obtained private financing is associated with the Yuma Project. In this case, the irrigation district also had a power plant on its facilities, revenues from which (as opposed to the power plant itself) were sufficient to pledge as loan security. For many of Reclamation's smaller project beneficiaries, this would not be an available option.

One of the explanations for why private lending institutions may be generally unwilling to finance the work is that water users often have no collateral to pledge for repayment because Reclamation holds title to the facilities.

The extent to which districts choose to use their taxing authority may depend on the individual water users' willingness to pay to undertake the rehabilitation activities. It could also depend on water users' ability to pay additional taxes. At least in concept, if an entity is not willing to pay for an activity, the activity may not be associated with net economic benefits.

Therefore, absent a loan guarantee program, it is assumed that only a limited amount of private capital would be available to the water users, due to the lack of substantial capital markets for these types of activities.

b. Direct Loan Funding/Special Legislation – Arrowrock

Under the baseline of a world absent the loan guarantee program, water users could seek special legislation that would fund extraordinary maintenance and rehabilitation work in a way that would either re-instate, or provide similar repayment terms to, a direct loan program. Reclamation's Rehabilitation and Betterment program, as well as the funding of the outlet works replacement at Arrowrock Dam are examples.

Given the limited information available, it is difficult to determine the number of water districts that might seek such legislation. In any event, the water users would incur costs in seeking such legislation, which may or may not be offset by avoiding the application costs associated with obtaining a loan guarantee under the program. As illustrated in the Costs section below, the Federal government would incur greater costs in direct financing of potential projects than in administering loan guarantees. However, these are financial, not

economic costs. Therefore, while the loan guarantee program would likely result in less direct financing, it is difficult to determine whether the loan guarantee program would result in any avoided economic costs compared to this aspect of the baseline.

Postponement of Necessary Work.

The baseline also encompasses the situation where water districts simply postpone, extend over a longer period, or even recast, rehabilitation work. . Reclamation does not have authority to expend funds for these major repairs and rehabilitation without advance funding for the district's share of the obligation. The end result is a continued deterioration of the associated facilities, or a piecemeal or stopgap approach to major repair and rehabilitation work. The extent to which this approach has net benefits that are lower than other approaches is uncertain. There are benefits to be realized from facilitating the timely performance of needed major repair and rehabilitation work and in some situations these can be substantial, as illustrated below.

5. Benefits

The benefits of the loan guarantee program encompass several categories. In concept, the benefits are closely associated with project outputs – agricultural products, hydropower, recreation, etc. The availability of the loan guarantee program could assist in restoring the level of benefits to what they may have been in the past, potentially could assist in restoring the benefits in a more timely fashion than what have might otherwise been the case, provide “insurance” that the level of benefits would remain at a given level (and not decline), and reduce the transaction costs associated with financing the rehabilitation activities.

However, quantifying the benefits is difficult because it is difficult to estimate the number of projects that would seek to use loan guarantees, project specific information is not

available to assist in quantifying the benefits, and the extent to which private capital might be more readily available is difficult to forecast.

If the most common aspect of the assumed baseline condition without a loan guarantee program is that needed major repair and rehabilitation work is inevitably postponed or delayed, then an appropriate measure of the benefits of the program is the cost of such postponement. As stated previously, the postponement or delay is not of routine O&M work; such work is currently being performed in a timely manner. However, delay of needed major repair and rehabilitation work due to lack of financing capability could result in further deterioration of the facilities. This could lead to higher routine operation and maintenance costs, and potentially significant reductions in project benefits.

While it is difficult to precisely estimate the nature and magnitude of the benefit losses that could occur due to postponement of needed repairs and rehabilitation an example of the potential benefits associated with accomplishing repair work in a timely manner is provided by the Boise Project's, Arrowrock Dam.. In preparing an Environmental Impact Statement, "Arrowrock Dam Outlet Works Rehabilitation Final Environmental Impact Statement" March 2001, covering the alternatives for addressing the repair needs, Reclamation determined impacts of three different scenarios. The No Action alternative consisted of a gradual, piecemeal approach to performing needed repairs of the outlet works at the dam, which was more within the ability of the water users' annual operation and maintenance budgets to absorb the costs. One of the action alternatives was to perform all needed repairs of the outlet works at once. Under the No Action alternative, it was envisioned that the water levels in reservoir would be drawn down annually to effect

necessary repairs over a 4 year period. Under the Preferred Alternative, the reservoir would be drawn down once and the required repairs completed within one year.

