

GAO

Report to the Chairman, Subcommittee
on Water, Power, and Offshore Energy
Resources, Committee on Interior and
Insular Affairs, House of
Representatives

March 1991

FEDERAL ELECTRIC POWER

Effects of Delaying Colorado River Storage Project Irrigation Units



143688

PLEASE RETURN TO THE
GENERAL INVESTIGATING DIVISION, SPECIFICALLY
APPROPRIATE AND SPECIAL INVESTIGATIONAL
DIVISION

**Resources, Community, and
Economic Development Division**

B-217826

March 22, 1991

The Honorable George Miller
Chairman, Subcommittee on
Water, Power, and Offshore
Energy Resources
Committee on Interior and
Insular Affairs
House of Representatives

Dear Mr. Chairman:

As you know, in 1956 the Congress authorized the U.S. Bureau of Reclamation's Colorado River Storage Project (CRSP) to develop the water resources of the Upper Colorado River Basin.¹ A large portion of the federal investment in this project is repaid through revenues from the sale of electricity generated by CRSP hydropower facilities and marketed by the Department of Energy's Western Area Power Administration (Western). In addition to large multipurpose reservoirs, CRSP includes irrigation and/or water supply facilities known as "participating" projects. CRSP legislation authorizes the use of power revenues to repay a portion of costs incurred for constructing the irrigation components of participating projects. A project's irrigation construction cost must generally be repaid within 50 years of the date that the project becomes fully operational.

The price of CRSP electricity—the CRSP power rate—normally generates sufficient repayment revenue and is periodically recalculated to reflect updated cost information. Since 1983, the Bureau of Reclamation (Bureau) and Western have excluded from the power rate the estimated irrigation construction costs of some authorized participating projects that have not been constructed and are not currently planned for construction.² Expressing concern about this exclusion in a February 1990 letter, you requested that we determine the effects of such exclusion on CRSP power rates and electricity revenues, repayments to the U.S. Treasury, and the ultimate development of Upper Colorado River Basin water resources as envisioned in CRSP legislation. You also asked us to determine (1) which of CRSP's authorized participating projects have

¹The Upper Colorado River Basin includes the Colorado River and its headwaters that flow through Wyoming, Utah, Colorado, Arizona, and New Mexico.

²Although these projects are authorized by CRSP legislation, the Bureau has not sought, and the Congress has not appropriated, construction funds. Because they have not been scheduled for construction and, indeed, may never be built, we refer to these as "indefinite" projects.

been constructed and whether or not each is included in the power rate calculation; (2) the legal basis and rationale for excluding participating project costs, or portions of them, from the rate calculation, as well as the rationale for not seeking deauthorization of excluded projects; and (3) whether the information provided to the Subcommittee for its oversight of CRSP is adequate.

Results in Brief

Excluding the estimated irrigation construction costs of indefinite projects results in lower electric power rates and CRSP revenues than would otherwise exist. For example, on the basis of Western's studies, GAO estimates that if the projects' estimated costs were included in the power rate calculation, the existing power rate would be approximately 43 percent higher and gross revenues through 2080 would be about \$3.4 billion more. GAO believes, however, that excluding the estimated costs will not materially affect Treasury repayment or the ultimate development of Upper Colorado River Basin water resources, because (1) the existing power rate has been set to produce enough revenue to repay, within legislatively determined time frames, the costs of projects that are constructed or will soon be constructed, and (2) the power rate can be adjusted to produce more revenue if the indefinite projects, or other projects, are constructed in the future.

As currently authorized, CRSP consists of four mainstem storage units—dams and reservoirs—and 19 participating projects whose irrigation construction costs are repayable with power revenues. The mainstem units are completed and their costs are included in calculating the CRSP power rate. Eleven participating projects are constructed, and 2 are under construction; the irrigation construction costs of these 13 projects are also included in the power rate calculation. One authorized participating project, the Central Utah Project (CUP), is partly constructed and partly indefinite. A portion of its irrigation construction cost is included in the power rate calculation. The remaining five participating projects, all indefinite, are not constructed or scheduled for construction; their estimated irrigation construction costs are excluded from the power rate calculation.

Excluding the estimated costs of indefinite CRSP projects from the power rate calculation is not precluded by law. The rationale for the exclusion is that today's power customers should not be required to pay, through electric rates, for projects that may never be constructed. While deauthorizing the projects would also result in their removal from the power rate calculation, Bureau officials said they excluded the projects

instead of seeking their deauthorization because, in their view, deauthorization is the responsibility of local water users and the Congress.

Each year the Subcommittee on Water, Power, and Offshore Energy Resources, House Committee on Interior and Insular Affairs, receives from the Bureau an annual report containing CRSP financial data and, as part of the annual appropriations process, Bureau status reports for individual CRSP participating projects that require appropriations. However, the financial data, summarized for CRSP as a whole, do not include data on individual storage units and participating projects within CRSP. Neither report provides the historical cost information needed for comparing participating projects' past and current cost estimates nor information showing whether each project affects the current power rate.

Background

CRSP mainstem storage units and participating projects serve distinct purposes. While the four mainstem units are designed to control the flow of the rivers, the participating projects are designed chiefly for irrigation and/or supplying water to cities and industries. Three storage units and one participating project have hydroelectric facilities whose power is marketed by Western.

The Bureau plans and constructs CRSP components and accounts for their costs. In addition to irrigation, water supply, and hydroelectric purposes, CRSP provides flood control, recreation, and fish and wildlife benefits. A portion of CRSP construction costs is allocated to each purpose. The costs allocated to electric power, irrigation, and municipal and industrial water supply purposes, considered reimbursable, are expected to be repaid by the direct beneficiaries.³ Costs allocated to irrigation that exceed the beneficiaries' (irrigators') ability to repay are repaid instead by CRSP power revenue. This revenue must therefore be sufficient to cover the

- costs of operation and maintenance, replacements, and emergency repairs of storage units assigned to power;
- construction costs of storage units and participating projects assigned to power and the construction costs of electric transmission systems;

³In contrast, the costs allocated to flood control, recreation, and fish and wildlife enhancement are nonreimbursable; that is, they are paid for by the Treasury, states, or municipalities.

- interest on investment costs allocated to power;⁴ and
- storage unit construction costs allocated to irrigation and the irrigation construction costs of participating projects that are beyond the irrigators' abilities to repay.

Appendix I has more information on CRSP purposes and repayment requirements.

Western uses the Bureau's project construction schedules and cost information to prepare annual power repayment studies and calculate the rates to be charged for electricity. Power repayment studies generally cover a period of about 100 years. For each year in the study, Western estimates the costs that must be covered by power revenues. The electric rate is then set so as to generate sufficient revenue to cover the year(s) in which the greatest costs are anticipated (the maximum cost year). However, Western is also required to set power rates as low as possible in accordance with good business practices.

