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STATEMENT OF POSITIONS ON THE UPPER COLORADO

GOVERNMENT

Storage

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RIVER STORAGE PROJECT

HEARINGS

BEFORE THE

COMMITTEE ON

INTERIOR AND INSULAR AFFAIRS

UNITED STATES SENATE

EIGHTY-SEVENTH CONGRESS

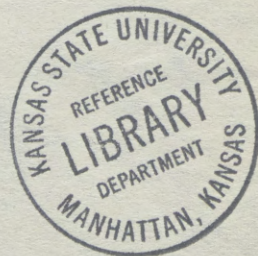
FIRST SESSION

ON

STATEMENT OF POSITIONS ON THE UPPER COLORADO
RIVER STORAGE PROJECT

JULY 7 AND 21, 1961

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II



STATEMENT OF POSITIONS ON THE UPPER COLORADO RIVER STORAGE PROJECT

FRIDAY, JULY 7, 1961

U.S. SENATE,
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D.C.

The meeting convened at 10:30 a.m., in room 3112 of the New Senate Office Building, Senator Clinton P. Anderson (chairman of the committee) presiding.

Present: Senator Anderson.

Present representing the Bureau of Reclamation: N. B. Bennett, Assistant Commissioner of Reclamation, Department of Interior; and Ken Cummings, regional power supervisor, Salt Lake City, Bureau of Reclamation, Department of Interior.

Present representing the Public Service Co. of New Mexico: G. A. Schreiber, executive vice president; and B. L. Baugh, executive assistant, Public Service Co. of New Mexico.

Members of the committee staff present: Stewart French, chief counsel; Jerry T. Verkler, clerk; and Roy M. Whitacre, professional staff member.

The CHAIRMAN. I have asked for this meeting between representatives of the Bureau of Reclamation and the Public Service Co. of New Mexico in order to get background for the dispute which has arisen as to the construction of the powerlines from Glen Canyon Dam. We may find it necessary to take this on a State-by-State basis, but I wanted first of all to establish the situation with reference to New Mexico.

The utilities, in an evaluation dated June 1, 1961, had a table showing irrigation assistance to be made available to States from excess power revenues, and the comparable figures carried in the utility memorandum show for fiscal year 2049 that there would be available \$877,796,000 from the utilities' proposal, whereas the yardstick system would have \$875,512,000, a figure that is relatively close and comparable.

However, the Bureau of Reclamation of the Department of the Interior, in a letter dated June 16, 1961, to Iva A. Goslin, chief engineer and secretary of the Upper Colorado River Commission, signed by Mr. Bennett, acting commissioner, for these same years, showed \$952,234,000 available for irrigation assistance to the States from the yardstick system, and only \$590,854,000 from the utilities system.

This is so drastically different from the utility evaluation that I felt it would be desirable to try to find out if there was some way to learn why the figures were not closer or whether we could determine what the true figures should be if you tried to meet the conflicting points of view, or whether the points of view are just so far apart

that you have to take the two sets of figures and offer them to Congress and say, "Take your choice."

Now, Mr. Bennett, since the problem is in the Bureau of Reclamation and since the Department of Interior, both under Secretary Seaton and Secretary Udall, has favored the Federal construction of the powerlines, would you mind supplying for the record your views on the utility evaluation, particularly that section of it which deals with errors and omissions in the Bureau's analysis?

Mr. BENNETT. Senator, our view of the June 1, 1961, report by the private utilities is that, in essence, they reach the answers which they show by maximizing the costs of the yardstick system and minimizing the costs of the Federal portion of the combination system.

Point No. 1, made on page 3 of their report, in effect, says that there should be added to the Bureau's cost estimate \$13,933,000. The Bureau's view on this point is that we already have in our cost estimates of the yardstick system, adequate dollars to construct the transmission system to move all of the power of the storage project.

At the time the Bureau laid out its yardstick system, we recognized an inherent uncertainty in the southeastern portion of the system. The uncertainties had to do with the fact that the Marble Canyon hydroplant was an uncertain element. Which it still is, that construction of the Four Corners steamplant at that time was an uncertain element but which subsequently has been put under construction. We recognized that in order to move the entire output of the Glen Canyon powerplant there would need to be the equivalent of six 230-kilovolt lines. For the moment we are overlooking the small amounts of power which would flow into southeastern Utah for simplicity.

The Bureau's map of the yardstick system which was attached to the news release of May 18, 1960—

The CHAIRMAN. Of the Department of the Interior?

Mr. BENNETT. Of the Department of the Interior, yes. That map showed three lines from Glen Canyon to Four Corners, and two solid lines from Glen Canyon to Phoenix, and one dash line from Glen Canyon to Phoenix. It was recognized that the dashed line was an alternate. It could be built either to the south or to the east as the occasion arose due to whether you did or did not have interconnection at the Four Corners steamplant.

Even though this line was not specifically identified at this location, the cost estimates in the Bureau's analysis included \$13 million for that line, plus other unidentified facilities. The \$13 million is more than ample.

The CHAIRMAN. Do you still believe that six 230-kilovolt lines will carry all of the power that will be available from Glen Canyon, no matter where it is going?

Mr. BENNETT. This is correct.

The CHAIRMAN. If you only put two lines to Phoenix, you would run four lines to Four Corners, if the demand were there?

Mr. BENNETT. As long as there was no interconnection at the Four Corners steamplant.

The CHAIRMAN. If there is an interconnection at the Four Corners steamplant—perhaps you had better explain to me what the interconnection would be.

Mr. BENNETT. The interconnection at the Four Corners steamplant has the effect of making a majority of Glen Canyon power flow south

with, in turn, Four Corners steampower flowing northerly into Colorado and southeasterly into New Mexico by displacement or exchange, if you prefer to call it that.

The CHAIRMAN. Are you saying that the plant to be built by the Arizona Public Service Co. will generate electricity which will not be used in Arizona, but which will be exchanged for Glen Canyon electricity?

Mr. BENNETT. In essence. Now, of course, some of it would be used in Arizona.

The CHAIRMAN. I am only trying to find out why we talk about that.

Mr. BENNETT. For purposes of this understanding, in essence, what would happen is that the Glen Cayon power would be used in Arizona, partly by the preference customers, and partly by non-preference customers, in substitution for the steampower at Four Corners. The steampower at Four Corners in turn would be used by preference customers north into Colorado over into Utah and up into Wyoming and down into New Mexico.

The CHAIRMAN. We had better deal with this preference customer situation just a minute. The Arizona Public Service is what we now call private utility and what we used to call a public utility. It is a private utility, is it? Why would it have anything to do with preference customers?

What I am trying to establish is, would it not be correct to say that a portion, and only a portion, of the power generated by the steamplant of Four Corners would normally be used by any preference customers, but most of it would go directly to the Arizona Public Service Co. itself?

Mr. BENNETT. For simplicity, this is correct.

The CHAIRMAN. How large would the preference load be at Phoenix, as you understand it, or along the route?

Mr. BENNETT. Well, this varies by time, of course. The preference customers in the southern division, as we term it, which is Arizona, three counties in southern Nevada, and a strip along the Colorado River in California, according to the load studies available at the time the analysis was made, could take out of the storage project some 600,000 kilowatts.

The CHAIRMAN. How many lines would it require to move that?

Mr. BENNETT. To deliver 600,000 kilowatts from Glen Canyon to Phoenix would take the equivalent of three 230-kilovolt lines.

The CHAIRMAN. If it were down to the figure you used—I think at one time, the figure of 450—if it were down to a figure of 450, then two 230-kilovolt lines would be enough?

Mr. BENNETT. Or the equivalent which can deliver 450 megawatts.

The CHAIRMAN. If part of this power is to be used by the customers of Arizona Public Service, why would the Government be obligated to build a transmission line in any event?

Mr. BENNETT. Under the proposal which was given to the Government by the Arizona Public Service Co., the Government would build one 230 line from Glen Canyon to Four Corners. The Arizona Public Service Co. would build sufficient lines, which they say are three, from Glen Canyon to Phoenix, plus whatever lines they needed to deliver their own steampower from Four Corners to Phoenix.

The Arizona Public Service Co.'s proposal was based upon there being interconnection at the Four Corners steamplant recognizing

displacement. And consequently, they would have to build whatever lines were required to move almost the entire output of Glen Canyon to the south.

Their proposal of October 1959 had three lines. For that purpose, plus a fourth line which they were building in any event, they indicated, for interconnections with Utah Power & Light Co. Whether or not any portion of that line would be available for moving Glen Canyon power is uncertain.

