

**SECTION 1**  
**INTRODUCTION**

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**1.1 PURPOSE**

This report was produced as an integral part of the Western Area Power Administration (Western) Replacement Resources Process. This process was initiated by Western in response to Title XVIII of the Reclamation Projects Authorization and Adjustment Act of 1992, P.L. 102-575, also known as the Grand Canyon Protection Act of 1992 (GCP Act). The stated purpose of the GCP Act is "to protect, mitigate adverse impacts on, and improve the values for which the Grand Canyon National Park and the Glen Canyon National Recreation Area were established, while preserving the dam's water storage, allocation, and delivery functions."

Section 1809 of the GCP Act, entitled "Replacement Power," specifies that:

*The Secretary of Energy...*

*...shall identify economically and technically feasible methods of replacing any power generation that is lost through adoption of long-term operational criteria for Glen Canyon Dam...*

*...shall include an investigation of the modifications or additions to the transmission system that may be required to acquire and deliver replacement power...*

*...shall present a report of the findings, and implementing draft legislation, if necessary, not later than two years after adoption of long-term operating criteria for Glen Canyon Dam.*

The identification of "economically and technically feasible methods" of replacing power generation made unavailable due to changes in long-range operating criteria of the hydroelectric generating facilities at Glen Canyon Dam (GCD), as specified in the GCP Act, is the subject of this Replacement Resources Methods Report, referred to

hereafter as the Methods Report. The Executive Summary from this report will serve as the basis for the report to Congress required by the GCP Act.

Given the recurring nature of future replacement power actions, Western, acting on behalf of the Secretary of Energy, interpreted the intent of Section 1809 of the GCP Act as requiring a study defining the approach to be taken and the tools to be applied to acquire replacement power when necessary, rather than *actual* quantification, analysis, and acquisition of specific long-term replacement power. Therefore, the Methods Report identifies, explains, and demonstrates the process and methodology to be used in evaluating replacement resources, and lays the foundation for subsequent and recurring acquisition steps in Western's Replacement Resources Process

A copy of the text of the GCP Act is contained in Appendix A.

## **1.2 REPLACEMENT RESOURCES PROCESS**

Western's Replacement Resources Process is divided into three distinct phases: Phase 1 (Public Consultation); Phase 2 (Identification of Acceptable Methods); and Phase 3 (Implementation of Methods).

### **1.2.1 PHASE 1 - PUBLIC CONSULTATION**

In satisfying the requirements of Section 1809, the Secretary of Energy is to consult with the Secretary of the Interior, representatives of the Colorado River Storage Project power customers, environmental organizations, and the Colorado River Basin States. Phase 1, the "Public Consultation" phase of the Replacement Resources Process, formally began with publication of a notice in the Federal Register on August 8, 1994.<sup>1</sup> This notice initiated the public process to identify feasible methods of replacing power lost at GCD, and indicated that Western would prepare information on the process and schedule public meetings. A copy of the Federal Register was mailed on August 10, 1994 to approximately 900 interested stakeholders identified by Western.<sup>2</sup> Interested stakeholders were identified prior to this mailing through direct mail contact by Western to

approximately 2,600 entities, including those agencies and organizations for consultation identified in Section 1809 of the GCP Act.

On October 7, 1994, Western published a second Federal Register Notice (FRN) announcing the availability of information on the Replacement Resources Process, along with a schedule for four public meetings to be held in Western's Salt Lake City Area Integrated Projects (SLCA/IP) service territory.<sup>3</sup> A notice of the meeting dates and an information packet on the process were also mailed on October 20, 1994 to interested stakeholders.

Public consultation meetings were held during November 1994 in Salt Lake City, Utah; Albuquerque, New Mexico; Phoenix, Arizona; and Denver, Colorado. These meetings were open to the public, and attended by power customers, representatives from the U.S. Bureau of Reclamation (Reclamation), and the National Park Service, Basin States representatives, and environmental groups. The objectives of these public meetings were to inform those attending on Western's proposed process, and to encourage public input. Western accepted written comments on the proposed process until December 19, 1994. Western also attempted to refine its list of interested stakeholders for consultation by direct mailings to all Colorado River Basin States governors during the month of December. Phase 1 ended with the close of the comment period in December 1994.