Previous work by GAO showed that CRSP power rates are similar to those charged by other federal hydropower projects, but are lower than nonfederal utilities operating in the West.⁵ Comparable wholesale power rates charged by federal utilities during 1990 ranged from 6.8 to 31.5 mills/kWh.⁶ Comparable nonfederal rates ranged from 34.4 to 80.2 mills/kWh.

In order to exclude estimated irrigation construction costs of the indefinite projects from the rate calculation, the Bureau and Western agreed to "reschedule" the projects so that their costs would not have to be repaid until a date after the anticipated maximum cost year (currently estimated to be 2058). Thus, while the indefinite projects are included in the overall CRSP power repayment study, they do not affect current electric power rates.

⁴Irrigation project costs are financed by the Treasury without interest, and the interest charged on other project costs is generally below market rates. The imputed cost of this subsidy is assumed by the Treasury.

⁵Federal Electric Power: Information Concerning the Colorado River Storage Project (GAO/RCED-90-2FS, Oct. 3, 1989).

⁶A mill is one-tenth of one cent. A kilowatt hour (kWh) is one thousand watts used for one hour.

Impact of Cost Exclusion

Excluding participating project costs by rescheduling the projects has resulted in lower CRSP power rates and, thus, lower revenues than would exist otherwise. Nevertheless, on the basis of information supplied by Bureau and Western officials, we conclude that the required repayment of CRSP costs will not be materially affected, nor will the ultimate development of water resources within the Upper Colorado River Basin. Rescheduling the indefinite projects does not affect the cost recovery of the remaining participating projects; the Treasury will recover its investment in those within the required 50 years.

Western's and the Bureau's studies show that if all participating projects, including the indefinite projects, were funded and under construction by 1991 (and were thus within the rate calculation period), the power rate effective in October 1990 would have been 18.54 mills per kilowatt-hour instead of the actual rate of 13.0 mills/kWh, or about 43 percent higher. Similarly, the rate in effect from 1983 to October 1990 would have been 11.46 mills/kWh instead of 9.92 mills/kWh, or about 16 percent higher. Total power revenues through 2080—the last year included in Western's current repayment study—would be an estimated \$8.8 billion if the indefinite projects had not been rescheduled, or about 63 percent more than the approximately \$5.4 billion estimated under the actual rate. The rate and revenue effects are summarized in table 1.

Table 1: Effects of Excluding Indefinite Projects on CRSP Power Rates and Revenues

Rates/revenues	Indefinite projects		Difference	Percentage change
	Excluded	Included		
1983 power rate (mills/kWh)	9.92	11.46	1.54	15.5
1990 power rate (mills/kWh)	13.00	18.54	5.54	42.6
Total CRSP power revenue collected by 2080 (dollars in billions)	\$5.4	\$8.8	\$3.4	62.9

According to information supplied by Bureau and Western officials, the required repayment of CRSP irrigation construction costs will not be materially affected by rescheduling the indefinite participating projects. The costs of constructed or soon-to-be constructed participating projects are included in the rate calculation and will therefore be repaid within the statutory time limit. Of the estimated \$3.4 billion in additional revenue that would result if the indefinite projects were to be funded and under construction by 1991 (and therefore included in the rate calculation), approximately \$1.6 billion would be used to repay irrigation construction costs of existing and potential future participating projects,

and approximately \$1.8 billion excess to CRSP needs would be accumulated from 2058 to 2080.⁷

Western's current repayment study assumes that the costs of constructed or soon-to-be constructed participating projects will not be repaid until the last year of the required 50-year period for each project, and the power rates and revenues are set accordingly. If the indefinite projects had not been rescheduled—and consequently were included in the power rate calculation—the increased power rates would provide excess revenues, perhaps enabling some of the existing participating projects to be repaid in less than the full 50 years. Thus, rescheduling the indefinite projects lowers the probability that the definite projects will be repaid sooner.

Excluding the estimated irrigation construction costs of indefinite participating projects does not affect the ultimate development of Upper Colorado River Basin water resources. CRSP legislation does not establish a specific timetable for participating project development, and the power rate can be adjusted to produce more revenue if additional projects are funded for construction in the future. Appendix II has additional information on the effects of excluding the costs of rescheduled projects from the power rate calculation.

Status of CRSP Projects

The Congress has authorized four mainstem units (dams and reservoirs) and 19 participating projects⁸ that are to be repaid through power revenue. (These projects are listed in table 2.) Construction of the four CRSP mainstem units was completed in 1966. The costs of their construction and subsequent improvements—about \$586 million—allocated to power for repayment are included in the power rate calculation.⁹

Thirteen of the 19 participating projects, and portions of another project, have been or will soon be constructed. Irrigation construction costs

⁷Including indefinite projects in the rate calculation will raise power rates. Like other CRSP power rate revenue, any additional amounts would go into the Basin Fund and would not be considered part of general Treasury funds. Under current law additional revenue would not have to be used to speed up repayments on existing projects.

⁸Because the Navajo Indian Irrigation Project will not be repaid through power revenue, we have not included it.

⁹Cost information is based on 1989 estimates, the most recent available at the time of our review.

for these projects that exceed irrigators' ability to pay—about \$1.17 billion—are included in the power rate calculation. The irrigation construction costs of the indefinite participating projects are currently estimated at about \$1.24 billion; their cost is excluded from the power rate calculation.

CUP is the largest participating project, consisting of five separate units. CUP is unique among CRSP participating projects in that some portions of the project are constructed or under construction, while other portions are indefinite. One CUP unit, the Bonneville Unit, includes facilities that are under construction and other facilities that are indefinite. The estimated irrigation construction cost of all authorized CUP units is \$1.1 billion; of this, \$543 million, which represents facilities that have been constructed or are planned for construction, is included in the power rate calculation. The balance, about \$580 million, reflects those portions of CUP—including the indefinite portion of the Bonneville Unit—that are not scheduled for construction and are excluded from the rate calculation.

Table 2 summarizes the cost and construction status of the 19 participating projects. Appendix III provides additional details.