The CHAIRMAN. You, therefore, contend that the \$13,933,000, which is in the utilities' analysis and evaluation, is not necessary?

Mr. BENNETT. It is unnecessary, as the amount is already in the cost estimates, sufficient to build all of the lines needed to take out the Glen Canyon power, whether it be to the south or whether it be to the east.

The CHAIRMAN. Mr. Baugh, what is your position?

Mr. BAUGH. Our position, sir, is that we have not attempted to maximize the cost of the yardstick system. We have used the Bureau's basic report and have corrected only those errors which we consider to be of major consequence. Mr. Bennett had previously mentioned that under the Secretary's criteria, all power not required by the preference customers in the northern division would next be made available to preference customers in the southern area of Arizona. This was contained in the Secretary of Interior's power marketing criteria of May 18, 1960.

In the load estimates which were furnished to us by the Bureau of Reclamation and dated August 31 of 1960, the Bureau of Reclamation indicated a delivery to the southeastern division of something in excess of 600,000 kilowatts. Our proposal was based upon a delivery of this amount.

In our opinion, Senator, in order to make the two systems comparable and in order to meet the criteria of the Secretary of the Interior, the power be delivered to the preference customers, that the two should at least be based upon the same standards of comparison.

The CHAIRMAN. If the Secretary of Interior should find that the demand at Phoenix would not run long enough to justify the third line, he would not be required to build the third line, would he, Mr. Bennett?

Mr. BENNETT. Would you repeat that, please?

The CHAIRMAN. If, for example, the Secretary of Interior were to determine that the demand for power for preference customers in the Phoenix area would not be sufficient to justify or require three lines after a limited number of years, 5 or 10 years, and if, therefore, the third line would not be economically feasible, he would not be required to build the third line.

Mr. BENNETT. That is correct and that is exactly what happened. Our studies showed us that the need for the third line under an all-Federal system and under the marketing criteria, was only about a 6-year period, and consequently, the power that you could sell for 6 years was not sufficient to justify construction of the third line.

The CHAIRMAN. What is your comment on that, Mr. Schreiber?

Mr. SCHREIBER. This information was not available to the company until after the decision by the Bureau and by the Secretary to construct the all-Federal lines, so our point is that we are not comparing equals; we are comparing oranges and apples.

The CHAIRMAN. But you know it now and you knew it June 1 when this evaluation was put out.

Mr. BAUGH. That is correct, sir.

Mr. SCHREIBER. That is correct.

Mr. BENNETT. And they knew it also in May 1960. In October of 1960, I personally met with the utilities in Denver, at a meeting in Mr. Patterson's office, and I went over this whole thing with them at that time.

The CHAIRMAN. We had better have Mr. Patterson identified for the record.

Mr. BENNETT. He is vice president of the Colorado Public Service Co.

Mr. BAUGH. However, sir, the economic analysis which they have used to evaluate our system and that of the yardstick system, still contains load estimates of 611,000-kilowatt delivery to lower basin.

Mr. BENNETT. We contend, Senator, that this makes no difference because under the proposal of the Arizona Public Service Co. they had to construct enough lines south of Glen Canyon to move almost the entire output of Glen Canyon, regardless of how much of the Federal power was sold as Federal power to preference customers. So their investment is the same whether we market 10 megawatts or 600 megawatts and does not, therefore, in our view, affect their wheeling offer in the slightest, nor does it affect the cost estimates of the all-Federal system.

The CHAIRMAN. I think I understand the first question, unless you care to have some additional comments.

Mr. BAUGH. Yes, sir. He also mentioned that at the time the yardstick system was laid out there were a number of uncertainties, including construction of the Four Corners generating station. Now, according to the guidelines which were set up at that time, there was, to be no interconnection with the Four Corners plant and the yardstick system, and therefore, this should not have been of consequence or a problem in laying out of their system.

Mr. BENNETT. And it was not a problem in terms of actually what was laid out. The dollars were in to do either.

Mr. SCHREIBER. One other point, Senator, to our knowledge the basic yardstick has been changed four times, the latest being June, after hearings before the House.

The CHAIRMAN. June of this year?

Mr. SCHREIBER. Yes, sir.

Mr. BENNETT. We can get into that if you wish on what we term our modified system. It does not change the basic effect of the yardstick system.

The CHAIRMAN. Let us go to the second point.

Mr. BENNETT. I would like to make one additional comment which leads into the second point, in essence, that I think the point being made here actually goes to the difference in the basic concept.

Now, what the Bureau has tried to do throughout is to measure the differences in costs between what the Bureau would do in an all-Federal system, and what the Bureau would do under the wheeling proposals.

As I view it, the utilities have a somewhat different concept than that and we will get into that in point 2.

The CHAIRMAN. Why don't you start point 2, then?

Mr. BENNETT. Point 2 is a contention on the part of the private utilities that under both the yardstick system and the Federal portion of the combination system, the costs should be identical, the Federal costs should be identical.

The CHAIRMAN. Their statement is that the Bureau used higher costs for these facilities in evaluating the utilities proposal than used for the same facilities in the yardstick system.

Mr. BENNETT. That is the statement. I put it in another context which I think is really what it means.

The CHAIRMAN. The question is, Did you use different figures?

Mr. BENNETT. Yes, sir. We did use different figures and we think for very justified reasons. To give you the simplest one—the easiest to understand—under the all-Federal system we felt it completely appropriate that the Government should be entitled to build the most economical arrangement, so far as the lines between Glen Canyon and Four Corners and Curecanti are concerned. You have a triangle there. The economics of construction showed us, in the all-Federal system, that the location of the point at which you would swing from heading east to heading generally northeast would be farther to the northwest.

In other words, it was cheaper to make that apex of the triangle more to the northwest, building a longer line toward Albuquerque than would otherwise be the case, because under the all-Federal system there was assumed no interconnection at Four Corners and no reason to go to Four Corners. So we selected the most economical location for that point.

Now, this means a shorter line under the all-Federal system and, consequently, a cheaper line. We used those costs in the yardstick system.

When we go to the Federal portion of the combination system you have to go to Four Corners, very near to the location of the Four Corners steamplant, in order to make your interconnection. This is a cost to the Federal Government and not to the private utilities, so you have to build a longer line in effect, from Glen Canyon to Four Corners up to Curecanti. It is true, the line from Four Corners to Albuquerque is shorter but it is not enough to offset the difference, so costs are greater.

We think this is completely appropriate to do that.

The CHAIRMAN. When you swung to the northwest, after you left Glen Canyon, was your point of departure, your turning point, in Arizona or in Utah and it was not in New Mexico, in any event, was it?

Mr. BENNETT. It still was, as I recall. What we did, Senator, as I remember, was we simply moved that point indicated as Four Corners some 27 miles, wasn't it, to the northwest.

The CHAIRMAN. It came, actually, closer to the Four Corners itself, than the location of the Four Corners steamplant.

Mr. BENNETT. Under the all-Federal system we went farther away from the location of the Four Corners steamplant, with that turning point.

The CHAIRMAN. We got closer to the actual Four Corners of the States themselves than to the location of Four Corners steamplant. You went to the geographical center of the meeting point of the four States instead of closer to the Four Corners steamplant, some 27 miles?

Mr. BENNETT. That is correct. This is the basic concept of comparing what the Federal Government would do under an all-Federal system of that kind, as against what it would do under the wheeling proposals, and you have something in the order of 57 miles, I think it is, shorter lines under the all-Federal system than under the combination system.

This is only one of the points that they make under No. 2. This is the easiest one to understand. Another one which they make has to do with certain switchyard facilities. The private utilities contend that the cost of construction of certain switchyard facilities was included, but not needed in the Federal system under their proposal, and they have, therefore, deducted the cost estimate on the Federal portion of the combination system.

We believe this contention is incorrect. We include the costs of switchyards with our costs of powerplants, and not in the costs of transmission facilities, so in no event should it have been deducted from costs of transmission systems. If there is a deduction warranted, and we don't believe there is, but if there is, then it should be reduced from the cost of Glen Canyon Dam and not from the costs of the transmission system. So we think this is inappropriate.

Now, the next one gets you into some technicalities in matters of engineering judgment and I will try to explain it to you oversimplified.

Under the all-Federal system, in the line between Four Corners and Curecanti, we had added in what are known as series capacitors. Now, in essence, Senator, a series capacitor is analogous to a pump in a pipeline. You start with a pipeline and your water flows down a ways and its pressure goes down so you want to raise the head and you put in a pump and raise its head and water flows again.