For an average 4-year period, water shortages under the No Action alternative amounted to 121,000 acre-feet, while no shortages occurred under the alternative of performing all of the needed repairs at once. Based on a value of \$22.50 per acre-foot for irrigation water on the Boise Project (Deadwood Dam Modification Report, December 2002), this represented a cumulative benefit of approximately \$2,722,500 for the four-year period resulting from timely performance of major repair and rehabilitation work on this one project. Assuming these benefits accrued uniformly throughout the 4 year period, at an annual rate of \$680,625, and using a discount rate of 7 percent, the net present value of these benefits is approximately \$2,305,421. This does not take into account other benefits generated by the project and affected by postponing the repair, such as those accruing from recreation use and power development. In the case of Arrowrock Dam, annual recreation benefits would be significantly reduced under the No Action alternative (assuming there were no substitutes for the recreation services provided by the reservoir available), based on a need to repeatedly lower the reservoir elevation to conduct maintenance and repair activities. While the released water could still be used for power generation, the reduced flexibility in timing the releases could cause potential reductions in the value of the power generated.

While the repair and replacement of Arrowrock Dam's outlet works is representative of the types of extraordinary maintenance and rehabilitation that would be funded under the program, the extent to which the Arrowrock case can be generalized to the universe of Reclamation projects or districts that might participate in a loan guarantee program is unclear. As discussed in the introduction, the analysis does not address the costs and benefits

of performing the work itself, but rather the costs and benefits of providing financing assistance to facilitate the performance of the work in *a timely manner*.

Given the lack of project specific information, it is not possible to quantify the net benefits associated with the loan guarantee program.

6. Costs

The proposed rule will impose costs on lenders, borrowers, and the Federal government. Quantitative estimates of these costs have been made and are presented below, first for lenders and borrowers and then for the Federal government. Some of the costs associated with the loan guarantee program are considered financial costs and would not be evaluated in the context of a benefit-cost analysis. For example, potential default costs are financial and not economic costs. Financial costs may be important to decision makers and thus some information on these costs is presented below.

For purposes of the analysis, the interest rate on the un-guaranteed portion of the loan is assumed to sufficiently cover the expected default costs to the lender associated with that un-guaranteed portion. Interest rates on the guaranteed portion of the loan do not cover expected default rates, and these costs are therefore included in the analysis of Federal government costs. Costs which would be required regardless of whether Reclamation provides financing assistance, such as environmental compliance costs, are not included in the analysis. Unless specifically indicated otherwise, costs given are the total for the 4-year period of analysis.

a. Borrower and Lender Costs

For lenders and borrowers, the costs are broken down by various phases or steps associated with the rule – lender eligibility, loan application, loan origination, and loan

servicing. For the Federal government, costs are broken down by activities associated with reviewing lender eligibility, reviewing applications for loan guarantees, loan origination activities, loan servicing activities, conducting oversight and monitoring activities during the life of the loan, and administrative activities.

Estimated costs of the proposed rule were made based on the anticipated number of loan applications and approvals over Fiscal Years 2008 - 2011. During this period, it is estimated that approximately 72 potential borrowers will submit applications through 26 lending institutions. This is based on expressions of interest from water users and lending institutions during discussions with these entities in 2006.

Without going through the actual application process for these potential applicants, it is not possible to determine precisely how many applicants would be approved. However, for purposes of this analysis, it is estimated that one in four applicants would be approved. Therefore, eighteen of these applications are estimated to be approved for guaranteed loans through nine approved lenders. A rate of \$75 per hour was used to calculate borrower, lender, and Reclamation costs. While this rate may vary by location, it is roughly representative of a GS-12 salary. Estimated hours required to complete the form and non-form requirements were derived by a comparison to the United States Department of Agriculture's (USDA) experience in administering loan guarantees. The forms to be used were adapted from USDA'S existing forms.