Table 2: Summary of Participating Project Status and Cost

Dollars in thousands

Projects included in power rate calculation	Construction status	Irrigation construction cost repayable with power revenues
Animas-La Plata	Under construction	\$214,000
Bostwick Park	Completed	5,483
Dallas Creek	Completed	32,721
Dolores	Under construction	288,107
Emery County	Completed	6,591
Florida	Completed	7,786
Hammond	Completed	6,660
Lyman	Completed	23,820
Paonia	Completed	5,196
San Juan-Chama	Completed	30,324
Seedskadee	Completed	1,228
Silt	Completed	5,742
Smith Fork	Completed	3,199
CUP units:		
Bonneville	Under construction	527,326
Jensen	Completed	7,679
Vernal	Completed	8,033
Total		\$1,173,895
Projects excluded from power rate calculation		
Fruitland Mesa	Indefinite	\$172,178
La Barge	Indefinite	6,391
San Miguel	Indefinite	108,525
Savory-Pot Hook	Indefinite	154,847
West Divide	Indefinite	219,569
CUP units:		
Bonneville	Indefinite	428,812
Uintah	Indefinite	94,534
Upalco	Indefinite	57,096
Total		\$1,241,951

Legal Basis and Rationale for Rescheduling

The Bureau and Western decided to exclude the cost of indefinite participating projects from power rate calculations in part because power users were concerned that they were paying for participating projects that would never be built. According to the Bureau's analysis, the indefinite projects have not been constructed and are not currently planned for construction because they are not economical (that is, their estimated costs exceed their estimated benefits).

Because CRSP power is sold at wholesale, CRSP power rates must be approved by the Federal Energy Regulatory Commission (FERC), which is responsible for regulating wholesale electric power rate transactions. In 1981 CRSP power customers, represented by the Colorado River Energy Distributors Association (CREDA), contested Western's proposed power rate increase before FERC. The proposed rate increase was calculated to include the estimated irrigation construction costs of indefinite participating projects. FERC decided that the rates should not reflect the cost of projects that might never be constructed. At FERC's urging, Western and the Bureau entered into an agreement that formalized criteria used to determine which participating projects or portions of them could be included in the rate calculation. FERC accepted this agreement as part of the rate-making case. Since 1983, the Bureau and Western have used the criteria in the agreement to determine the project costs used in power rate calculations.¹⁰

According to Western and Bureau officials, rescheduling indefinite projects is not prohibited by law and is consistent with their legislative mandate to set rates as low as is allowed by sound business principles. Further, agency officials indicated that they believe rescheduling has become a practice accepted by the Congress over the years. We believe that rescheduling, as adopted by FERC, Western, and the Bureau, is consistent with the law.

The cost of participating projects could also be excluded from power rate calculations if the projects were deauthorized, as the costs for the Pine River Extension Project were excluded when it was deauthorized in 1968. However, Bureau officials indicated that they have not sought the deauthorization of indefinite projects because they believe (1) it is the responsibility of local water users and ultimately of the Congress to seek deauthorization, (2) changing economic conditions may make the

¹⁰Western, the Bureau, and power users disagree as to whether the agreement has been strictly followed with respect to the Central Utah Project's Bonneville Unit. Appendix IV includes a discussion of this matter.

projects economical in the future, and (3) the government incurs no significant cost in keeping these projects authorized.

Information for CRSP Oversight

The status reports currently provided to the Subcommittee on Water, Power, and Offshore Energy Resources, House Committee on Interior and Insular Affairs, contain information on individual CRSP projects that are definite, including current estimated total costs and funding requests for the next fiscal year. However, the reports do not identify the historical cost information needed for comparing past and current cost estimates for these projects. For example, original estimated project costs indexed for inflation are not part of the status report. Further, the reports do not include information on indefinite projects. Comparing original indexed and current cost estimates for both definite and indefinite projects could help the Subcommittee judge how economically and efficiently the projects are being constructed and if the existing authorizations appear sufficient. The status report could also be used to explain why current cost estimates may be higher than original cost estimates.

None of the information provided to the Congress identifies which CRSP participating projects are included in the current electric power rate calculation or why some projects have been excluded. This information would be useful for the Congress because it would clearly identify the indefinite participating projects. Information about project status and cost would be useful for the Subcommittee's general oversight activities, such as evaluating requests to authorize CRSP funding. Appendix V discusses the information the Subcommittee receives from the Bureau.

Recommendation

We recommend that the Secretary of the Interior direct the Commissioner, Bureau of Reclamation, to provide the Subcommittee, at the beginning of each calendar year, with

- a schedule comparing the original estimated cost, indexed for inflation, and the current estimated cost for each CRSP authorized participating project, regardless of the project's construction status;
- explanations of significant differences between the indexed and current costs;
- a schedule showing, for each CRSP authorized project, the estimated irrigation construction cost included in the power rate calculation and the estimated irrigation construction cost excluded from the power rate calculation;
- an explanation for any irrigation construction costs that are excluded from the power rate calculation; and

-
- an explanation for significant changes in costs included in the power rate calculation that have occurred since the date of the previous schedule provided to the Subcommittee.

This information should be provided in addition to that information currently provided to the Subcommittee.

In completing this review, we held discussions with officials and reviewed documents at Western, the Bureau, and CREDA related to the (1) status of participating projects and the rationale for rescheduling and (2) information on CRSP provided to the Subcommittee. Western and Bureau officials provided us with studies showing the impact of rescheduling on power rates, CRSP revenues, and payments to the Treasury. We did not verify the output of Western's automated systems used in preparing these studies. We performed our field work from November 1989 through September 1990. Our audit was performed in accordance with generally accepted government auditing standards. Appendix VI discusses our objectives, scope, and methodology in more detail.

We discussed the factual content of this report with Western and Bureau officials, who generally concurred with the facts. However, as you requested, we did not obtain official agency comments on a draft of this report.

As arranged with your office, we will make no further distribution of this report until 30 days from the date of this letter, unless you release its contents earlier. At that time, we will send copies to the Secretary of Energy; the Secretary of Interior; the Commissioner, Bureau of Reclamation; the Director, Office of Management and Budget; and other interested parties. Copies will also be provided to others upon request.

This work was performed under the direction of Victor S. Rezendes, Director, Energy Issues, (202) 275-1441. Other major contributors are listed in appendix VII.

Sincerely yours,



J. Dexter Peach
Assistant Comptroller General

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Abbreviations

CREDA	Colorado River Energy Distributors Association
CRSP	Colorado River Storage Project
CUP	Central Utah Project
FERC	Federal Energy Regulatory Commission
GAO	General Accounting Office
kWh	kilowatt hour
PMA	Power Marketing Administration
PRS	Power Repayment Study