Well, a series capacitor, in essence, acts like this on a transmission line. You go along so far and maybe your voltage drops lower and you put in series capacitors and you raise it up and start over again.

It isn't quite that simple, but this is the best analogy I know of. We had to put the cost of series capacitors in that line in the all-Federal system.

Now, at this point, the private utilities contend if we interconnect at Four Corners, you don't need those series capacitors in the Federal lines. We think we do.

Mr. SCHREIBER. Even with the Four Corners connection?

Mr. BENNETT. It is a matter of engineering judgment, purely and simply. We think you still need them and we have kept the costs in. The private utilities have taken the cost out. It is as simple as that.

Another point which they make here has to do with a line from Flaming Gorge to Vernal, Utah. We had a somewhat comparable problem at Flaming Gorge, as we indicated under point 1 at Glen Canyon.

So far as the all-Federal system was concerned—before I get into that, this is basically a problem of identification, rather than a problem of cost. Under the all-Federal system, we only identified one line out of Flaming Gorge. We did this because we have in that area now the Moon Lake, REA. There has been some negotiations with Moon Lake as to whether we would buy their line that goes into Flaming Gorge, whether they would take on certain responsibilities in marketing power out of Flaming Gorge or whether we would build a second line.

So, again, we did not identify a short piece of line there, but we did put its costs in our contingency item of \$13 million. This is a cost of \$850,000. Under the utility proposal and combination system, we identified that particular line. This is all it is; one we identified and one we didn't. The costs remain the same, but the private utilities in turn, subtract it in this instance from Federal costs under the combination system.

We say this is inappropriate. It is in there in both systems and it should be in in both systems and the costs are there.

So, in substance, we think that all of these decreases in costs are inappropriate and the costs must be in the systems in the way in which we have them in.

The CHAIRMAN. Now, Mr. Baugh, could you tell us a little bit why you think that these capacitors, and so forth, should not be in there?

Mr. BAUGH. I would be happy to, Senator. The first point Mr. Bennett had raised was in connection with the switch gear at Glen Canyon powerplant.

The CHAIRMAN. The shortness of the lines, the \$5 million?

Mr. BAUGH. Ch, all right, sir.

Mr. BENNETT. Excuse me. All of these points that I mentioned total the \$5 million. Each one is roughly \$1 million.

The CHAIRMAN. All right. As a part of the \$5 million, I should have said, instead of the \$5 million.

Mr. BAUGH. Our detailed analysis of that appears on pages 14 and 15 of the report. In connection with the location of the Bureau substation under the two plans, it is our contention that the Bureau in either event would locate their substation at the most convenient point. It would not be necessary to carry all of the transmission lines emanating from the Four Corners substation to the Four Corners powerplant site. Rather they would locate their substation and would then build connecting lines with the resulting benefits to the Bureau of Reclamation.

The costs of locating the substation under the combination plan at the same point has been developed in exhibit 5 of our study.

The CHAIRMAN. They aren't going to lose \$1 million by shortening the line, are they? Isn't that what your analysis would show, they are losing \$1 million by shortening the line? They aren't actually going to lose any money by that, are they?

Mr. BAUGH. No. We are saying that under the combination plan, they have included a cost of approximately \$1.9 million, for longer facilities than actually necessary to do the job at Four Corners. Altogether the Federal investment has been overstated under our proposal by approximately \$5 million.

Further on that point, Senator, as I understand, the substation location has now been moved to a point farther south, under either plan.

The CHAIRMAN. So the figures would be identical?

Mr. BAUGH. Yes, sir.

The CHAIRMAN. Would it make any difference then?

Mr. BENNETT. We disagree if the figures would be identical. This goes back to the basic concept I mentioned a while ago, as to whether you are or are not measuring what the Government would do under one set of conditions, as to what it would do under another set of conditions. They are simply saying the same set of conditions should apply to both for measuring purposes. We disagree.

Mr. BAUGH. The fact remains that the substation location has been changed, and the costs would be correspondingly increased.

Mr. BENNETT. We have changed it from where we had it under the yardstick system, in anticipation that the Arizona Public Service Co. will want to interconnect with us. This, we think, is a good calculated risk on our part.

Mr. BAUGH. Under either plan?

Mr. BENNETT. No, just a good calculated risk under an all-Federal system.

The CHAIRMAN. This question of capacitors is a matter of engineering judgment. It is not a question of utility efficiency against Government efficiency. It is just a question of what is needed.

Mr. SCHREIBER. We think the pump would be at Four Corners.

The CHAIRMAN. But you will save that \$4 million under either the Federal system or the private system.

Mr. BAUGH. What they do, Senator: Under the system, they have a distance of approximately 297 miles from Glen Canyon to Curecanti. By interconnecting with the Four Corners plant you have in effect cut your distance in half.

The CHAIRMAN. Of course, all I am trying to say is that we have decided it is generally desirable to interconnect, and therefore the figure remains the same whether the private utility does it or the Government does it.

Mr. BENNETT. We think the costs are the same in either event. We think the capacitors are highly desirable, even if we interconnect. Again, this brings you right down to engineering judgment.

Mr. SCHREIBER. That is correct.

The CHAIRMAN. There is not any real difference in the money involved.

Mr. SCHREIBER. Yes, sir; there is, Senator. Because the line is shorter if they interconnect with Four Corners.

The line from Glen Canyon to their substation is shorter.

Mr. BENNETT. If you do not put the cost of these capacitors in the Federal portion of the combination system, the tendency of the analysis is to swing in favor of the private utility. The smaller the Federal costs—like a teeter-totter—the smaller you put the weight on the Federal costs, the higher goes the utility benefit, and vice versa. So, by taking out the cost, this is part of the reason why they now are able to come up with figures more nearly comparable to ours.

The CHAIRMAN. Now let us move to the third one, please.

Overstatement by the Bureau of Utilities—wheeling charges, \$62 million.

Maybe you had better justify that first, Bill, and then let Mr. Bennett comment on it, as to what the basis is for that. That is exhibit 6 in your proposal.

Mr. SCHREIBER. It begins on page 17, sir.

The CHAIRMAN. Do you want to go ahead?

Mr. BAUGH. Fine, sir. I will.

After receiving the Bureau report, an analysis was made by each company based upon the load estimates for power delivery into their area and applying the rate which had been quoted to the Bureau of Reclamation. In our case and that of the Arizona Public Service Co., there were alternative rates offered. In the case of the Public Service Co. of New Mexico, we offered a capacity charge of 50 cents

per kilowatt per month, or a kilowatt-hour rate of 1.25 mills per kilowatt-hour delivered at Albuquerque.

On the basis of the deliveries anticipated by the Bureau and furnished us for purposes of quotations, our capacity rate was 1.1 mills per kilowatt-hour. The Bureau of Reclamation in its analysis used the higher optional rate of 1.25 mills per kilowatt-hour, resulting in an overstatement of charges averaging \$92,000 per year, approximately 10 percent of the amount used for deliveries to the Albuquerque area. This same condition applies for this reason or similar reasons throughout the entire system.

Detailed breakdowns of the wheeling offers by years for each company are shown in exhibit No. 6. The totals are shown in the summary.

The CHAIRMAN. Where is the summary?

Mr. BAUGH. On page 16, sir; which amounted to an overcharge to the utility system of \$62½ million over the payout period of the project.

The CHAIRMAN. I am trying to find where you have that figure. I do not find it yet.

Mr. BAUGH. It is on page 1 of exhibit 6, sir.

The CHAIRMAN. Thank you. I see that figure now. But I do not want just a flat figure. I want to know where you get it.

Mr. BAUGH. The breakdown follows, sir.

The CHAIRMAN. Well, I do not see anything that adds up to \$62 million anywhere. I am not saying it is not there but I wish you had some table that showed it, where the individual items totaled together equalled \$562 million. Where is that? Page 2 of exhibit 6?

Mr. BAUGH. Yes, sir. We come to a total annual cost for the year through 2049 of \$562,609,000. The same figures for the Bureau of Reclamation in their report was \$635,137,000.

We do not develop that directly.

The CHAIRMAN. You do not show where the savings are, in other words?

Mr. BAUGH. Yes, sir.

Mr. SCHREIBER. We do not total it.

The CHAIRMAN. Is that page 3, then?

Mr. BAUGH. Yes, sir.

The CHAIRMAN. These are the two comparable figures, then?

Mr. SCHREIBER. That is right, sir.

Page 3 is the summary by year, 562 versus 625.

The CHAIRMAN. All right.