To be eligible, lenders must submit evidence of eligibility, as well as a copy of their loan origination and servicing policies. This must only be done for the first approved application for a loan guarantee; any lender with an existing guaranteed loan portfolio is considered an approved lender. However, since the program is new, and no lenders are

currently approved, the analysis assumes that this cost will be incurred once for each lender involved. It is also assumed that each lender will request and receive approval for one additional loan guarantee. The basis for this assumption is that a successful application by a lender will lead the lender to seek repeat participation, and will lead potential borrowers to choose those lenders who have successfully requested Reclamation guaranteed loans. It is also assumed that each lender assigns the guarantee to another party (generally as a holder of a portion of the debt) once for each loan approved. While such assignments could happen multiple times or not at all, this is considered the most reasonable estimate. Given these assumptions, and estimates of applications and approvals, Reclamation anticipates that lenders will incur a cost of approximately \$19,500 in establishing eligibility for approved lender status, as shown in Table I.

Application costs are those associated with the application form, financial reports, and other documentation associated with submittal of the application for a guaranteed loan, as described in Section 403.7 of the proposed rule. Only the preparation costs of those documents which are prepared solely for purposes of obtaining the loan guarantee are included in the estimate.

While costs associated with the loan application would initially be borne by both the lender and the borrower, they have all been recorded for purposes of this analysis as borrower costs. This is justified by the assumption that all costs incurred by the lender will in fact be captured in the interest and fees assessed by the lender on the borrower and therefore, any distinctions are more appropriate to a financial analysis rather than an economic analysis such as this one. However, it should be noted that the majority of the initial outlays required of the borrower would occur during preparation of the application for

loan guarantee. Reclamation estimates that costs for preparation and submittal of applications for loan guarantees would be approximately \$86,400 as shown in Table I below.

There are a number of activities associated with loan origination. Most of the costs of these activities are initially borne by the lender. These costs include obtaining guarantees from principals of the borrower, various Reclamation approvals, and preparation of the various loan documents, such as the Lender's Agreement, and the Conditional Commitment for Guarantee. Estimated costs for Loan Origination functions, itemized in Table I below, are \$48,600.

The activities included under loan servicing are those that take place once the loan note guarantee has been issued. These include activities such as submitting notifications and status reports, reorganizations, transfers and assumptions, liquidations, litigation, and termination of the loan guarantee. For purposes of the borrower/lender cost calculation, two of the 18 loans are assumed to default. This is based roughly on a ten percent default rate which Reclamation has estimated for the program, as discussed in more detail under (b) below. (This default rate could potentially be reduced, depending on the success of mechanisms such as guarantee fees charged to the lender.) Total costs associated with loan servicing are estimated to be approximately \$259,500. Total borrower and lender costs for all associated activities for the 4-year period of analysis are \$414,000. Assuming these costs are incurred uniformly throughout the 4 year period, at an annual rate of \$103,500, and using a discount rate of 7 percent, the net present value costs incurred by Borrowers and Lenders are expected to be \$350,576. Table I below displays the breakdown of these cost components.

Table I – Cumulative Borrower and Lender Costs: 2008 - 2011

Item	Number of respondents	Hours per Incidence	Hours	Cost
Establishment of Eligibility	26	10	260	\$19,500
Application for Loan Guarantee	72	16	1,152	\$86,400
Loan Origination	18			
Reclamation Approvals	18	4	72	\$5,400
Conditional Commitment	18	4	72	\$5,400
Lender's Agreement	18	16	288	\$21,600
Assignment of Guarantee	18	8	144	\$10,800
Obtaining Personal & Corporate Guarantees	18	4	72	\$5,400
Loan Servicing	18			
Loan status	18	120	2,160	\$162,000
Default	2	104	208	\$15,600
Notifications	18	8	144	\$10,800
Report of loss	2	24	48	\$3,600
Other servicing	18	50	900	\$67,500
Total Lender & Borrower Cost			5,520	\$414,000
Present Value costs over the 4-year period (evaluated at 7%)				350,576

b. Reclamation Costs

Estimated costs to Reclamation would be incurred in administration of the program, review of applications, issuance of guarantees, and loan oversight. These costs are estimated for the same 4-year period, using the assumptions regarding numbers of applicants, approvals, and defaults described in the section on borrower and lender costs.