Background

CRSP Purposes

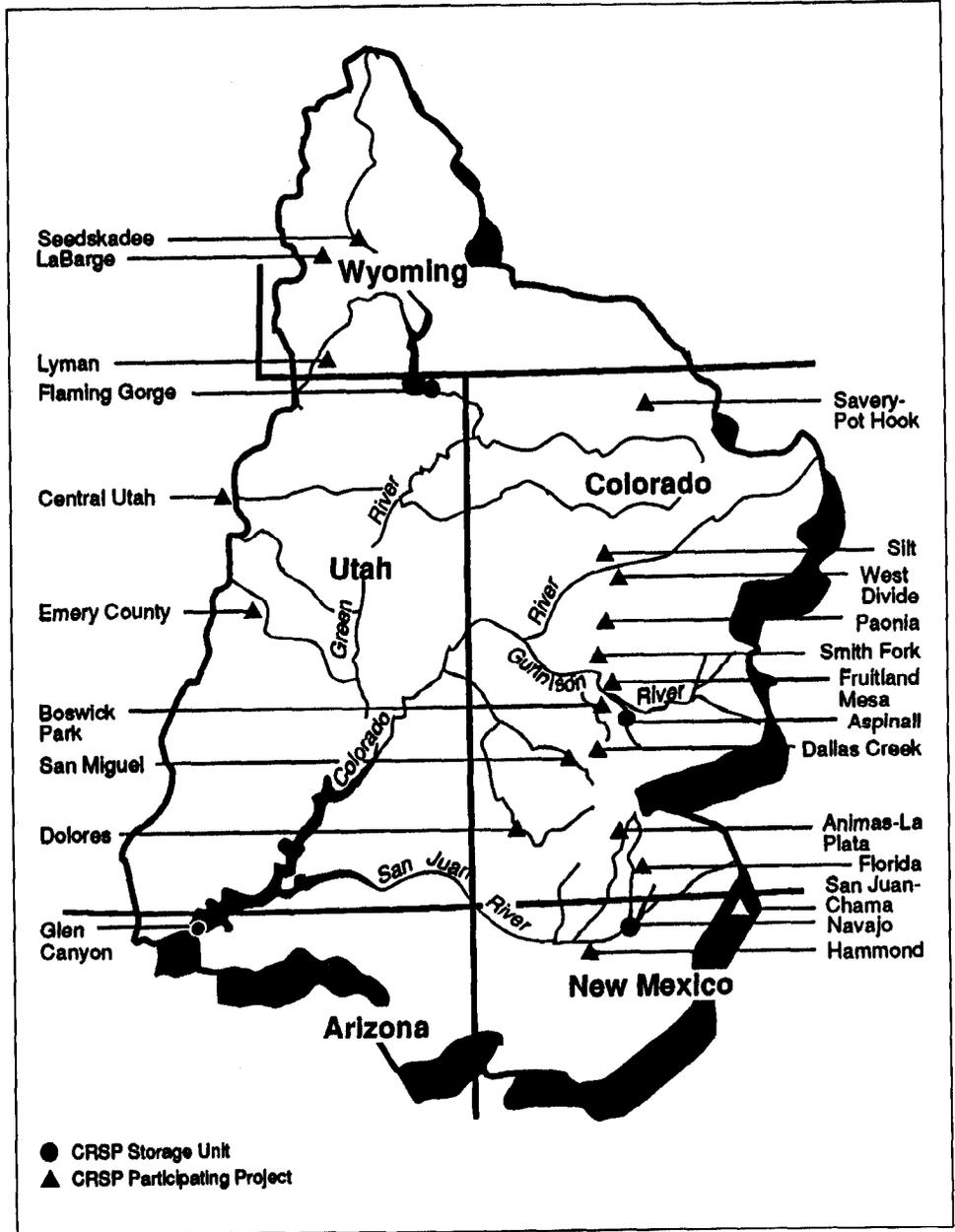
CRSP was authorized by Pub. L. No. 84-485, 70 Stat. 105 (1956) as a comprehensive federal water project to develop, and make available for use, the water resources of the Upper Colorado River Basin. CRSP consists of 4 multipurpose water storage units (dams and reservoirs) and 20 participating projects (see figure I.1); however, one participating project—the Navajo Indian Irrigation Project—is considered nonreimbursable, and therefore does not “participate” in CRSP power revenue. One function of the water storage units is to equalize the erratic flow of the Colorado River and its main tributaries. The equalized flow helps the Upper Basin states of Colorado and Wyoming, and portions of Arizona, New Mexico, and Utah to make their annual water delivery commitments to the Lower Basin states of California and Nevada, and portions of Arizona, New Mexico, and Utah. Water in the Upper Basin not needed to meet these delivery commitments may be used by participating projects for irrigation and municipal and industrial purposes.

CRSP is a multipurpose project. Project purposes include electric power supply, irrigation, municipal and industrial water supply, recreation, fish and wildlife enhancement, and flood control. Participating projects may provide benefits from one or several of these purposes. The cost of each participating project is allocated among these purposes, relative to the amount of benefits received.

CRSP Repayment Requirements

CRSP construction is financed by the federal government through appropriations. CRSP appropriations are transferred to the Upper Colorado River Basin Fund, a revolving fund in the U. S.

Figure I.1: Map of Colorado River Storage Project



Treasury. In addition to the appropriated funds, all revenues collected from the operation of CRSP, including receipts from power and water sales, are credited to the Basin Fund. Basin Fund revenues are used for (1) costs of operations and maintenance, replacements, and emergency repairs on storage units assigned to power; (2) those construction costs of storage units and participating projects that have been assigned to power, and construction costs of electric transmission systems; (3) interest on investment costs allocated to power; and (4) storage unit construction costs allocated for irrigation.

Revenues in excess of the amounts needed to repay these costs to the Treasury (net CRSP revenues) are apportioned according to legislative guidelines and credited to the states in which projects are located to repay irrigation construction costs of participating projects that are beyond the irrigators' abilities to repay. The Bureau determines how much the irrigators can pay using a standard formula. This amount is only a small portion of the total irrigation construction costs; the remaining costs are repaid from apportioned net CRSP power revenues.

CRSP net revenues are apportioned to Upper Basin states in the following manner: Colorado, 46 percent; New Mexico, 17 percent; Utah, 21.5 percent; and Wyoming, 15.5 percent. These percentages are established by legislation. Revenues accumulated for a state are held in the Basin Fund for the development of the Upper Colorado River Basin water resources in that state. Revenues are available for repayment of irrigation construction costs of authorized participating projects or projects yet to be authorized. Once a participating project is completed and fully operational (which may include a developmental period of up to 10 years), the project irrigation construction costs must be repaid within 50 years.

Whenever the sum of apportioned revenues and state-specific revenues is insufficient to meet the repayment requirements of a participating project within a given state, a further distribution of net CRSP revenue is triggered. The state with the participating project(s) in financial need is said to be "driving" the apportionment at that point. The driving state receives a credit in the Basin Fund for exactly enough net revenue from CRSP to cover its financial shortfall, and the other three states also receive credits according to their individual apportionment percentages. Generally, the funds apportioned to the three states not driving the apportionment exceed the funds needed at that time to repay the irrigation construction costs of participating projects in those states.

For example, assume that Utah is the driving state, needing funds beyond those in its Basin Fund account to repay \$100 million of a participating project's irrigation construction cost within the legislated time period. When net CRSP revenue is applied to repay that project, the other three states—Colorado, New Mexico, and Wyoming—receive credit for funds according to their respective apportionment percentages of 46, 17, and 15.5. To determine how much net CRSP revenue must be made available in order to (1) repay the irrigation construction costs of Utah's project and (2) apportion the required amounts to the other three states, the \$100 million that Utah needs is divided by Utah's percentage of 21.5, resulting in \$465 million (100 divided by .215 = 465). The total amount is then multiplied by each state's apportionment percentage to determine how much each state is credited, as shown in table I.1.