Mr. Bennett, what have you to say about page 3 of exhibit 6 or page 2 of exhibit 6?

Mr. BENNETT. I have quite a little to say about this particular point, Mr. Chairman.

You have to take each of the companies separately. We had a rather unique situation. At the time we received the offers, we had one from the Pacific Power & Light Co., operating in Wyoming, but between their system and Flaming Gorge was the Southern Wyoming Utilities Co., which did not submit a wheeling offer. So at the time we prepared our analysis, we had to assume that we would probably have to pay Southern Wyoming something in order to get to Pacific Power & Light's system. So we did add in 1 mill per kilowatt-hour over their system.

However, after we had made our analysis, we were advised that Pacific Power & Light had purchased the Southern Wyoming Utilities Co., and that their offer of 1 mill per kilowatt-hour would be applicable in toto. We recognized this in our report of November 30, 1960, that our actual wheeling costs were overstated by this reason to the tune of \$14,694,000.

Now, this is negligible.

The CHAIRMAN. \$14,694,000?

Mr. BENNETT. Yes, sir. This is negligible. It was only about 2 percent of the total wheeling costs. So we did not bother to go back and change our complete analysis.

So far as the Arizona Public Service Co. is concerned, they claimed that the Bureau could have saved \$16 million of wheeling costs by accepting its alternate offer of \$6.74 plus taxes per kilowatt-year rather than its offer of 1.177 mills plus taxes per kilowatt-hour.

Now, the company's computations that they made, using the \$6.74 per kilowatt-year, showed the so-called \$17 million savings by calculating wheeling costs using smaller loads than the system in the Bureau used. Naturally, if you use smaller loads, you are going to get smaller total costs.

The company's offer, their final one, of September 26, 1960, specifically indicated that a wheeling rate of 1.177 mills per kilowatt-hour as applied to the total annual energy shown on exhibit 1, which they attached to their offer, would be the minimum annual charge for wheeling. Energy wheeled above the minimum would be at no added charge.

We think we were completely justified in interpreting their offer, that regardless of which rate was used, the kilowatt-hour rate or the capacity rate, the minimum annual charge established in the table would be the minimum annual charge. So we used that.

The CHAIRMAN. Mr. Schreiber, do you think Arizona agrees with that, that the minimum is 1.177?

Mr. BENNETT. No, this is not what I said, Senator.

The CHAIRMAN. I am sorry. Up to a certain amount?

Mr. BENNETT. They attached to their offer a table in which they said, "The 1.177 applied to the figures in the table would be the minimum annual charge. So we have to interpret that as saying, "This is the minimum regardless of which you use."

And I want to intersperse one thing, here. We recognized, at the time we were putting down numbers on these offers, that there was this question: Did we or did we not properly interpret the offers?

So we took our computations to each one of the private utilities. We sat down with them, and we went over our computations, how we applied their offer, and in each case none of them said "You have misapplied our offer." As a matter of fact, Arizona Public Service Co. changed their offer three times after that, finally coming up with this so-called minimum annual charge. So we had no reason to question but what we had properly interpreted. Perhaps we have not.

The CHAIRMAN. Where do we stand now with Arizona Public Service? What is their current offer?

Mr. BAUGH. Their current offer and related charges are given in our statement. It shows an overstatement of \$17 million.

Mr. BENNETT. As I indicated, they got to this \$17 million so-called savings by applying their current offer, as it is termed, to less loads than the Bureau offered.

The CHAIRMAN. Where do you show the \$17 million?

Mr. BAUGH. On page 4 of exhibit 6, sir.

Mr. SCHREIBER. The last column on the right, sir.

The CHAIRMAN. Now, it is your contention that this \$17 million, Mr. Bennett, is developed by applying minimum loads, smaller loads?

Mr. BENNETT. By applying the unit rate to smaller loads than the Bureau used.

Mr. SCHREIBER. I cannot speak for Arizona.

The CHAIRMAN. We will get them in.

Mr. BAUGH. I might add with respect to the Public Service Co. of New Mexico that our capacity rate was offered to the Bureau of Reclamation after this meeting which they had mentioned. There was no opportunity to review this and determine if the proper application had been made.

The CHAIRMAN. Where is your exhibit?

Mr. BAUGH. Our exhibit is on page 7.

The CHAIRMAN. Since I am primarily interested in that, Mr. Bennett, would you comment?

Mr. BENNETT. Yes, sir. There is apparently no question as far as the arithmetic is concerned. But multiplying 1.25 mills per kilowatt-hour times the kilowatt hours gives a total lesser figure than multiplying the 50 cents per month per kilowatt of maximum demand times the kilowatts.

Mr. SCHREIBER. It is just reversed.

The CHAIRMAN. Just reversed; yes, sir.

Mr. BENNETT. Yes, sir. That is right.

Our feeling has been that the use of the 50 cents per month per kilowatt of maximum demand was less reliable, because we had a pretty good basis for estimating energy; very little basis for estimating capacity. We are going to have to limit the preference customers in this project to 5,100 hours of use for every kilowatt.

The CHAIRMAN. Maybe you had better explain why you are going to have to do that.

Mr. BENNETT. This is, in essence, an energy-short project because of water; 5,100 hours of use is about a 58½-percent load factor, which is what they run now on the average. There are some customers, of course, who will have less, some who have more. But the systemwide average is about 58½. This is purely a matter of water. The water you have to run through your generators.

The CHAIRMAN. At Glen Canyon?

Mr. BENNETT. Well, at all three of the units—Flaming Gorge, Curecanti, and Glen Canyon.

The CHAIRMAN. Most of the New Mexico power will probably come from Glen Canyon; will it not?

Mr. BENNETT. Well, it is Glen Canyon power, in that sense; yes, sir.

Mr. SCHREIBER. This plays up that the Bureau needs interconnections with the private companies to back the firm-up in Glen Canyon.

Mr. BENNETT. This I disagree with. We can get the same kind of backup by interconnecting with the preference customers. I admit we will have to have some interconnections with our own systems and probably with some thermal generation, in order to be able to purchase energy in below-average water years. But this can be done with the preference customers as easily as it can with the private utilities.

Now, as far as Colorado Public Service——

The CHAIRMAN. Before we leave the New Mexico situation, either Mr. Schreiber or Mr. Baugh: What is the attitude of the Public Service Co. of New Mexico as to these wheeling charges? You apparently think they are overstated by \$7,925,000.

Mr. BAUGH. Yes, sir.

The CHAIRMAN. Tell us why.

Mr. BAUGH. What they are saying is that they are unsure of their load estimates and it could result in a far higher charge. This is hardly a right basis.

Mr. BENNETT. This is not exactly what we are saying. We are saying that the risk involved in using 50 cents per month per kilowatt of maximum demand is more than we ought to be required to take. We can reasonably estimate energy. We cannot reasonably estimate monthly maximum demand. The only demands which we have shown are annual demands. When you take it down to a monthly demand, it is all over the place in all likelihood. We simply think that this is a more conservative, if you like, way to approach the problem.

The CHAIRMAN. What would happen, Mr. Schreiber, if you folks made the offer you have made of 50 cents per month, and so forth, but in no event more than a mill and a quarter.

Mr. BENNETT. We would come out at the same place.

Mr. SCHREIBER. The same place you are now, Senator.

The CHAIRMAN. No. Wait a minute. That takes out the risk. You did not hear me, I guess.

Mr. BENNETT. Well, in that case you would use the mill and a quarter, and you come out right where we are.

The CHAIRMAN. He offers you the lower rate. If the lower rate stands up, fine. But if it does not stand up, you could not possibly be hurt more than a mill and a quarter. That is what I am trying to say.

I am not trying to get you to make any offers, but I am just wondering if they are worried about the risk.

Mr. SCHREIBER. Senator, we will accept it either way.

Mr. BENNETT. I will say this, Senator. I have not made a calculation, but my estimate is that even if you change this one, it would still not change the relative positions of the analysis, nor would it change what we call the individual analysis. We have also analyzed each individual offer, not as a package but as an individual offer. It will not change that one either.

Now, I am figuring in my head, and I can figure pretty wrongly at times, but if you take the roughly \$8 million, which they say is the difference, and if you divide that over the 86-year period, as I understand it, that is in round terms what? \$100,000 a year? The difference in the individual analyses average annual cost basis—the cost of wheeling, as we now have it, is \$867,000. You knock \$92,000 off of that——

Mr. SCHREIBER. Is that New Mexico only?

Mr. BENNETT. New Mexico only.