Reclamation would incur costs in reviewing and approving lender eligibility, and applications for loan guarantees. Costs for these activities are estimated to be \$11,700 and \$216,000 respectively, as shown in Table II below.

Reclamation would also interact with the lender during the loan origination period. These activities would include reviewing and approving closing documents, obligating

necessary funds from budget accounts to financing accounts, and issuing the Conditional Commitment, the Lender’s Agreement and the Loan Note Guarantee, where applicable. The cost for conducting these activities is estimated to total \$54,000.

Reclamation would also interact with the lender during the loan servicing period in such instances as subordinations, transfers and assumptions, and, in cases of default, litigation and appeals and release of collateral, The cost for conducting these and other activities during the loan servicing period is estimated to be \$43,200.

Once a loan is guaranteed, Reclamation would perform various oversight and monitoring activities, including conducting lender visits and/or audits as necessary, and reviewing loan status reports, default reports, and notifications. Costs incurred in these activities are estimated to be \$405,000.

Finally, Reclamation will incur costs associated with program development and the preparation of various materials (e.g., handbooks, forms, instructions) and their distribution. These costs are estimated to be approximately \$225,000. Total cumulative costs incurred by Reclamation for program administration, implementation and oversight are \$954,900. Assuming these costs are incurred uniformly throughout the 4 year period, at an annual rate of \$238,725, and using a discount rate of 7 percent, the net present costs incurred by Reclamation are expected to be \$808,612. The breakdown of these costs is summarized in Table II below.

Table II – Cumulative Reclamation Costs – 2008 - 2011

Item	Number of Cases	Hours	Cost
Review of Lender Eligibility	26	156	\$11,700
Application for Loan Guarantee	72	2,880	\$216,000
Loan Origination	18	720	\$54,000
Loan Servicing	18	576	\$43,200

Oversight and Monitoring	18	5,400	\$405,000
Program Administration		3,000	\$225,000
Total Reclamation Cost		12,732	\$954,900
Present Value of Costs Over the 4-Year period (evaluated at 7%)			\$808,612

Costs would also be incurred by Reclamation in paying the remaining balances of guaranteed portions of any defaulted loans. While default costs in this context are not true economic costs in terms of the National Economic Development Account, they do present a potentially significant financial implication which should be considered in any assessment of a loan guarantee program.

For purposes of estimating default payments for this analysis, Reclamation anticipated that, as an upper bound, 10 percent of the 18 loans would default over a 15 year period, starting in fiscal year 2011. This default rate is based on a survey of agricultural loan defaults, representing borrowers similar to those which would be receiving guaranteed loans from Reclamation.

Assuming a discount rate of 7 percent, the net present value cost to Reclamation of these defaults at the 10 percent rate would be \$8,518,463 for loans guaranteed during the 4-year period of analysis. Table III demonstrates how this value was calculated. Column 1 represents the total private loans expected to be made available for each year. This is based on an evaluation by Reclamation staff of projects with extraordinary maintenance and rehabilitation projects which need to be accomplished within the period of analysis. Column 2 represents the 80 percent of the total loan amount for which Reclamation would be liable. Columns 3 and 4 represent the cumulative totals. Column 5 shows the amount of loan defaults given the assumptions above, and Column 6 represents the 80 percent liability of the

Federal government for these defaults as they occur. Finally, Column 7 discounts these default payment obligations to Year 1.