Table I.1: Example of CRSP Revenue Apportionment Process

State	Amount needed for construction	Calculation	Total net CRSP revenue needed
Colorado	\$0	\$465 * .460	\$214
New Mexico	0	465 * .170	79
Utah	100	465 * .215	100
Wyoming	0	465 * .155	72
Total	\$100		\$465

For states that are not driving the process, net CRSP revenue accumulates until it is needed to repay the irrigation construction costs of participating projects in those states. The revenues cannot be used to repay the irrigation construction cost of a participating project in another state without the consent of the state to which such revenues are apportioned. On the basis of the current power rate of 13.0 mills/kWh, Western estimates that by 2080, approximately \$2.4 billion of total apportioned revenue will be available for the Colorado River's upper basin states after all currently scheduled projects are built and repaid. This \$2.4 billion is not considered excess CRSP funds, since it is designated to repay the irrigation construction costs of potential future participating projects. The total amount of apportioned funds will be recalculated when a new power rate is assigned. According to a Bureau official, CRSP legislation does not clearly indicate what should happen to these apportioned funds once the currently planned CRSP projects are completed.

How Power Rates Are Established

Western's rate calculation process is similar to that used by most of the other four federal power marketing administrations (PMA).¹ It involves estimating future water availability for electric power; determining whether revenues at existing power rates will cover the costs of the project; developing new rates, if needed, to ensure that revenues are adequate to cover those costs that must be repaid with power revenue; and obtaining approval for the new rates.

If Western determines that the current power rate is not adequate to generate revenues required to cover future expected costs, the agency proposes a new power rate. Western discusses the proposed rate informally with its customers and announces that a revised rate is under consideration. The official announcement of the rate under consideration is published in the *Federal Register*. Meetings with customers, public meetings, press releases, and newspaper advertisements may also be used to announce the proposed rate. After the announcement, interested parties may submit written comments to Western relevant to rate policy and design, and to the rate adjustment process. Comments received are considered in the development of the proposed rate.

Once Western determines what the new rate should be, the Administrator gives public notice that this new rate is under consideration. All interested persons have the opportunity, during a set time period, to consult with and obtain information from Western, examine backup data, and make suggestions to Western about modifying the rate. Once Western completes this process, it submits its proposal for the rate increase to the Deputy Secretary of the Department of Energy who, after review and approval, may establish the new rate on an interim basis pending final approval by the Federal Energy Regulatory Commission.

Power Rate Studies

To help ensure that annual revenues from the sale of power are sufficient to cover costs, Western uses a computerized model to develop a power repayment study (PRS) that simulates the financial life of CRSP and includes significant operating data for every remaining year of CRSP's life. Data that Western uses for the PRS include actual and estimated revenues, based on actual and estimated water availability data

¹There are five PMA's that market power throughout the U.S. In addition to the Western Area Power Administration, there are the following: the Bonneville Power Administration, the Alaska Power Administration, the Southwestern Power Administration, and the Southeastern Power Administration.

provided by the Bureau, and actual and estimated costs for the life of the project.

The computer model goes through each future year sequentially, calculating revenue, subtracting estimated operating costs, and applying the remainder to the repayment of construction costs, including those revenues allocated for irrigation construction costs. In this way, the PRS will determine the year in which the operation and construction costs to be paid are the highest (the maximum cost year) and will then approximate the power rate necessary to provide the revenue to pay these costs. Also, to meet legislative requirements, the PRS distributes construction costs over the years of the study so that the power rate can be kept at the lowest rate possible.

If revenues throughout the life of the project are adequate to recover all operation and construction costs within the time frame established by legislation, Western concludes that the current power rate is adequate to generate necessary revenues and no power rate increase is needed. If revenues are estimated to be inadequate and the indicated increase is relatively small, Western reevaluates the accuracy of the data used in the PRS and runs a new PRS with any changes in the data to determine whether a new rate is needed. If revenues are estimated to be inadequate and the indicated increase is relatively large, Western proceeds with the rate-adjustment process to establish a new rate.

By agreement between Western and the Bureau (see appendix IV for more information on this agreement), the estimated irrigation construction costs of indefinite participating projects are not allowed to affect the rate-setting calculation. Instead, these costs have been rescheduled in the PRS for repayment during years beyond the maximum-cost year. According to the Bureau and Western, as soon as it becomes apparent that a project will be funded and built, its estimated irrigation construction cost is included in the rate calculation.

Impact of Rescheduling

Impact on Power Rates and Revenue

At our request, Western and the Bureau prepared power repayment studies (PRS) that show what power rates and revenues would be if indefinite participating projects were not excluded from the rate calculation. They indicated that to be consistent with their policy for scheduling the irrigation construction costs for participating projects, they had to assume, in making their studies, that the Congress would fund the presently indefinite projects and that construction would begin by 1991. However, Western officials do not anticipate that these events will occur.

The studies show that the rate in effect from the years 1983 to 1990 would have been 11.46 mills/kWh instead of 9.92 mills/kWh, and the rate going into effect in the year 1990 would have been 18.54 mills/kWh instead of 13.0 mills/kWh. Gross Treasury receipts (the entire sum deposited in the Basin Fund over and above annual operating costs) would increase by approximately \$3.4 billion through 2080 if the indefinite participating projects' estimated irrigation construction costs were included. (An additional amount—about \$100 million—would accrue due to net changes in interest, for a total increase of about \$3.5 billion.)

Table II.1 shows that approximately \$1.2 billion of this increase would be used to repay the irrigation construction costs of participating projects, approximately \$419 million would be credited to states for the repayment of the irrigation construction costs of potential future participating projects, and approximately \$1.8 billion would be excess to the needs of CRSP. The excess funds would be accumulated from the years 2058 to 2080.

**Appendix II
Impact of Rescheduling**

Table II.1: Estimated Use of Increased Revenues (All CRSP Participating Projects Included in Rate Calculation)

Dollars in thousands		
Repayment uses of increased gross treasury receipts:		
Power-related investment	\$ 34,493	
Power-related replacements	0	
Storage unit irrigation investment	14,039	
Participating projects ^a	1,241,951	
Subtotal	\$1,290,483	\$1,290,483
Apportioned to states ^b		418,621
Excess funds		1,842,656
Capitalized deficit ^c		(10,094)
Prior years adjustment ^d		(3,631)
Total increase in gross treasury receipts through 2080 (net change in interest)		\$3,538,035

^aThe \$1.2 billion represents only participating projects' irrigation construction costs payable with power revenues. According to the Bureau, if the currently indefinite projects were to be funded and built, the total cost to the Treasury would be another \$1.2 billion, approximately, for costs attributable to recreation, fish and wildlife enhancement, flood control, and other purposes that are not repayable with power revenues.