And you come back to \$767,000. The average annual cost of Federal transmission is \$325,000. So you still have a difference in favor of the Federal construction of \$442,000 a year.

So in terms of the analysis, this does not change the relative positions.

Mr. BAUGH. No one factor; but if we take these—

Mr. BENNETT. I am only commenting on the idea of changing it over. It does not change the relative positions.

Mr. BAUGH. But this relative error in the New Mexico wheeling application carries throughout the five-State area.

The CHAIRMAN. Yes, sir; we will get to the other companies at another time.

Mr. BENNETT. All the five have their proportionate effect.

Mr. SCHREIBER. But if you multiply your load estimates by arithmetic, it results in an overstatement. This is just plain arithmetic. We have no basis other than your load estimates.

Mr. BENNETT. I do not like your overstatement. Arithmetically you get a different answer.

Mr. SCHREIBER. I will buy that. You get a different answer. And our only basis was your load estimates, which we were furnished.

Mr. BENNETT. Now let us go to Public Service Co. of Colorado. On October 8, 1960, we got a letter from Mr. L. R. Patterson, vice president of the company, who advised us that the company, after going over our analysis of their offer, agreed that the wheeling dollars we had come up with were appropriate. The company now claims that we overstated the wheeling dollars paid to them, because the Bureau would have to pay them under the yardstick system also, and only the difference should be used.

Now this gets a little complicated, Senator. In the Federal portion of the system, under the utility's proposal, if you will notice on the map, there are no Federal lines interconnecting the southern portion of the Federal system associated with Glen Canyon and Curecanti with the northern portion associated with Flaming Gorge.

The deficiencies in the supply for the loads from Flaming Gorge can be delivered from Glen Canyon and Curecanti only through lines of the private utilities. The wheeling charge which they quoted was applied to this service. It was the only way it could get there. It had to go over their system.

Now under the yardstick system, we included that line you can see there from Curecanti to Rangely, a 230-kilovolt line. The investment is there. The line is there. The power would flow over it. It is entirely possible that there might also be some inadvertent flow over the system of the Colorado Public Service Co., because we are interconnected with them now at Salida and other points. But we see no reason whatsoever, with an all-Federal system that can take the power, why under those conditions we should pay Colorado Public Service Co. for inadvertent flows over their system. So we disagree completely that there should be a payment of a wheeling fee under the all-Federal system.

Now the Utah Power & Light Co. is a very interesting case. They quoted us \$7.75 per kilowatt year out of Flaming Gorge, and presumably Glen Canyon. They give us a different rate out of the little plants in central Utah.

We met with their representatives and agreed this was the rate to be used in the Bureau analysis.

By letter of September 16, the company also suggested a rate of fifteen one-hundredths of a mill per kilowatt-hour to be applied to the gross generation of the central Utah project plants.

But now the company, in arriving at its figures, has reduced the generation in the central Utah plants by 7 percent, which makes their rate apply to the net and not to the gross. They claim that they also used not 7.75, which they told us to use, but 7.739. Why, I do not know.

They also claim that the overstatement of its wheeling charges by the Bureau is due to the application of the Utah wheeling charges to the loads to be served adjacent to Glen Canyon. But this claim is absolutely false. The Bureau's analysis specifically exempted these loads from wheeling.

Now, on the contrary, we can only conclude that Utah Power & Light Co., in making its own computations, has used a lesser rate than did the Bureau, and also in computing their wheeling costs they did not include those of the St. George and the surrounding area. They can only mean the company is not willing to wheel power to the preference customers in southwestern Utah.

Now, all of these, in summary—we can only conclude that we have not in any instance overstated the wheeling charges under the proposals.

Mr. BAUGH. We have one definite answer, sir, in New Mexico.

Mr. SCHREIBER. We cannot speak for Utah.

I know Mr. Bennett did not mean to paint this picture, but Utah is a well respected company in Utah.

Mr. BENNETT. No question of this.

Mr. SCHREIBER. And I am sure they will back up anything that they said in this book, any statement they have made.

Mr. BENNETT. We simply cannot understand why they give us such a rate and turn out in their own computations and use 7.739. It is just not understandable. We cannot understand why they tell us in writing, "apply fifteen-hundredths mills to gross" and they turn around and apply it to net. This we do not understand. And, of course, to do what they did benefits them. I just do not follow these kinds of things.

Mr. SCHREIBER. That is true, and Utah must have an answer for it.

The CHAIRMAN. I quite agree with this, Mr. Bennett, that if you use one statement to the Bureau you cannot turn around, in order to show the Bureau misfigured, and use something else.

Mr. SCHREIBER. You are absolutely correct. That is why we are here this morning.

The CHAIRMAN. All right. Now we will go on to the next item, which is what?

The next item is bigger.

Mr. BENNETT. Not only big, but a tough one.

The CHAIRMAN. Item No. 4 is that in evaluating the utilities' proposal, the Bureau ignored increased project revenues which would result in the reduction of transmission power losses under the utilities' proposal.

Who wants to start off on that one?

Do you want to start, Mr. Bennett? Go ahead.

Mr. BENNETT. In essence, Senator, this contention is applicable to what we call the Glen Canyon-Four Corners-Phoenix triangle. We can toss in a few other things, which perhaps we maybe should for the record. Two of the private utilities in their official proposals were

silent as to the amount of payment for losses in connection with the power transmitted over their systems.

Now, incidentally, any time you move power over a transmission line, you lose some of it, and the amount of these losses is a function of several things. It is a function of the length of the line. It is a function of the voltage. It is a function of the size of the conductor, and things of this kind.

The Public Service Co. of New Mexico specified that for transmission losses associated with power wheeled to be furnished by the Bureau, the Bureau will stand the losses.

The Utah Power & Light Co., in its offer specified that it would transmit the power delivered to it at a point near Glen Canyon and at a point near Flaming Gorge less appropriate transmission losses.

Pacific Power & Light Co. anticipated that the present allowance in existing contracts of 7 percent for losses would continue.

Public Service Co. of Colorado suggested that for purposes of study the Bureau add 6 percent for power and energy at delivery points to cover losses. In other words, the Bureau will stand the losses.

The Arizona Public Service Co. did not quote a figure, in its letter, on losses, but did calculate the kilowatt-hours and the kilowatts shown on exhibits 1 and 2 of their quotation, to which they said their wheeling rates would apply. And they used the same basis as the Bureau used; namely, 10 percent losses on kilowatts and 7 percent losses on kilowatt-hours.

And in the last offer we received by letter from the Arizona Public Service Co., September 26 and 27, they corrected their exhibit 2 to show a loss factor of 10 percent in the kilowatts instead of 7 percent.

We can only conclude on the basis of these official offers, that the utilities either did not recognize or intended to keep for themselves any benefit and savings in losses resulting from interconnections.

It is a well known fact that the losses on an independent Federal transmission system plus the losses on the private utility systems without any interconnection would be higher than the losses of the two systems if new interconnections are made.

Now, let us think only of the Glen Canyon-Four Corners-Phoenix triangle. This is where the big problem is, Senator.

If there is no interconnection, then there will be losses on our lines; Glen Canyon-Four Corners; Glen Canyon to Phoenix. There will be losses on the Arizona Public Service lines, Four Corners to Phoenix. The sum of those losses without a connection is greater than would be the sum of the losses with a connection. This is a fact that everybody agrees to.

The important thing, as far as we are concerned, is that the same decreases in losses can be secured by the Bureau building lines without wheeling being involved. In other words, wheeling is not a part of the loss problem. It is purely a matter of interconnection.

Now, it must be recognized that in the interconnected system, not only are the losses to the Bureau reduced but the losses to the private utilities are also reduced.

Again I must emphasize that this savings in losses is associated with the interconnection and more efficient use of the systems through displacement and not related to the wheeling offers.

For these reasons, we contend that it is appropriate not to claim any added revenues due to savings in losses.

And I would like to make another comment. This is our basic point, though. But in computing the added revenue, which is exhibit 7 of the June 1 report by the private utility, the private utility used in their analysis 72 million kilowatt-hours of purchased steam energy more than the Bureau used. This increase in purchase energy is related to the computed savings in losses.

The private utilities claim that under their proposal the losses would be less than under the all-Federal system; hence there would be more power to sell. In order to sell this power with load factor energy, they make more purchases, and therefore more revenue is obtained.

Now, as far as we are concerned, the error in this approach is in the assumption that the savings in losses can take place only under the wheeling proposal. Factually, the matter of savings in losses is one of interconnections and not, in their proposal involving wheeling. And consequently, in our judgment, it is no part of the comparison of the two systems.

