Mr. Wesley R. Nelson  
Assistant Commissioner  
Department of the Interior  
Bureau of Reclamation  
Washington 25, D. C.

My dear Mr. Nelson:

At last we have completed our study of the report on the Colorado River Storage Project and Participating Projects. We apologize for the delay in supplying the enclosed material, but there have been complications over which we had no control.

Incidentally, we appreciate this opportunity to give you the views and recommendations of the State of Arizona.

Beginning with those portions of the report dealing with the generation, transmission and sale of electric power and energy, we submit the following:

Although the Glen Canyon Unit is located above Lees Ferry and therefore wholly within the Upper Colorado River Basin, the Glen Canyon Dam site and the proposed Glen Canyon Powerplant are both located within Northern Arizona, about 13 river miles downstream from the Utah-Arizona State line and 15 miles upstream from Lees Ferry. Despite this fact, the report makes no provision for sale and delivery of electric power and energy in Arizona, as a part of the considered power market.

The market area considered by the report for most of the power to be generated by the Colorado River Storage Project lies outside of the area contained within the Upper Colorado River Basin. A large potential market for such power is shown in the Bonneville Basin around Salt Lake City. This area lies largely within the boundaries of Region 4 of the Bureau of Reclamation, but outside and just west of the Upper Colorado River Basin. An even larger potential market is shown in the report as contained in three fringe areas in the States of Wyoming, Colorado and New Mexico. Each of these fringe areas lies largely outside of both the Upper Colorado River Basin and Region 4. The potential market in Arizona is not included among the so-called fringe areas, although a small part of the state lies within the Upper Colorado River Basin and the state contributes within that area one of Arizona’s natural resources, the Glen Canyon Dam site and Powerplant. This powerplant is proposed for an installed capacity of 800,000 kilowatts, or almost one-half of the total installed capacity of 1,622,000 kilowatts proposed for the Colorado River Storage Project.

The Tentative Project Power System shows proposed transmission lines throughout that portion of the market area contained within Region 4. No transmission lines are shown as proposed within the three fringe market areas of Wyoming, Colorado and New Mexico. Transmission interconnections are shown, however, not only between the Region 4 Market area and the three fringe areas, but between Region 4 and Arizona at Glen Canyon and between Region 4 and Southwestern Idaho. The statement is made that other lines are planned to permit
energy from Region 4 to be interchanged with energy produced by Bureau projects in other regions in Arizona, California, Colorado, Idaho, Nevada, New Mexico, Utah and Wyoming.

The report proposes that firm energy will be sold at an average rate of 5.5 mills per kilowatt hour, and that firm energy produced in advance of market needs would be sold at an average rate of 3 mills per kilowatt hour. Although the point, or points, of delivery at which such average rates would apply are not set forth in the report, it could be assumed that such applicable points of delivery will be on the transmission system within the boundaries of Region 4. This would mean that any energy delivered in the fringe market areas of Wyoming, Colorado and New Mexico would have to stand a transmission charge in addition to the 5.5 or 3 mills per kilowatt hour. This is not borne out, however, by the fact that the 5.5 mills per kilowatt hour average rate for firm energy in the market area is considered reasonable when compared with the estimated cost of generation at future steam electric installations at Salt Lake City, Denver and Albuquerque. Such installations were assumed to include units as large as 100,000 kilowatts, and it was estimated that energy could be produced, with annual generation at 60 percent plant factor, at an average rate of approximately 6 mills per kilowatt hour at the high voltage side of the plant. This would indicate that the average rate of 5.5 mills per kilowatt hour was assumed to be applicable to deliveries of energy in the three fringe market areas as well as within Region 4. Such a conclusion is also borne out by the fact that the report includes the potential market within the three fringe areas in determining market needs. The balance of available firm energy, considered in excess of such market needs, is to be sold at 3 mills per kilowatt hour.

Future steam electric installations in Southern Arizona, operating at 60 percent annual plant factor, are estimated to produce energy at 6 mills per kilowatt hour, or less. This means that energy will have to be delivered in Southern Arizona, as well as in the three fringe areas, at the average rate of 5.5 mills per kilowatt hour without additional transmission costs, in order to be competitive with local generation.

The Glen Canyon Unit is estimated in the report to cost as follows:

<table>
<thead>
<tr>
<th>Class</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dam and Reservoir</td>
<td>$175,877,000</td>
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<tr>
<td>Power Plant</td>
<td>75,301,000</td>
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<tr>
<td>Transmission</td>
<td>108,000,000</td>
</tr>
<tr>
<td>General Property</td>
<td>4,250,000</td>
</tr>
<tr>
<td>Construction Facilities</td>
<td>(1,400,000)</td>
</tr>
<tr>
<td>Total all classes</td>
<td>$363,928,000</td>
</tr>
</tbody>
</table>

The installed capacity is proposed for 800,000 kilowatts and the generation is estimated at 1,710,000,000 kilowatt hours in 1959 increasing to 4,337,000,000 kilowatt hours in 1976.