^bRevenue would be apportioned to the states from 1995 to 2057.

^cThe capitalized deficit represents a temporary shortfall in current power revenues as compared to current costs. This shortfall is due to a decrease in power revenue resulting from an unexpected reduction in stream flow over a 4-year period, and an increase in purchased power costs and unbudgeted environmental clearance costs.

^dPrior year adjustments were made in the PRS (for the current power rate) at the request of Western's independent auditor. The adjustments made revenues and expenses in the PRS consistent with the revenue and expense data in Western's financial statements.

Western and the Bureau prepared PRSS showing what the previous rate and current rate and their related revenues and outlays would have been without rescheduling. We compared the results of these PRSS with the same types of data from the PRSS for the actual previous and current rates through the year 2080 to develop the information in the above table.

To develop the rate, revenues, and outlays that would have been necessary in 1983 if projects had not been rescheduled, Western reproduced, with limitations, the April 1983 PRS upon which the 9.92 rate was based. According to Western, it was impossible to reproduce the way in which the power-related investment was handled in the April 1983 PRS because of changes in the computer system since that time; however, Western said that this problem did not materially affect the study results. Participating projects that were rescheduled were placed in the GAO-requested

said that this problem did not materially affect the study results. Participating projects that were rescheduled were placed in the GAO-requested PRS using 1979 repayment schedule dates—adjusted 4 years into the future—and 1983 estimated irrigation construction costs. To simulate the project integration that took place in 1987, Western inserted, beginning in fiscal year 1988, the power resources and the gross power-related revenue requirements for the Collbran and Rio Grande projects, as estimated in their 1981 PRS.

To develop the information for the years covered by the 1989 PRS without project rescheduling, Western modified the FY 1989 study upon which the current rate of 13.0 mills/kWh is based. For the study, Western assumed that the 11.46 mills/kWh developed by the above study was in effect since June 1983. The repayment schedule Western used assumed that (1) all authorized participating projects would be built regardless of their cost-effectiveness, (2) construction would proceed as soon as physically possible for every project not yet completed, and (3) the Congress would fund construction on a timely basis. Participating projects were included in the GAO-requested PRS at their FY 1989 estimated irrigation construction costs.

Impact on Repayment and Ultimate Development

According to Bureau and Western officials, the rescheduling that has occurred will not affect the repayment of irrigation construction costs of completed participating projects nor the development of the basin. The current power rate is set to repay, within legislative time frames, the irrigation construction costs of participating projects built or expected to be built. The rate can be adjusted, if necessary, to provide for the repayment of irrigation construction costs for projects not yet authorized or planned.

However, because of rescheduling, the irrigation construction costs of completed and soon-to-be completed participating projects may not be repaid as early as they would have been otherwise. If Western included all indefinite projects in the current rate calculation, the rate would be higher, more revenue would be collected, and some projects could be repaid sooner.

Status of Participating Projects

CRSP legislation authorized 21 Upper Basin projects as CRSP participating projects. However, the Pine River Extension participating project was deauthorized in 1968, and the Navajo Indian Irrigation Project is nonreimbursable and therefore does not "participate" in CRSP power revenues. The construction status, estimated cost, and power rate status of each of the 19 remaining participating projects is summarized in Table III.1.

Eleven of the 19 projects have been completed, and their irrigation construction costs are included in the rate calculation. The five projects named below are indefinite, and their estimated irrigation construction costs are not included in the rate calculation because of the following reasons (see app. IV):

- Fruitland Mesa does not have water rights;
- LaBarge does not have repayment contracts with water users or water rights;
- San Miguel does not have an environmental clearance, a definite plan report, or repayment contracts with water users;
- Savory-Pot Hook does not have repayment contracts with water users, water rights, or environmental clearances; and
- West Divide does not have an environmental clearance, a definite plan report, or repayment contracts with water users.

**Appendix III
Status of Participating Projects**

Table III.1. Status of CRSP Participating Projects

Dollars in thousands

Project	State	Estimated total cost	Irrigation cost repayable with power revenue	Excluded from power rate calculation	Status^a
Animas-La Plata	CO/NM	\$582,165	\$214,000	0	UC
Bostwick Park	CO	10,499	5,483	0	C
Dallas Creek	CO	172,467	32,721	0	C
Dolores	CO	488,126	288,107	0	UC
Emery County	UT	16,613	6,591	0	C
Florida	CO	11,429	7,786	0	C
Fruitland Mesa	CO	195,807	172,178	172,178	I
Hammond	NM	7,440	6,660	0	C
La Barge	WY	6,477	6,390	6,390	I
Lyman	WY	36,243	23,820	0	C
Paonia	CO	8,279	5,196	0	C
San Juan-Chama	NM	87,600	30,324	0	C
San Miguel	CO	154,018	108,525	108,525	I
Savery-Pot Hook	CO/WY	170,924	154,847	154,847	I
Seedskadee ^b	WY	84,762	1,228	0	C
Silt	CO	7,510	5,742	0	C
Smith Fork	CO	4,690	3,199	0	C
West Divide	CO	330,251	219,569	219,569	I
Subtotal		\$2,375,300	\$1,292,366	\$661,509	
Central Utah:					
Bonneville	UT	\$1,948,841	\$956,138	\$428,812	UC
Jensen	UT	81,601	7,679	0	C
Uintah	UT	204,361	94,534	94,534	I
Upalco	UT	145,411	57,096	57,096	I
Vernal	UT	10,585	8,033	0	C
CUP Subtotal		2,390,799	1,123,480	580,442	
Total		\$4,766,099	\$2,415,846	\$1,241,951	

^aC = Complete; I = Indefinite; UC = Under Construction

^bSeedskadee was completed without its planned irrigation component. Costs for planning the unconstructed irrigation component are included in the rate calculation for repayment with power revenue.

Of the three participating projects under construction, two have irrigation construction costs included in the rate calculation. The remaining Central Utah Project is unique among CRSP participating projects in that some of its estimated irrigation construction costs are included in the

rate calculation while others are excluded. This occurs because part of CUP is constructed; part of it is under construction; and part of it is indefinite or deferred, pending congressional funding.

CUP is the largest CRSP participating project. Water collected by this project is primarily for irrigation and municipal and industrial uses. CUP is divided into five separate units. The Vernal and Jensen Units are completed and their irrigation construction costs must be repaid no later than the years 2015 and 2033 respectively. The Uintah and Upalco Units have not been constructed and are indefinite. The Bonneville Unit, the largest unit of CUP, is under construction and partially complete.

