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UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

SEP 30 1969

Dear Mr. President:

Section 303(a) of the Colorado River Basin Act, Public Law 90-537 provides that:

"The Secretary is authorized and directed to continue to a conclusion appropriate engineering and economic studies and to recommend the most feasible plan for the construction and operation of hydroelectric generating and transmission facilities, the purchase of electrical energy, the purchase of entitlement to electrical plant capacity, or any combination thereof, including participation, operation, or construction by non-Federal entities, for the purpose of supplying the power requirements of the Central Arizona Project and augmenting the Lower Colorado River Basin Development Fund; Provided, That nothing in this section or in this Act contained shall be construed to authorize the study or construction of any dams on the main stream of the Colorado River between Hoover Dam and Glen Canyon Dam."

Section 303(c) requires that the Secretary submit his recommended plan to the Congress no later than September 30, 1969. This letter report is made pursuant to these two sections of the Act.

Basic to consideration of power requirements of the Central Arizona Project and to analysis of alternative means of meeting these requirements is determination of what the hydraulic capacity of the Central Arizona Project system should be. In this respect Section 301(a) authorizes "a system of main conduits and canals, including a main canal and pumping plants (Granite Reef aqueduct and pumping plants), for diverting and carrying water from Lake Havasu to Orme Dam or suitable alternative, which system shall have a capacity of 3,000 cubic feet per second or whatever lesser capacity is found to be feasible" The Conference Report on the Colorado River Basin Project legislation explains this language as follows:

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ORR 3(2) Governmental - Federal

"The conference language is intended to fix the capacity at 3,000 cubic feet per second if this is the desire and decision of the State of Arizona and it can be shown that an aqueduct of this capacity is economically justified and financially feasible."

Determination of Central Arizona System Hydraulic Capacity

The analysis presented in the report of the Senate Interior and Insular Affairs Committee on S. 1004 (Report No. 408, 90th Congress, 1st Session), based on information provided by the Bureau of Reclamation, demonstrates the economic justification and financial feasibility of the Central Arizona Project with the Granite Reef Aqueduct sized at 3,000 cubic feet per second capacity. The ratio of benefits to costs derived in that analysis was 2.6 to 1.0. Except for minor adjustments in costs and prepaid power arrangements, there has been no change in the contemplated project, and the analysis presented in Report No. 408 is still substantially valid.

Subsequent testimony presented to the Subcommittee on Irrigation and Reclamation of the House Interior and Insular Affairs Committee during the 2nd session of the 90th Congress and the economic analysis presented in the Committee's Report No. 1312 on H.R. 3300 demonstrated the economic justification and financial feasibility of the Central Arizona Project with the Granite Reef Aqueduct sized at 2,500 c.f.s. capacity. Recent incremental analyses indicate a favorable benefit-cost ratio of 2.3 to 1.0 for the 500 c.f.s. increment to be added to increase the aqueduct capacity from 2,500 c.f.s. to 3,000 c.f.s.

On the basis of the above and in view of the desires of the State of Arizona as evidenced by the letter of September 2, 1969, from the Executive Director of the Arizona Interstate Stream Commission to the Secretary of the Interior, a copy of which is enclosed, a hydraulic capacity of 3,000 c.f.s. for the Granite Reef Aqueduct was adopted for determination of what the electric power capacity requirements will be for the Central Arizona Project.

Power Demand

Taking into account manufacturers' warranties, motor efficiencies, power transformer, station auxiliary losses and transmission losses, it was concluded that the electric capacity required at the power-plant to serve the Central Arizona Project operating at full hydraulic capacity of 3,000 c.f.s. would be 561,000 kilowatts.

This amount of power is based upon power service to six main canal pumping plants aggregating over 1,200 feet of head, one pumping plant on the Salt-Gila aqueduct of about 85-foot head, and four pumping plants on the Tucson Aqueducts totaling over 1,200 feet of head. Exact locations of all pumping sites and corresponding lifts have not yet been determined.

Contractual Arrangements

Background. Negotiations looking toward contractual arrangements for the purchase of entitlement to electric power and transmission capacity in non-Federal facilities were initiated in June 1968. Public and private utilities in the Southwest were invited to participate, and a steering committee was formed consisting of a representative from each interested utility and the Bureau of Reclamation. The initial non-Federal parties were: San Diego Gas and Electric Company; Southern California Edison Company; Los Angeles Department of Water and Power; Nevada Power Company; Salt River Project Agricultural Improvement and Power District; Arizona Public Service Company; Tucson Gas and Electric Company; El Paso Electric Company; and Public Service Company of New Mexico. While others did attend the June meeting, the above group constituted the core of those interested.

The steering committee appointed several task forces to study various facets of the overall problem. These task forces covered the problems involved in the construction and operation of the power generation and transmission facilities, including design, costs, legal and tax considerations, coal leases and other property agreements, socio-economic aspects, loads, and resources.

In February 1969 the El Paso Electric Company and the Public Service Company of New Mexico decided not to participate in the joint project. This decision necessitated modification of the initially contemplated development. Negotiations continued.

In May 1969 the San Diego Gas and Electric Company and the Southern California Edison Company decided that they did not desire to participate in the joint effort, which at that time contemplated two powerplants, one near Page, Arizona (Navajo), and one near Farmington, New Mexico (Four Corners), with six 820-mw units and a total electric power capacity of 4,920 mw. The Southern California Edison Company will, however, be involved as a purchaser of a major portion of United States entitlement to generation and transmission prior to need for Central Arizona Project pumping. This decision

required a complete new look at the proposed joint development as some 2,000 mw, or about 40 percent of the total generating capability, was destined for these two utilities.