Table III – Default Costs (assumes 10 percent default rate)

Year	Annual Private Loans Made	Annual Federal Loan Guarantee	Cumulative Private Loans	Cumulative Federal Loan Guarantee	Defaulting Loans	Federal Guarantee Payments	Cost of Defaults (evaluated at 7%)
1	6,900,000	5,520,000	6,900,000	5,520,000	0	0	0
2	27,030,000	21,624,000	33,930,000	27,144,000	0	0	0
3	54,200,000	43,360,000	88,130,000	70,504,000	0	0	0
4	126,700,000	101,360,000	214,830,000	171,864,000	1,432,200	1,145,760	874,095
5		0	214,830,000	171,864,000	1,432,200	1,145,760	816,911
6		0		171,864,000	1,432,200	1,145,760	763,468
7		0			1,432,200	1,145,760	713,522
8		0			1,432,200	1,145,760	666,843
9		0			1,432,200	1,145,760	623,218
10		0			1,432,200	1,145,760	582,446
11		0			1,432,200	1,145,760	544,342
12		0			1,432,200	1,145,760	508,731
13		0			1,432,200	1,145,760	475,450
14		0			1,432,200	1,145,760	444,345
15		0			1,432,200	1,145,760	415,276
16		0			1,432,200	1,145,760	388,109
17		0			1,432,200	1,145,760	362,718
18		0			1,432,200	1,145,760	338,989
TOTAL	\$214,830,000	\$171,864,000	\$214,830,000	\$171,864,000	\$21,483,000	\$17,186,400	\$8,518,463

Reclamation’s experience with defaults and deferrals on obligations from project beneficiaries indicates that a 10 percent default rate may be higher than what would actually result under the program. USDA has not experienced any actual defaults in its loan guarantee programs, either. Deferrals have been granted on a number of Reclamation repayment obligations, and an analysis of the present value of the costs of such deferrals indicates that they have resulted in a reduction in net present value of the repayment obligations of approximately 2.73 percent. This percentage was derived by calculating the reductions in net present value of the repayment obligations for which deferrals were granted since 2000, a period for which data was readily available. Data is not readily available to

evaluate the extent to which this period is similar to earlier periods. The total reduction in net present value as a percentage of the total loan volume yielded the result given.

The calculation of deferral costs does not include debt forgiveness specifically authorized by the Congress or reallocations to other non-reimbursable project purposes, which have occurred on several occasions. Due to the many complex factors which often enter into decisions on such actions, an attempt to quantify the costs associated with them would not yield particularly meaningful results.

Total present value costs (noting that these costs include the potential costs associated with defaults which in a benefit-cost context are financial, not economic costs) over the 4-year period of analysis associated with a loan guarantee program under the proposed rule, including information collection, submission, and evaluation, administration, and default costs are therefore estimated to range from \$1,159,188 to \$9,677,651. The lower figure assumes no defaults, following USDA's and Reclamation's past experiences. It includes only the \$350,576 in borrower and lender costs and \$808,612 in Reclamation costs shown in Tables I and II above. The higher figure includes the \$8,518,463 resulting from a 10 percent rate of default. In order to ensure a conservative analysis, the 10 percent default rate and resulting cost figure of \$9,677,651 will be used to measure costs of the program and compare to program benefits and to the cost of alternative solutions. Assuming 18 projects take advantage of the loan guarantee program, the estimated average present value cost per project ranges from \$64,400 to \$537,700

The cost of the Loan Guarantee Program compared to both the benefits of the program and the Direct Loan Alternative presented below, is not unduly sensitive to the discount rate used. A rate of 5 percent would result in an upper bound estimate of program

costs of approximately \$11.4 million. The cost of the Direct Loan Alternative presented below would decrease to approximately \$116 million using a 5 percent discount rate.

c. Alternative Costs

By comparison, the costs associated with financing a similar amount of work using an interest-free, direct loan approach such as occurred during Reclamation's Rehabilitation and Betterment Program and on the Arrowrock Outlet Works Repair is given below.

Reclamation's Rehabilitation and Betterment program consisted of direct, interest-free loans, generally with a 40-year term. Actual defaults were not experienced. Administrative costs were incurred throughout the life of the loan. Given these assumptions, the net present value cost of financing work similar to the estimates used for the loan guarantee program costs calculated above, would be approximately \$123,812,857. The method used to reach this estimate is illustrated in Table IV below. Column 1 represents the total funding required for projects in each year, and corresponds to Column 1 in Table III. Columns 2 and 3 represent cumulative project costs and annual administrative costs, respectively. Columns 4, 5, and 6 show the total program expenditures and revenues by year, and the difference between these. Column 7 discounts the annual net expenditures or revenues to Year 1.