As of 1989, the Bureau estimated that CUP will cost about \$2.4 billion. The total construction costs of CUP's units that have been allocated for irrigation and are repayable with power revenues are shown in table III.2.

Table III.2: CUP Unit Irrigation and Total Construction Costs

Dollars in thousands

Unit	Irrigation construction cost	Total cost	Status
Bonneville	\$956,138	\$1,948,841	Under construction
Jensen	7,679	81,601	Complete
Uintah	94,534	204,361	Indefinite
Upalco	57,096	145,411	Indefinite
Vernal	8,033	10,585	Complete
Total	\$1,123,480	\$2,390,799	

The irrigation construction costs of the Vernal and Jensen units are included in the power rate calculation because they are constructed. The estimated irrigation construction costs of the Uintah and Upalco units are excluded from the rate calculation because they may not be funded and are indefinite.

The Bonneville Unit's irrigation construction costs are divided into two categories: (1) those that have been incurred or are under contract to be incurred (sunk costs), approximately \$527 million as of 1989, and (2) those that may be spent (indefinite) to complete Bonneville as presently planned, approximately \$429 million as of 1989. The sunk costs are included in the rate calculation and the deferred costs of indefinite parts of the project are excluded from the rate calculation.

Bonneville's sunk costs and deferred costs are allocated to six irrigation blocks according to the proportional share of Bonneville's water supply that each block will receive. An irrigation block is a geographic area that receives water for irrigation. Collection systems gather water for Bonneville's blocks. Distribution systems, such as the Irrigation and Drainage system, transport the water to the blocks' end users. The collection systems, which are constructed, account for the Bonneville Unit's sunk costs of approximately \$527 million. The distribution system, which is not completely funded, accounts for the Unit's deferred costs of \$429 million. Table III.3 lists the blocks and their allocated sunk costs, deferred costs, and total costs, as of January 1989.

Table III.3: Allocation of Costs to Blocks of the Bonneville Unit

Dollars in thousands			
Block name	Sunk cost	Deferred cost of indefinite blocks	Total cost
Duchesne	\$113,302	\$0	\$113,302
Heber-Francis	27,260	52,673	79,933
Sevier Area	105,096	85,462	190,558
Mona-Nephi	123,500	100,428	223,928
Spanish Fork-Mapleton	55,076	106,416	161,492
Elberta-Mosida	103,092	83,833	186,925
Total	\$527,326	\$428,812	\$956,138

Agency officials believe they have followed the Bureau-Western agreement in including Bonneville irrigation construction costs in the rate calculation because for rate calculation purposes they used only those costs for completed systems of the unit (approximately \$527 million). However, certain power customers believe that the Bureau and Western have deviated from the agreement because irrigation construction costs allocated to blocks that are indefinite have been included in the rate calculation. Four of the blocks—Elberta-Mosida, Mona-Nephi, Sevier Area, and Spanish Fork-Mapleton—are included in the geographical area of the Irrigation and Drainage System. The Irrigation and Drainage System does not meet the criteria in the agreement; it is not funded and is indefinite. Therefore, customers contend that, according to the agreement, the irrigation construction costs allocated to the Irrigation and Drainage System blocks should not be included in the rate calculation.

Agency officials disagreed with the power customers' conclusions. They contend that for rate calculation purposes they had used only those costs for completed systems of Bonneville. Bureau officials said that they allocated these sunk costs to blocks, some of which may never be

funded and are indefinite, not to determine which costs should influence the power rate, but to establish a basis for spreading sunk costs in the power repayment study so that the costs do not unduly affect power rates. A Bureau official indicated that if the indefinite blocks are never built, the sunk costs will ultimately have to be reallocated to blocks that have been or will be built, or the Congress will have to forgive these costs. We recently reported on the cost implications of completing and not completing the Bonneville Unit.¹

¹WATER RESOURCES: Bonneville's Irrigation and Drainage System Is Not Economically Justified (GAO/RCED-91-73, Jan. 31, 1991).

Rationale for Cost Exclusion

The Bureau and Western agreed in a 1983 document to exclude from CRSP power rate calculations the estimated costs of indefinite projects. The underlying rationale for the exclusion is that today's power customers should not be required to pay, through electric rates, for projects that may never be constructed. The agreement resulted from concerns raised by power customers about a proposed rate increase before the Federal Energy Regulatory Commission (FERC), which is responsible for regulating wholesale power transactions.

Events Preceding the Bureau-Western Agreement

In 1979 Western proposed a 38 percent increase in the CRSP power rates from 6.55 mills/kWh to 9.04 mills/kWh. The Colorado River Energy Distributors Association (CREDA) objected to the rate increase primarily because the costs of indefinite projects were allowed to affect the power rate. CREDA was established in 1978 to represent the interests of power users in the Upper Colorado River Basin. It is a nonprofit membership corporation composed of associations of power utilities, state agencies, and some individual power utilities. CREDA members, located in the Colorado River Basin states, purchase a majority of the CRSP power marketed by Western.

In December 1980 the Department of Energy's Assistant Secretary for Resource Applications publicly announced that a rate increase, reduced to 7.89 mills/kWh from the original proposed 9.04 mills/kWh, would be effective beginning January 1981 on an interim basis and requested that FERC approve the rate on a final basis. The 7.89 mills/kWh rate included the estimated irrigation construction costs for all authorized participating projects, except for LaBarge and Seedskadee, which had not been funded by the Congress. (The Congress was not asked to fund these projects because they had been deemed not economical.)

After receiving complaints about the rate determination from CREDA and other customers over a 2-year period, FERC denied the 7.89 mills/kWh rate in October 1982. FERC instructed Western to (1) file a substitute rate and (2) provide evidence that projects proposed for cost recovery through power revenues were reasonably expected to be built. A few days after FERC denied the 7.89 rate, Western proposed not the substitute rate that FERC had requested, but an entirely new rate that balanced CRSP revenue with current CRSP costs. This newly proposed rate was 10.06 mills/kWh. This new rate rescheduled the estimated irrigation construction costs of indefinite participating projects so they would not affect the power rate.

In March 1983 Western proposed the substitute rate FERC had requested, and the rate was the same as the denied rate of 7.89 mills/kWh. CREDA objected to this rate, partly because it included the costs of participating projects regardless of whether they would be built. At about this time, Western, the Bureau, and CREDA began working on criteria for determining which projects could be allowed to affect the rates.

In August 1983 Western and the Bureau entered into an agreement that formalized the process for determining which future projects could be allowed to affect the power rate. In December 1983, FERC approved the agreement and a substitute rate of 7.89 mills/kWh, even though the rate included the costs of future projects that were indefinite. FERC approved the rate, partly because the 1983 agreement provided acceptable rate development criteria that Western and the Bureau would use in setting subsequent rates. In May 1984 FERC approved a power rate of 9.92 mills/kWh (reduced from the proposed rate of 10.06 mills/kWh) that excluded the costs of indefinite projects.