The annual costs of the Glen Canyon Unit, including operation, maintenance and replacement, are estimated in the report at:

<table>
<thead>
<tr>
<th>Class</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dam and Reservoir</td>
<td>$3,935,000</td>
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<tr>
<td>Power Plant</td>
<td>1,602,700</td>
</tr>
<tr>
<td>Transmission System</td>
<td>2,732,400</td>
</tr>
<tr>
<td>Total</td>
<td>$4,428,600</td>
</tr>
</tbody>
</table>
Based on the above estimates and for the assumed conditions, energy produced at Glen Canyon would cost:

(a) Delivered on the Transmission System charged to Glen Canyon, allowing 10% for losses and with the generation estimated for 1959 - 2.38 mills per kwh.

(b) Delivered on the Transmission System charged to Glen Canyon, allowing 10% for losses and with the generation estimated for 1976 - 1.13 mills per kwh.

(c) Delivered at Glen Canyon without charges for Transmission and with the generation estimated for 1959 - 0.99 mills per kwh.

(d) Delivered at Glen Canyon without charges for Transmission and with the generation estimated for 1976 - 0.39 mills per kwh.

The early completion of construction of the Bridge Canyon project, so that operation could begin in 1956, should provide sufficient generation to meet the estimated increased power market needs for Arizona by that time. In anticipation of such power needs, the Arizona Power Authority has filed an application with the Secretary of the Interior for the entire commercial output of the Bridge Canyon powerplant when available. Arizona must look to a portion of the output of Glen Canyon powerplant to meet its probable needs after 1957, and this need for power from Glen Canyon would be increased should Arizona not be allocated the entire commercial output of Bridge Canyon.

In view of the fact that Arizona is one of the Upper Colorado River Basin States and that the Glen Canyon Dam site and powerplant are located within and constitute a natural resource of the State of Arizona together with consideration of the estimated cost of power generation at Glen Canyon and the possible power market needs of Arizona, it is recommended that the Secretary of the Interior be requested to include the State of Arizona in the Project Power Market Area as Fringe Area D (Arizona) and that energy be made available to that fringe area on the same basis as proposed for the other three fringe areas. In this connection, it would likewise seem equitable that Fringe Area C (New Mexico) be increased to include the western edge of that state and that the southwestern portion of Utah also be included in the Project Power Market area.

Turning now to another aspect of the Colorado River Storage and Participating Projects report, we would like to say that we concur in the conclusions listed on pages 20 and 21 of the report, which are as follows:

"40. The Colorado River Storage project would provide necessary regulatory storage by a combination of reservoirs on the Colorado River and its tributaries above Lee Ferry. All projects that would consume water of the Upper Colorado River system, authorized subsequent to approval of the Upper Colorado River Basin Compact, are considered to be dependent on river regulation for an assured water supply.

"41. Reservoirs of the Colorado River Storage project would provide a total storage capacity of about 43,555,000 acre-feet. In 200 years at the present rate of erosion about 20,000,000 acre-feet of the capacity would be occupied by sediment, leaving 25,941,000 acre-feet of active capacity for river regulation and direct use of water in the upper basin and 2,514,000 acre-feet of inactive capacity for creation of power heads, fish and wildlife propagation, recreation, and other purposes.
42. Releases from regulatory reservoirs would produce substantial amounts of electric energy. Power load growth trends indicate that the project power output would readily be absorbed in the power market area.

43. The Colorado River Storage project has engineering feasibility and is economically justified.

44. The initial construction program would include the Echo Park, Flaming Gorge, Glen Canyon, Navajo, and Whitewater units. These would be constructed in an orderly schedule. Construction of the Whitewater, Echo Park, and Glen Canyon units should be started immediately.

45. Revenues from the sale of electric energy generated by units of the Colorado River Storage project would be more than sufficient to pay all reimbursable costs of the project within a period of 50 years after installation of the last generating unit. Project power revenues also would be available to assist irrigators in the payment of construction costs of economically justified and urgently needed participating projects. Financial assistance could best be rendered irrigators through establishment of an Upper Colorado River Account.

46. Development of the Colorado River Storage project and participating projects is essential to the comprehensive development of the upper basin's natural resources. It would provide flexibility in the basin development and coordination of the interests of the Nation and States of the Upper Colorado River Basin."

We further concur in the statement on the bottom of page 13 of the Report, to the effect that the construction of the holdover reservoirs will assist the states of the upper division in meeting their obligations to make deliveries to the lower basin at Lee Ferry.

We, therefore, recommend that all assistance possible be given to the states of Colorado, New Mexico, Utah, and Wyoming, and the Bureau of Reclamation in securing the expeditious construction of the features proposed in the Report, reserving the right to examine the provisions of any bill which may be offered to authorize the construction of the project, particularly Glen Canyon Dam, which is wholly within the State of Arizona.

If there are any questions concerning Arizona's reactions to your Colorado River Storage and Participating Projects Report, we would be more than happy to provide the earliest possible answers.

Sincerely,

Howard Pyle
Governor

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