Table IV – Direct Loan Costs (R&B)

<u>Year</u>	<u>Annual Federal Loans</u>	<u>Cumulative Federal Loans</u>	<u>Annual Administrative Costs</u>	<u>Total Annual Costs</u>	<u>Annual Repayment Revenue</u>	<u>Annual Costs Minus Repay Revenue</u>	<u>Present Value of Column 7 at 7% discount</u>
1	\$6,900,000	6,900,000	448,000	7,348,000	0	\$7,348,000	6,867,290
2	\$27,030,000	33,930,000	461,440	27,491,440	0	\$27,491,440	24,012,088
3	\$54,200,000	88,130,000	475,283	54,675,283	172,500	\$54,502,783	44,490,506
4	\$126,700,000	214,830,000	489,542	127,189,542	848,250	\$126,341,292	96,385,167
5		214,830,000	300,000	300,000	2,203,250	-\$1,903,250	-1,356,991
6			309,000	309,000	5,370,750	-\$5,061,750	-3,372,858
7			318,270	318,270	5,370,750	-\$5,052,480	-3,146,431
8			327,818	327,818	5,370,750	-\$5,042,932	-2,935,032
9			337,653	337,653	5,370,750	-\$5,033,097	-2,737,671
10			347,782	347,782	5,370,750	-\$5,022,968	-2,553,422
11			358,216	358,216	5,370,750	-\$5,012,534	-2,381,419
12			368,962	368,962	5,370,750	-\$5,001,788	-2,220,854
13			380,031	380,031	5,370,750	-\$4,990,719	-2,070,971
14			391,432	391,432	5,370,750	-\$4,979,318	-1,931,065
15			403,175	403,175	5,370,750	-\$4,967,575	-1,800,478
16			415,270	415,270	5,370,750	-\$4,955,480	-1,678,592
17			427,728	427,728	5,370,750	-\$4,943,022	-1,564,834
18			440,560	440,560	5,370,750	-\$4,930,190	-1,458,665
19			453,777	453,777	5,370,750	-\$4,916,973	-1,359,584
20			467,390	467,390	5,370,750	-\$4,903,360	-1,267,121
21			481,412	481,412	5,370,750	-\$4,889,338	-1,180,839
22			495,854	495,854	5,370,750	-\$4,874,896	-1,100,328
23			510,730	510,730	5,370,750	-\$4,860,020	-1,025,206
24			526,052	526,052	5,370,750	-\$4,844,698	-955,116
25			541,833	541,833	5,370,750	-\$4,828,917	-889,724
26			558,088	558,088	5,370,750	-\$4,812,662	-828,719
27			574,831	574,831	5,370,750	-\$4,795,919	-771,809
28			592,076	592,076	5,370,750	-\$4,778,674	-718,723
29			609,838	609,838	5,370,750	-\$4,760,912	-669,207
30			628,133	628,133	5,370,750	-\$4,742,617	-623,024
31			646,977	646,977	5,370,750	-\$4,723,773	-579,952
32			666,387	666,387	5,370,750	-\$4,704,363	-539,784
33			686,378	686,378	5,370,750	-\$4,684,372	-502,327
34			706,970	706,970	5,370,750	-\$4,663,780	-467,401
35			728,179	728,179	5,370,750	-\$4,642,571	-434,837
36			750,024	750,024	5,370,750	-\$4,620,726	-404,477
37			772,525	772,525	5,370,750	-\$4,598,225	-376,175
38			795,701	795,701	5,370,750	-\$4,575,049	-349,794
39			819,572	819,572	5,370,750	-\$4,551,178	-325,204
40			844,159	844,159	5,370,750	-\$4,526,591	-302,287
41			869,483	869,483	5,370,750	-\$4,501,267	-280,931
42			895,568	895,568	5,370,750	-\$4,475,182	-261,031
43			922,435	922,435	5,198,250	-\$4,275,815	-233,086
44			950,108	950,108	4,522,500	-\$3,572,392	-182,001
45			978,611	978,611	3,167,500	-\$2,188,889	-104,221
TOTAL	\$214,830,000	\$214,830,000	\$25,473,254	\$240,303,254	\$214,830,000	\$25,473,254	
Present Value Cost of Baseline R&B Program							\$123,812,857.78