Therefore, we think that this \$75,347,000 is completely inappropriate to include in the analysis.

Mr. SCHREIBER. By Mr. Bennett's own admission, he admits that with the interconnections which were offered as a part of the wheeling offers made by the private companies, there would be decreased losses.

Mr. BENNETT. There would be decreased losses with interconnection. This there is no question of.

Mr. SCHREIBER. If there are decreased losses, there are more kilowatt-hours to be sold.

Mr. BENNETT. This is true.

Mr. SCHREIBER. If there are more kilowatt-hours to be sold from Glen Canyon, there should be preference customers and other customers that are going to use them and pay for them. Therefore, there is more money going to the Federal project by the increased sales.

Mr. BENNETT. This can happen under the all-Federal system, interconnected, as well as it can under wheeling. So we think this is no part of the analysis.

Mr. BAUGH. We disagree with that, sir.

The CHAIRMAN. But if there is saving, you do get extra current, which you do sell, and that is additional revenue, is it not?

Mr. BENNETT. If—and this is a great big “if”—if you do interconnect, and you do get less losses.

The CHAIRMAN. Did we not agree we were going to interconnect?

Mr. BENNETT. This is a fact that nobody quarrels with.

The CHAIRMAN. We do agree we are going to interconnect?

We are agreed on that?

Mr. BENNETT. Yes, sir. But keep in mind, Senator—

The CHAIRMAN. If we are going to interconnect, and we have agreed that by interconnection we will reduce losses, then we have decided there will be reduced losses.

Mr. BENNETT. There will be reduced losses with interconnection. But keep in mind that the initial offer of the public service companies kept those losses for themselves and on top of that charged the Bureau for 10-percent losses on their official offer.

Mr. SCHREIBER. No. I cannot speak for Arizona. I can only speak for New Mexico.

The CHAIRMAN. What did you do?

Mr. SCHREIBER. We told them: “Replace the losses with kilowatt hours. We will trade out.”

Mr. BAUGH. Which is standard practice.

Mr. SCHREIBER. Which is standard practice in the industry. "You replace the losses."

Mr. BENNETT. There is no problem with New Mexico or Colorado. The only problem is in this triangle.

The CHAIRMAN. If we get Arizona straightened out, that problem is cured, is it not?

Mr. BENNETT. Well, not completely.

Subsequently, I will say in all fairness, Arizona Public Service has told us orally that they intended for their offer to include the Government getting all of the savings and losses. They have never put this in writing.

Mr. SCHREIBER. I believe they would, sir.

Mr. BENNETT. But I do not think, even if they do, it becomes a part of the analysis. Because you can get exactly the same savings interconnecting an all-Federal system as you can whether you wheel or do not wheel. This is a matter of interconnection; not a matter of wheeling.

So we think this is an item that is just left out of the analysis.

The CHAIRMAN. If Arizona did agree that the savings would go to the Federal Government, would this \$75 million be an appropriate amount to reduce from the Federal savings?

We are trying to bring these things together.

Mr. BENNETT. I doubt if it would. I doubt very much if it would.

The CHAIRMAN. What makes you doubt?

Mr. BENNETT. Well, you get off into several things, here, Senator. In the first place, we will have some questions of policy as to how much steampower we are going to purchase at any given point of time.

Mr. SCHREIBER. What does the purchase of steampower have to do with it, Mr. Bennett?

Mr. BENNETT. Because the fact that you have these savings does not automatically give you more load factor energy in these earlier years. You just do not have it. The only thing that you are saving, in essence, is capacity. You still do not have the water to run through and make the energy. You have to purchase thermal energy in order to sell and market that capacity as load factor energy.

Mr. SCHREIBER. This only appears in the early years of the project.

Mr. BENNETT. This is the critical time.

Mr. SCHREIBER. While the dam is being filled.

Mr. BENNETT. This is the critical time.

Mr. BAUGH. And it is now your expected method of operation.

Mr. BENNETT. Right. But not to the extent which your analysis contemplates purchasing. You have increased the purchases by 72 million kilowatt-hours a year.

Mr. SCHREIBER. Again, Senator, this is based on their loads which they gave us.

Mr. BENNETT. No, this is based on your computed savings and losses, not upon our loads.

Mr. BAUGH. May I make this one comment, sir?

Mr. BENNETT. I wanted to add only one thing to be sure you understand it.

The reason you get more revenue out of this is the assumption that you can purchase the energy at 4 mills and sell it at 6 mills.

This is a good assumption. But the more purchases you throw in under this assumption, the more revenue you get.

The CHAIRMAN. Because I do want to finish as much as we can today, what about item 5, \$72 million?

Mr. BAUGH. Senator, I had one point on that. He mentioned that the savings in losses could be obtained under the all-Federal system as well as the combination, and that it, therefore, was not a valid savings. We would like to say, though, that the combination system as proposed carried with it these interconnections, and that before the Federal system can obtain like savings and losses, we must at each point of interconnection establish mutuality of benefits and costs. If the Federal Government saves on losses, those benefits must be recognized and reckoned with.

The CHAIRMAN. All right. Go to item 5 now.

Mr. BENNETT. No. 5 is in essence related back to No. 2. No. 5 deals with the difference in operating costs, while No. 2 deals with the difference in construction costs, and the same general reasoning applies.

The private utilities claim the Bureau has overstated the operation and maintenance and replacement cost of facilities the Bureau would construct under the private utilities' proposal.

Now, they seem to base this claim on a contention that the relationship between operation and maintenance costs and the investment and transmission facilities is a constant percentage for all systems. That there is not such a constant relationship is shown by the fact that the operation and maintenance cost of the Arizona Public Service Co. system, since 1952, has averaged $4\frac{45}{100}$ percent while on the Utah Power & Light Co. system, for example, in the last 10 years it has averaged $1\frac{97}{100}$ percent.

We have all recognized the frailties of a rule-of-thumb approach. A rule of thumb is nice for approximation. It appears to us that they have here tried to apply a rule of thumb.

The Bureau bases its operation and maintenance costs on a detailed study of the personnel requirement of the transmission substation operating the maintenance crews, using our experience on systems, and taking into account the nature of the terrain in this entire case, the isolation of the facilities, the long-distance travel by maintenance crews, and the efficient utilization of personnel.

The point goes back basically to this difference in the length of lines between Glen Canyon and Curecanti, that we explained under No. 2. It perhaps can be best illustrated in this way, and I am going to oversimplify to illustrate a point.

Under the all-Federal system we would have three or four lines from Glen Canyon to Four Corners. The same crew, in essence, can maintain those four lines as can maintain one line. Yet your construction cost is four times as great. So your percentage, in essence, is four times as great. I am oversimplifying to illustrate the point.

Mr. SCHREIBER. You are not saying that is the fact here?

Mr. BENNETT. No. I am saying this illustrates my point. So what we have done is to ignore this percentage thing. The rule of thumb roughly says your O. & M. costs are somewhere around 2 percent of your investment. It varies all over the place.

So we actually tried to get at this cost by personnel—use of the personnel transportation costs. It would vary on the two systems, and by the two systems I mean the all-Federal system in comparison

to what the Federal Government would build under the combination system, because you in essence have two different systems. One would be more expensive on a unit basis than would the other. One would have a higher percentage figure than would the other. Because in one case your O. & M. cost does not go down proportionately as great as your investment cost goes down.

Now, it is as simple as that, as far as we are concerned. We see no reason why there should not be a difference in O. & M. cost.

Now, this, again, is your basic concept, of comparing what the Bureau would build under one with what it would build under the other. And in our judgment they are two different things. And so you have two different investments. You have two different O. & M. costs percentage-wise.

Mr. SCHREIBER. Our contention is that different unit costs were used. Mr. Bennett says 2 percent is the standard figure for O. & M. The Bureau used 1.29.

Mr. BENNETT. No; we did not use 1.29 or 2.29. These are your computations of the percentage figures.

Mr. SCHREIBER. Dividing out. Yes, sir; I stand corrected; this is our computation.

Mr. BENNETT. We used detailed estimates of operation and maintenance costs.

The CHAIRMAN. Which came out at —

Mr. BENNETT. Which happened to come out at these computations. We never made these computations. We see no value in them and just do not use them.

Mr. BAUGH. The Federal Power Commission, I believe, does use them.

Mr. BENNETT. It is an interesting statistic, that is all.

Mr. SCHREIBER. But the operation and maintenance for an all-Federal system is certainly not the great difference that is shown here as compared to the cost per mile of a private system over the same terrain.