In October 1987 CRSP was integrated with the Rio Grande and Collbran projects to increase marketable resources, simplify contract and rate development and project administration, ensure repayment of costs, and create a common rate. According to Western officials, the CRSP power rate of 9.92 mills/kWh was sufficient to recover the integrated project's costs.

In October 1989 Western proposed to increase the integrated project power rates to 13.4 mills/kWh. The Department of Energy put the modified rate of 13.00 mills/kWh into effect on an interim basis in October 1990 and submitted the rate to FERC for approval on a final basis. A 1.5 mills/kWh surcharge was added to this rate for a 2-year period to help pay costs for environmental studies and purchased power.¹ The surcharge is necessary because water flows needed to generate electricity have been much lower than anticipated due to a 4-year drought, resulting in reduced revenues from power sales. The 13.0 mills/kWh power rate excludes the estimated irrigation construction costs of indefinite projects in their entirety, as well as the indefinite portion of the Central Utah Project.

¹Purchased power is power that CRSP is unable to generate, but has to purchase on the market to meet contractual obligations to power customers.

Details of the Agreement

The Western-Bureau agreement formalized criteria for determining which future participating projects or portions of projects would be allowed to affect CRSP's power rate. The agreement provides that a future project's estimated irrigation construction cost cannot be included in the rate calculation until all of the following criteria are met:

- (1) A definite plan report is prepared that includes information such as details of plans for the project and an economic feasibility analysis.
- (2) Water rights are substantially acquired.
- (3) Environmental clearances are obtained.
- (4) Repayment contracts with water users are signed.

These four criteria represent conditions that generally must be in place prior to constructing a Bureau project. However, the agreement provides that, even if the four criteria are not met, costs of future projects may be included in the rate calculation at the discretion of the Commissioner of the Bureau (1) on behalf of Indian projects, (2) for the Animas-La Plata project,² and (3) when the Congress appropriates construction funds. Even if future projects or portions of them meet all four criteria, the Bureau and Western will not allow projects' estimated irrigation construction costs to affect the power rate until the Congress authorizes funding for their construction.

The Central Utah Project's Upalco Unit is the only CRSP project that, while meeting all four criteria at the same time, has been rescheduled so that its estimated irrigation construction cost does not affect the power rate. The Bureau explained that the project was rescheduled because it is not economical. The Bureau therefore considers the project indefinite and is not seeking funding for its construction.

Agency officials believe the agreement is being followed. However, certain power customers believe that the Bureau and Western have deviated from the agreement because some construction costs incurred on CUP's Bonneville Unit have been allocated to portions of the unit that are

²During the time the 1983 agreement was formulated, the Bureau was certain that the Animas-La Plata project would be funded and constructed. Construction of the project was to be part of an Indian water rights settlement. The Bureau did not want to interfere with this settlement by excluding its cost from the rate calculation, which could appear as if the project would not be built. Therefore, the Animas-La Plata project was included in the rate calculation even though it did not meet all of the 1983 agreement's criteria.

**Appendix IV
Rationale for Cost Exclusion**

indefinite, and these costs are included in the rate calculation. Agency officials said that they included only those irrigation construction costs for completed portions of the unit. They contend that power users are focusing on subportions that have received allocations for purposes of determining the timing of repayment only.

Information for CRSP Oversight

Each year the Subcommittee receives from the Bureau the CRSP annual report containing financial data on CRSP in its entirety, but not on individual projects composing CRSP. This annual report includes a Cash Receipts and Disposition Schedule, a Consolidated Balance Sheet, an Income and Expense Summary, a schedule showing the allocation of federal investment costs among CRSP purposes, and a CRSP Repayment Schedule. This information is for CRSP as a whole (mainstem units and participating projects). However, information is not provided on the way in which the power rate is affected by the estimated irrigation construction cost of each authorized participating project, and an explanation is not provided for the reasons a project is or is not included in the rate calculation. Thus, the Subcommittee does not receive information critical to the rate calculation.

The Subcommittee receives annual Project Data Sheets (status reports) from the Bureau through the Appropriations Committee on individual CRSP participating projects for which funding is requested. These status reports, known as PF-65s, contain information on total estimated costs to be incurred on the projects, total appropriations received prior to the current year funding requests, the funding requests, and balance to complete after the requests. However, the PF-65 does not include the original estimated total costs of the projects at authorization, indexed to the present to take inflation into consideration, nor the total costs incurred to date. Therefore, the Subcommittee is not able to compare original indexed total costs for all authorized projects, active as well as inactive, with current individual project estimated total costs.

Objectives, Scope, and Methodology

In a February 1990 letter, the Chairman, Subcommittee on Water, Power, and Offshore Energy Resources, House Committee on Interior and Insular Affairs asked us to (1) determine the status of each authorized CRSP participating project; (2) determine the legal basis and rationale for excluding participating projects, or portions of them, from the rate calculation, as well as the rationale for not seeking deauthorization; (3) determine the impact of such exclusion on power rates, CRSP revenue, Treasury repayment, and development of the Upper Colorado River Basin; and (4) determine whether the information provided to the Subcommittee for its oversight of CRSP is adequate.

In addressing these objectives, we conducted interviews at Western's Headquarters at Golden, Colorado and its Area Office at Salt Lake City, Utah; the Bureau's Headquarters at Washington, D.C., and its Upper Colorado Region Office at Salt Lake City; and CREDA at Salt Lake City. We also reviewed documents at these organizations to determine the status and cost of participating projects, the legal basis and rationale for rescheduling such projects, and the rationale for not seeking deauthorization of projects that are indefinite. We reviewed legislation to assess the legality of rescheduling CRSP participating projects and requested that the Bureau and Western provide their legal basis for project rescheduling. During the assignment we focused on irrigation construction costs for participating projects because these are the costs that are repaid with CRSP power revenues and are subjected to rescheduling. We used 1989 irrigation construction costs for participating projects because these data were used to develop the impact studies prepared for us by Western and the Bureau.

Western and Bureau officials provided us with studies that show the impact of rescheduling the estimated irrigation construction costs of indefinite participating projects on power rates, CRSP revenues, and payments to the Treasury. We reviewed the reasonableness of the studies as indicated by the study documents provided to us and by interviews with Western officials, but we did not audit the PRS software, the processing of the data by the software, or the accuracy of the data being processed.

Finally, we interviewed Bureau officials and reviewed documentation regarding the data reported to the Congress on project status and cost.

Western and Bureau officials have informally reviewed the data presented in this report and confirmed their correctness. As requested, we did not obtain formal agency comments.

Appendix VI
Objectives, Scope, and Methodology

We performed our field work from February through September 1990. Our audit was performed in accordance with generally accepted government auditing standards.

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