Another comparison which illustrates the potential difference in costs to the United States associated with a loan guarantee program compared to other potential alternatives involves the Arrowrock Dam outlet works repair mentioned in the benefit section of this analysis. This repair work was actually financed using essentially a similar direct loan type of approach, though with different terms. Faced with an inability to finance the costs of these repairs upfront, the water users on this project sought and obtained special legislation from Congress authorizing Reclamation to proceed with the repairs; capping the water users' financial obligation for repayment of the costs at \$6,900,000 of the total \$9,200,000 in expenses which would otherwise have been reimbursable by the water users; and allowing interest-free repayment of this amount over 15 years. This represents a net present value cost to the United States of \$4,983,514, as shown in Table V below.

Table V – Arrowrock Outlet Works Repair Legislation

Year	Payment	Interest	Principal	Loan Balance	Present Value	7% Discount Rate	
		0		6,900,000	7.00%	No default	
1						9.2 Million of work is performed over years 1 and 2	
2						Repayment begins in Year 3, Total Obligation capped at \$6.9 Million	
3	460,000	0	460,000	6,440,000	401,782	Admin Costs are assumed to be included in the construction outlays or repaid separately by the water users as O&M	
4	460,000	0	460,000	5,980,000	375,497	Appropriations Requests	
5	460,000	0	460,000	5,520,000	350,932		
6	460,000	0	460,000	5,060,000	327,974		
7	460,000	0	460,000	4,600,000	306,517		
8	460,000	0	460,000	4,140,000	286,465		
9	460,000	0	460,000	3,680,000	267,724		
10	460,000	0	460,000	3,220,000	250,210		
11	460,000	0	460,000	2,760,000	233,841		
12	460,000	0	460,000	2,300,000	218,543		
13	460,000	0	460,000	1,840,000	204,246		
14	460,000	0	460,000	1,380,000	190,884		
15	460,000	0	460,000	920,000	178,396		
16	460,000	0	460,000	460,000	166,725		
17	460,000	0	460,000	0	155,818		
					3,915,552		
Arrowrock - Present Value Costs							
	Construction C	Admin Cc	Total Costs				
1	4,600,000		4,600,000		4,600,000		
2	4,600,000		4,600,000		4,299,065		
					\$8,899,065		
Net Present Cost - Arrowrock Legislation					\$4,983,514		

This amount compares to an average cost per project of the loan guarantee program as proposed of approximately \$537,647.

7. Net Economic Benefits

The present value of the net economic benefits is total benefits less total costs discounted appropriately. In the context of the loan guarantee program, benefits can be characterized as project outputs that would be provided at higher levels relative to the baseline or restored to previous baseline levels in a more timely manner. Economic costs are the costs associated with receiving these benefits. These costs involve the transaction costs associated with establishing the loan guarantee program and the annual ongoing costs associated with each guarantee. Economic costs do not include potential default costs. Given the lack of project specific

information it is not possible to estimate the net economic benefits associated with the loan guarantee program.

In a financial sense, and from a cost effectiveness perspective, for a given amount of rehabilitation work, the loan guarantee program appears to offer the possibility of cost savings to the US. This is because the transaction costs associated with financing rehabilitation work are reduced for both the US and water districts.

8. Summary

The Reclamation Loan Guarantee program under the proposed rules may represent a cost-effective means of ensuring the timely accomplishment of needed extraordinary maintenance and rehabilitation work on Reclamation projects. This is true in comparison to the ‘no action’ baseline, and to other potential financing assistance alternatives. The estimated program costs are small in comparison to the significant benefits generated by the Reclamation project facilities whose service life they would help to extend. The proposed rule is expected to provide net benefits compared to the current situation.