Mr. BENNETT. Oh, we think it is.

Mr. SCHREIBER. You think you can maintain your lines at half of what we maintain our lines at on a cost-per-mile basis?

Mr. BENNETT. I do not think that has anything to do with it.

Mr. SCHREIBER. Well, that is what operation and maintenance is, is it not?

Mr. BENNETT. I do not think it has anything to do with it. We pay no attention to what it costs you to operate your lines. This is your problem.

Mr. SCHREIBER. That is right. And we pay no attention to what it costs you to operate your lines, because your figure is so much lower than our figure—well, the figure that we came up with, after giving your O. & M. costs.

The CHAIRMAN. Is it fair to state that you estimate the amount it is going to cost you to operate and maintain a Federal system at a different figure from what the utilities think it would cost them to operate and maintain?

Mr. BENNETT. This is not the point. The point they are making is that we used a lesser unit figure—let us put it that way—without identifying the unit. We used a lesser unit figure in the all-Federal

system than we used in the combination system. And this is completely appropriate.

The CHAIRMAN. Why would there be a difference in the way they maintain them?

Mr. BENNETT. Let us oversimplify, again, to illustrate. Under the all-Federal system, we would have, let us say, three lines, Glen Canyon to Four Corners. Under the combination system, we would have one line. Now, obviously the O. & M. cost in total would be less to maintain one line than three lines. But this does not necessarily mean that the unit cost is less. The unit cost can be higher. The way they figured it, which is a percentage figure, your investment cost has gone way down. Your O. & M. has gone down, but not as much proportionately. So your percentage figure goes up. It is as simple as that.

We think these percentage figures have no meaning and no bearing whatsoever; that you have to go to "what does it cost you to maintain one system as against the other system" and that is all we have done.

The CHAIRMAN. But there ought to be a correlation as between the operation and maintenance of the two systems.

Mr. BENNETT. Not necessarily.

The CHAIRMAN. If they are over the same terrain, the same points, between Four Corners and Glen, there is some relation.

Mr. BENNETT. Oh, perhaps there is some kind of a relationship. But I think you know in your own system that if you have one line—and assume that is all you have, for illustration purposes—you have to have a crew to maintain that one line. You are not making efficient use of that personnel.

If you have two lines paralleling each other, you make more use of the time of the same crew. Your costs have not changed one iota, but your percent of investment has gone down by one-half. It is as simple as that.

Mr. BAUGH. We believe, sir, that such costs are a definite function of investment and a definite function of the length of line. We are talking in one case about 3,000 miles of line against 1,000 miles in the other instance.

Mr. BENNETT. Oh, I believe there is a function here in length of line. But I do not think this is the problem.

Mr. BAUGH. We also think our position is borne out by FPC technical memo No. 1 of March 1960.

Mr. BENNETT. Well, if that is the memo I think it is, that is a nice compilation of statistics that will get you an average percentage cost which gives you a nice rule of thumb.

The CHAIRMAN. That you are not going to settle in 15 minutes.

Mr. SCHREIBER. No, we are surely not, Senator.

Mr. BENNETT. Just one quick comment on point 6. I think you will see, Senator, that point 6, which goes to the matter of interest, is applicable only if you accept the other five.

Mr. BAUGH. We can agree on this, I think.

Mr. SCHREIBER. This we can agree on.

Mr. BENNETT. Assuming the mathematics are correct, obviously if you accept the first five you are going to get a greater interest figure than you do if you do not accept it. I mean it is as simple as that.

Mr. SCHREIBER. That is right. It is the total of these five and the interest in it which the Government would save.

Mr. BENNETT. This is the way the arithmetic works out, without saying whether the number is right or wrong. We have not checked the number.

Mr. SCHREIBER. We have agreed among ourselves that No. 6 we can agree on. If you save that money, the interest costs are less. That is what the assumption is.

The CHAIRMAN. Now, then, let us discuss the situation leaving out all the other lines except just the one line in New Mexico.

Mr. SCHREIBER. I have a map here, sir, which shows you. Maybe, Buz, you would want to come down here and point this out to the Senator. I only have one.

The CHAIRMAN. You are not talking about going into the Four Corners area at all, then?

Mr. SCHREIBER. Yes, sir, we are. We now have an existing 115 line running from West Mesa to Ambrosia. We now have under construction a 230-kilovolt line running from West Mesa to Ambrosia. We have gotten our certificate of convenience and necessity from the public service commission to extend this line from here to interconnect with Arizona, which has to be done by the second quarter of 1963. So that by the second quarter of 1963, we will have an interconnection with Arizona at their Four Corners plant. They have a summer peak. We have a winter peak.

We also have coalfields up here, and it is our intention to build a coal-fire generating plant in the period 1964 to 1966. The minute that coal plant starts, we have got to start another line. Because, as you know, we are going to put two 100,000-kilowatt units at this point. That will be our biggest plant. At this point we will have the other line completed. We will have two lines at the delivery point, and the Bureau sub and our sub are right there together. We very definitely feel, and have made offers to the Secretary, that we can wheel; that there will be excess capacity in that line for the preference customers. We will have two 230-kilovolt lines.

The CHAIRMAN. What is the cost of building the Bureau of Reclamation line from Four Corners to Albuquerque, Mr. Bennett?

Mr. BENNETT. To answer your question, Senator, as to the cost to the Government of the line from Four Corners to Albuquerque, when we include the Albuquerque substation, the Federal investment in that line would be about \$10,200,000. Now, this is broken down, without getting you involved in our accounting process, roughly \$6.8 million for the line itself and \$3.2 million for the substation at Albuquerque.

The CHAIRMAN. If the public service company does plan to build from Ambrosia Lake up there to connect with Arizona and later their own powerplant, are there other places where the juice that might be brought to Albuquerque could be used? Are there other markets?

Mr. BENNETT. You mean if we did not market any at Albuquerque?

The CHAIRMAN. Yes.

Mr. BENNETT. Well, in time, yes, sir, of course.

Mr. SCHREIBER. Senator, they have established a delivery point here for the preference customers, and all they would be doing would be wheeling over our facilities. And we are all interconnected there at West Mesa. The Bureau and our company is interconnected here. So they could just be taking it out here. They could be putting it in.

The CHAIRMAN. You are going to take it from the Arizona powerplant here, though.

Mr. SCHREIBER. We are going to interconnect here. We could put the power in this area and take it out down here.

Mr. BENNETT. They would in essence, be moving the Four Corners steampower.

The CHAIRMAN. But can they move it as economically over this system as you can move it over the line you are building?

Mr. BENNETT. Of course, we think not. This is a part of the problem.

Mr. SCHREIBER. Why not? It is the same kilovolt line.

Mr. BENNETT. I got into this a bit ago and would be happy to get back into it.

This is the way our figures come out, now. The wheeling charge which we would have to pay, even using your figure of 50 cents per kilowatt per month, would come out at roughly \$767,000 average annual cost. Our cost of Federal transmission system over the same period averages \$320,000, or an increase due to wheeling of \$442,000.

Now, somebody would have to pay that increase. Whether it would be the New Mexico customers, or whether you would prorate it through the system, the net effect of it would be to increase the cost to somebody.

These are our computations, average annual figures over the total period 1964 to 2049. And correct it for your hundred thousand we roughed out here a bit ago.

The CHAIRMAN. Do you have any quick comment on that?

Mr. BAUGH. Yes, sir. We cannot accept those economics.

First, we do not believe, in view of what has been announced by the preference customers in the Albuquerque area that they will use power in the quantities that they say they will.

Plains has announced to our power pool group that they would install a new 50,000-unit at Algodones.

The CHAIRMAN. If they do, that very substantially cuts their need for more power.

Mr. BAUGH. Very, very substantially. In fact, the Bureau has reduced their estimates since this book was prepared by some 24 percent over the long-range period themselves.

Mr. SCHREIBER. After the House hearing they reduced their estimates of the power delivered at the delivery point.

Mr. BENNETT. The latest load estimates which we have as of March 1961—you get a load at Albuquerque in 1975, December peak, of 145,000 kilowatts.

Mr. SCHREIBER. We were furnished on June 10 with estimates showing 116,000 kilowatts over the Bureau of Reclamation.

Mr. BENNETT (to Mr. Cummings). How about that? Have you a new table you have not given me?

The CHAIRMAN. I think this: We are going to have much discussion about this line from the Arizona powerplant and the Four Corners area down to Albuquerque and the possibility of it coming to Ambrosia Lake and on, which the public service companies proposed.