Near the end of Phase 1, Western retained the engineering-consulting firm R.W. Beck to provide assistance with specific aspects of the Replacement Resources Process. R.W. Beck was engaged to provide services during the remainder of Phase 1 and continuing into Phase 2, beginning with attendance at the public meetings in November 1994. R.W. Beck's principal focus was to assist Western with identifying economically and technically feasible methods for replacing lost GCD power and preparing the Methods Report in Phase 2 of the Replacement Resources Process.<sup>4</sup>

Table 1-1 summarizes the significant public consultation milestones in Phase 1 of the Replacement Resources Process.

TABLE 1-1

**REPLACEMENT RESOURCES PROCESS: SIGNIFICANT MILESTONES  
PHASE 1 - PUBLIC CONSULTATION**

Action	Completion Date
Notice of Initiation of Public Consultation, GCP Act Replacement Resources Methods Report, (59 FR 40357)	August 8, 1994
FRN Mailing	August 10, 1994
Notice of Public Consultation Meetings (59 FR 51191)	October 7, 1994
FRN (and Information Packet) Mailing	October 20, 1994
Public Consultation Meetings	November 1994
End of Public Comment Period	December 19, 1994

Appendix A of this report contains the Federal Register notices, the Information Packet, and other documentation of Phase 1 of the process.

### 1.2.2 PHASE 2 - IDENTIFICATION OF ACCEPTABLE METHODS

Phase 2, the "Identification of Acceptable Methods" stage of the Replacement Resources Process, began in January 1995 with the analysis of public comments, the identification of technical issues by R.W. Beck, and the formulation of key policy issues by Western. Consideration of principal replacement power influences, such as the response to public comments, decisions on key policy issues, consideration of developments in ongoing environmental processes, power contract modification negotiations, and other agency program activities, resulted in the refinement of process goals and objectives.

In February and October 1995, Western distributed newsletters to approximately 900 interested stakeholders. Much of the effort during 1995 focused on refining process goals and objectives and developing modeling methods, which were then implemented in the proof-of-concept analysis during early 1996.

The Draft Methods Report was issued to the public in July 1996. Four public meetings were held during July in Albuquerque, Denver, Phoenix, and Salt Lake City to present the Draft Methods Report and to encourage those in attendance to comment on the Draft Methods Report and the overall Replacement Resources Process. Approximately 40 interested individuals and stakeholders attended, representing environmental organizations, firm electric power customers, state and Federal (including Department of the Interior) agencies, and various utilities and power marketers interested in supplying replacement resources.

Stakeholders were also encouraged to submit written comments, and seven comment letters were received.<sup>5</sup> Overall, the comments supported the Colorado River Storage Project (CRSP) Customer Service Center's approach to developing the Draft Methods Report. Suggestions offered included additional public involvement, revisions to the Report, and delay of the scheduled submittal date of the final report to Congress.

Overall, phase 2 of Western's Replacement Resources Process included:

- publication in the Federal Register of a notice of availability of the draft Methods Report, and the initiation of a period for public comment;
- regional public information/comment meetings held in Albuquerque, Denver, Phoenix and Salt Lake City during the public comment period, where Western presented an overview of the contents of the draft Methods Report and accept additional public comment;
- a review period of public comments, potential direct consultation with interested stakeholders,

and consideration of necessary modifications to the recommended methods;

- preparation of a final Methods Report;
- publication in the Federal register of a notice of availability of the final Methods Report and executive summary for public review; and
- presentation of the summary report to Congress, fulfilling the requirements of Section 1809 of the GCP Act.

The Replacement Resources Process to date, including the Methods Report completed in Phase 2, examines only the feasible methods for evaluating power supply alternatives to replace the generating capability made unavailable at GCD. The actual solicitation, evaluation, acquisition, and integration of replacement resources by Western will occur later, in the next phase of the process. The final operating criteria at GCD, the ultimate SLCA/IP marketable resource, and the customers' replacement resource demand are not precisely defined at present. Additional changes in these parameters could also occur in the future based on research and long-term monitoring at GCD, operational changes at other federal facilities, and future changes in resource decisions by Western's customers. This report therefore identifies economically and technically feasible methods appropriate to a wide range of potential future replacement resource needs.

Table 1-2 summarizes both completed and projected milestones for Phase 2 of Western's Replacement Resources Process.