The final plan adopted for joint participation consists of one powerplant near Page, Arizona (Navajo), with three units having an expected effective output of 770 mw each and a transmission system consisting of a 500-kv line from the plant to the Colorado River near Boulder City, Nevada, and two 500-kv lines to the Phoenix area. It includes the Los Angeles Department of Water and Power, Nevada Power Company, Tucson Gas and Electric Company, Arizona Public Service Company, Salt River Project Agricultural Improvement and Power District, and the Bureau of Reclamation. The city of Anaheim, California, and the Arizona Power Authority have manifested an interest in the project, but will not be actual participants.

Arrangements and Status. Adequate contractual arrangements for a joint undertaking have been negotiated, of which the principal contract document is the Navajo Project Participation Agreement which, when executed, will bind all parties to a final cooperative effort. The United States will be signatory to this document although its participation in some of the project agreements will be through the Salt River Project Agricultural Improvement and Power District. A copy of the Participation Agreement is attached. The entitlement of the parties to generating capability is as follows:

	<u>Percent</u>
Bureau of Reclamation	24.3
Salt River Project Agricultural Improvement and Power District	21.7
Los Angeles Department of Water and Power	21.2
Arizona Public Service Company	14.0
Nevada Power Company	11.3
Tucson Gas and Electric Company	7.5

It is expected that all concerned will sign the Participation Agreement.

In addition to the Participation Agreement, contracts have been prepared covering coal supply, water supply, power coordination, interconnection of transmission systems, leases of Indian lands for plant site and transmission, and interim use of United States entitlement to generating and transmission capacity.

Power Cost

The steering committee concluded that all cost estimates would be based upon escalation factors starting with 1969 prices and continuing through 1976 when the last unit is scheduled to be in service. The escalation factors selected vary depending on the type of work involved, but result in a weighted average of 5.3 percent per year compounded for the generating station and 4.5 percent for transmission facilities.

The joint power system encompasses (1) the generating station, including buildings, coal storage and handling facilities, precipitators, water diversion cooling towers, and other appurtenant items in addition to the boilers, turbines, and generators; (2) the western portion of the transmission system with all appurtenant works; and (3) the southern portion of the transmission system with its appurtenant works. Operation and maintenance costs are estimated separately.

Generation costs are estimated to be \$134.05 per kilowatt and joint transmission costs are estimated to average \$71.30 per kilowatt. For its 561,000 kw entitlement, therefore, the cost to the United States would be \$75,200,000 for generation and \$40,000,000 for transmission. The total cost of the joint project would be \$481,000,000, of which the United States' share would be \$115,200,000.

Alternative Sources of Power

By barring consideration of new conventional hydroelectric powerplants on the Colorado River between Hoover Dam and Glen Canyon Dam, the Colorado River Basin Project Act eliminated conventional hydroelectric power facilities as a potential source of power for the Central Arizona Project since there are no other suitable power sites. Prior to authorization of the Central Arizona Project, consideration of pumpback storage hydroelectric possibilities indicated that, although such facilities had potential for contributing revenues to the Lower Colorado River Basin Development Fund, they were not suitable as a basic source of project pumping energy.

Thus, the only practicable alternative to the kind of arrangement reflected in the Navajo Project Participation Agreement would be direct purchase of the power and energy required for project pumping.

To explore the possibility of purchase of firm power and energy requirements, the Bureau of Reclamation sent letters of inquiry to potential suppliers of firm power and energy. Six replies were received. The Los Angeles Department of Water and Power advised that it could not sell power outside the city limits. Arizona Power Authority advised that it did not now have, and probably would not have, adequate resources on a timely basis to meet the required schedule. The Nevada Power Company stated it could not supply the requirements. Southern California Edison Company offered to sell the needed power for delivery at the Colorado River under its Rate Schedule A-8. Our calculations showed that at a 90-percent load factor this would cost the United States \$55.65 per kilowattyear. The Salt River Project has offered to sell power ranging from an equivalent cost of about \$46 per kilowattyear to about \$57 per kilowattyear, depending upon whether the United States desires unsupported power from the Navajo Project or firm power from the Salt River Project system. The Arizona Public Service Company has also proposed selling power under certain conditions to the United States at an equivalent rate of approximately \$54 per kilowattyear. By comparison the cost to the United States by the purchase of entitlement of power is approximately \$27 per kilowattyear.

Conclusions

In view of the above, it is concluded:

- (1) The Granite Reef Aqueduct, the basic canal structure of the Central Arizona Project, should be constructed to a hydraulic capacity of 3,000 cubic feet per second, and appurtenant facilities should be designed and constructed accordingly.
- (2) The most feasible plan to supply the power requirements of the Central Arizona Project and to augment the Lower Colorado River Basin Development Fund is to acquire generation and transmission capacity by participation with non-Federal entities in the construction and operation of generation and transmission facilities.

Implementation

Having determined that the project outlined in this letter report is my recommended plan for supplying the power requirements of the Central Arizona Project and augmenting the Lower Colorado River Basin Development Fund, I am proceeding pursuant to Section 303(b) to execute the necessary agreements and contracts to implement the recommended plan.

Advice of the Executive Office of the President

The proposal for contractual arrangement for purchase of entitlement to electric power and transmission capacity in the Navajo Project near Page, Arizona, a copy of the attached Navajo Project Participation Agreement, and this report were submitted to the Director, Bureau of the Budget, for his views and advice. Attached is a copy of letter dated September 23 from the Director advising that, because of the special circumstance in this instance, there would be no objection to our entering into a contract obligating the United States in advance of appropriations if we determine that such a contract is appropriate and necessary, and that there would be no objection to transmittal of this report to the Congress.

Sincerely yours,

(sgd) James R. Smith

~~Assistant~~ Secretary of the Interior

Hon. Spiro T. Agnew
President of the Senate
Washington, D. C. 20510

Enclosures