TABLE 1-2

**REPLACEMENT RESOURCES PROCESS: SIGNIFICANT MILESTONES  
PHASE 2 - IDENTIFICATION OF ACCEPTABLE METHODS**

Action	Completion Date
Newsletter Updates, Mailings	February 1995 October 1995 December 1996
Notice of Availability, Draft Replacement Resources Methods Report, Public Consultation Meetings, Public Comment Period	July 1996
FRN Mailing	July 5, 1996
Public Information/Comment Meetings	July 1996
Close of Public Comment Period	September 3, 1996
Notice of Availability of Final Replacement Resources Methods Report	August 1997
Final Report to Congress	August 1997

Appendix A of this report contains the newsletter updates distributed during Phase 2 of the Replacement Resources Process.

**1.2.3 PHASE 3 - IMPLEMENTATION OF ACCEPTABLE METHODS**

Phase 3, the "Implementation of Acceptable Methods" for the Replacement Resources Process, is expected to be influenced by:

- the provisions of the amended long-term firm electric service contracts between Western and the

SLCA/IP wholesale firm-power customers (Amended Contracts);

- the nature of SLCA/IP hydroelectric facility operational constraints and forecasted hydropower availability; and
- subsequent decisions by Western's customers on the magnitude and timing of their replacement power needs.

As stated in the Amended Contracts, post-1989 allocations begin in April 1997. Short-term replacements will begin one year later in April 1998, with long-term replacements following two years after that. Until short-term replacements begin, Western expects to supply the firm-power customers entire contract rate of delivery (CROD) through SLCA/IP resources and firming purchases. The decision process for subsequent recurring implementation of replacement power acquisitions will be influenced by provisions in the Amended Contracts, the methods defined in this report, and other conditions at that time. These influences are discussed in more detail in Section 4.

### **1.3 REPORT ORGANIZATION**

The following paragraphs describe the overall organization and contents of this report.

**Section 1 (Introduction)** describes the purpose of the Methods Report and Western's Replacement Resources Process.

**Section 2 (Background)** includes information on Western's SLCA/IP resources and loads, and additional studies, processes and policies relevant to the Replacement Resources Process.

**Section 3 (Policy Issues and Assumptions)** describes policy and program issues, overall assumptions, and key external issues related to resource replacement.

**Section 4 (Resource Acquisition Process)** describes the methods to be used for potential replacement resource acquisition, including evaluation criteria and methodology, analytical tools, and a format for requests for replacement power.

**Section 5 (Proof-of-Concept Analysis)** describes and demonstrates the implementation of the principal analytical tools for replacement resource acquisition described in Section 4 using a range of hypothetical replacement resource alternatives. This "proof-of-concept" analysis demonstrates of the key tools and analyses Western plans to use in the future acquisition phase of the Replacement Resources Process.

**Section 6 (Analysis Results)** covers the results of the proof-of-concept analysis, including findings from this demonstration of analytical tools and methods.

**Section 7 (Conclusions and Recommendations)** describes the overall conclusions and recommendations of the Report.

**Appendix A (Key Documents)** contains key documents pertaining to the Replacement Resources Process, including the text of the Grand Canyon Protection Act, public process records, and other relevant policies and documents.

**Appendix B (Review of Planning Tools and Methodologies)** contains a brief summary of many resource planning documents and tools reviewed prior to preparing the Methods Report.

**Appendix C (References)** contains glossaries and a bibliography.

**ENDNOTES:**

<sup>1</sup> The formal public process began with issuance of a Federal Register notice (59 FR 40357-40359) on August 8, 1994 (copy in Appendix A). However, for a year prior to this notice, Western had several informal meetings with power customers to discuss necessary modifications to the firm-power contracts to address many changing conditions, including the implementation of replacement power provisions.

<sup>2</sup> The almost 900 persons on the Replacement Resources Process mailing list are broken down as follows: over 200 CRSP power customers, over 90 members of Congress and staff persons from Colorado River Basin states, over 40 Department of the Interior or other Federal agencies, over 40 Colorado River Basin State and other State agencies, over 30 environmental organizations, almost 70 electric utilities and other power producers, and over 300 members of the general public, scientists, consultants, elected officials, media, and other interested persons.

<sup>3</sup> Federal Register notice (59 FR 51191-51192), October 7, 1994. A copy is included in Appendix A.

<sup>4</sup> The principal work products provided by R.W. Beck are the draft and final Methods Report, and the modeling tools developed and implemented for the "proof-of-concept" analysis.

<sup>5</sup> Written comments were requested from Western's list of interested stakeholders (see note No. 2 above). Copies of the seven comment letters received are included in Appendix A.