I would hope that the Bureau would furnish a statement as to its feelings on that, and that the public service company would then comment directly on that.

Mr. SCHREIBER. We would be glad to, sir.

(Subsequently the following two opinions were transmitted to the committee:)

POSITION OF THE BUREAU OF RECLAMATION

The Bureau's position in regard to the proposed line from the Shiprock substation to Albuquerque is as stated earlier in these hearings. The Bureau's calculations show clearly, on the basis of average annual costs, that it costs considerably more to transmit the power under the private utilities' wheeling proposal than it does to transmit it by federally constructed lines. In addition to the average annual costs previously reported in these hearings, we have also computed these costs based upon our most recent load and cost estimates and upon the private utilities' own interpretation of their offer (which we think would turn out to be the most costly interpretation). Under these conditions the average annual costs compare as follows:

Average annual cost of wheeling.....	\$605, 000
Average annual cost of Federal line.....	343, 000
Annual difference in favor of Federal line.....	262, 000

The average annual Federal costs include amortization of the line and substations (\$10,651,000, including interest during construction) in 46 years at 2½-percent interest, plus operation, maintenance, and replacement cost of \$10,909,000 over the 86-year period, or a total 86-year cost of \$29,502,000. When divided by the total years the average is \$343,000 as shown.

POSITION OF THE PUBLIC SERVICE CO. OF NEW MEXICO

The Public Service Co. of New Mexico's economic evaluation of wheeling from Four Corners to Albuquerque versus construction of a Federal line is set forth as exhibit 4 of our letter to Senator Anderson dated July 11, 1961. These data, in our opinion, fully establishes that the company's wheeling rate is reasonable and can result in substantial savings to the Bureau and to the project. In comparing relative economics of the two proposals, however, we believe that several additional factors must be taken into consideration:

1. We believe the load estimates used by the Bureau for power deliveries in New Mexico are high and completely uncertain. The associated transmission costs for a Bureau line could therefore be much higher than indicated by the Bureau's economic evaluation. The Bureau has estimated deliveries in Albuquerque of 116,000 kilowatts plus additional deliveries at Shiprock which include approximately 55,000 kilowatts for the town of Gallup and Continental Divide Electric Cooperative (Grants). The total, according to the Bureau's estimates, excluding Farmington, is in the order of 170,000 kilowatts. We believe we have been optimistic in projecting preference customer loads in this area and our estimates indicate about 85,000 kilowatts may be utilized in the area by 1979 (including deliveries to Grants and Gallup). Use of 85,000 kilowatts is based upon the preference customers using project power for all future load growth and limiting generation to their existing and announced additions of generating equipment.

The uncertainty of the Bureau's potential sales in New Mexico is best demonstrated by the public announcement contained in the Farmington Daily Times on August 11, 1961, copy attached, which sets forth plans by Plains Electric Generation & Transmission Cooperative and the town of Farmington to construct a large new generating station near Farmington. According to the release, the first phase of the project will be 100,000 kilowatts and the plant will have an ultimate capacity of 600,000 kilowatts. If this plant is constructed, there would be no market for firm power from the Colorado River storage project remaining within the State of New Mexico.

2. The Bureau's estimated transmission costs from Shiprock to Albuquerque are based upon a single transmission line which the Bureau assumes will carry approximately 116,000 kilowatts. From an operating standpoint, this assumption is not valid because the amount of firm power which can be obtained over a single transmission line is limited to the amount of reserve capacity which would be available with this line out of service. To meet minimum operating standards, any electric system must have sufficient capacity to carry its load with the largest single source of power out of service. Therefore, it is not practical for any electric system to obtain the majority of its power requirements from a single source.

At the present time the largest unit available on the system of Plains Electric Generation & Transmission Cooperative in the Albuquerque area is 16,500 kilowatts and regardless of the amount of power transmitted over the Bureau's proposed line, the maximum increase in firm power to Plains would be 16,500 kilowatts. For the line to be considered a reliable source of firm power in the amounts indicated by the Bureau, the preference customers or the Bureau must maintain 116,000 kilowatts of reserve generating capacity or provide the equivalent in reserve transmission capacity. For this reason, we believe their basic assumption of a single line is inaccurate and we are convinced that before their sales approach the quantities indicated, the Bureau would be required by good operating practice to construct a second line to Albuquerque. In view of the fact that our offer will involve two or more transmission lines, the proposed services are not comparable and direct cost comparisons as prepared by the Bureau are not valid.

3. The line proposed by the Bureau of Reclamation will constitute direct duplication of our company transmission facilities which we believe is contrary to established congressional policies as well as good operating practice. The consulting engineers retained by the Bureau to review their original analysis recognized the situation in New Mexico and commented on their report to the Bureau as follows: "*Lines to be constructed by the New Mexico Public Service Co. between Albuquerque and Four Corners will eliminate the need for the 230-kilovolt line proposed by the Bureau between these points and the capital investment in Federal facilities will accordingly be reduced*". [Italics supplied.]

4. Under our existing power pool contract with the Bureau, Plains Electric Generation & Transmission Cooperative, Inc., El Paso Electric, Community Public Service Co., and our company, the Bureau requires exclusive use by all parties of its transmission facilities on the Rio Grande system. This prevents unnecessary duplication of Bureau facilities. In our opinion, the same policy should apply when the Bureau desires to transmit power through an area where our company will have adequate transmission capacity.

Also, under terms of our power pool contract, Public Service Co. of New Mexico and the other power pool members pay the Bureau a wheeling rate of 1 mill per kilowatt-hour plus transmission losses. Our offer for wheeling Colorado River storage project power to Albuquerque is 1.067 mills per kilowatt-hour plus transmission losses at the Bureau's estimated load factor. We believe the Bureau should accept as reasonable and proper a wheeling rate substantially the same as the Bureau of Reclamation has established for New Mexico.

5. Another factor which we believe deserves consideration is the matter of Federal, State, and local taxes which would be paid by our company from revenue received from wheeling. Although the Bureau does not consider these items in its studies, they represent a definite cost of service and definite benefits to Government at every level. We sincerely believe that any comparison of costs between proposals should rightfully include associated taxes.

For these reasons we respectfully submit that the wheeling offer made by Public Service Co. of New Mexico is the most economical and satisfactory means of transmitting project power to the Albuquerque area.

Mr. BENNETT. Senator, let me say this: So far as the Federal costs are concerned, they do not change. They are not a function of load. They are a function of investment.

So our annual cost of \$325,000 does not change. The only thing that can change on the basis of these loads is the average annual cost of wheeling. To have it come down comparable to the Federal average annual cost, you would have to cut those loads by more than 50 percent.

Mr. BAUGH. You cut them 24 percent already.

Mr. SCHREIBER. Well, 50 percent in the beginning. Let me ask one further thing for the Senator's information.

Did the Bureau of Reclamation establish these loads by actual survey with the preference customers?

Mr. BENNETT. What do you mean actual survey?

Mr. SCHREIBER. Are these your estimates of the loads?

Mr. BENNETT. These estimates come out of a combination. They come out of the basic Federal Power Commission load estimates, they

come out of the statements and material we got from the preference customers and they came out of our own modification, some of these things.

Mr. SCHREIBER. I believe it was in Mr. Dominy's brief to the Upper Colorado River Commission which said that these estimates were furnished by the preference customers to you people and you accepted them.

Mr. BENNETT. They furnished the whole thing, the basic data. As I recall, we made some basic further modifications. But basically, they are their estimates.

Mr. SCHREIBER. Right.

Mr. BENNETT. And we have no reason to question it.

Mr. BAUGH. Nor any commitments?

Mr. BENNETT. No.

Mr. SCHREIBER. You have no signed contracts for that amount of power?

Mr. BENNETT. No.

The CHAIRMAN. How is your schedule this afternoon?

Mr. BENNETT. Fridays are rough days, but whatever you wish. I will not be available next week.

The CHAIRMAN. I am not going to talk about a time until 4 o'clock. I have a person coming in to see me on an important matter.

Mr. BENNETT. Well, whatever your wishes are, Senator.

The CHAIRMAN. I wonder if 4 o'clock would suit you? All I would like to do this afternoon is to have an Arizona man if he is here, and a Utah man here.

Mr. SCHREIBER. The Arizona and Utah men are here, but not the Wyoming man.

The CHAIRMAN. Well, I would like to have him here. At a later date, I would like to have someone discuss this Arizona situation to complete the record.

Mr. BENNETT. I will be partially available the week of the 17th. We have Senate appropriations hearings on the 18th and 20th. But otherwise, I have nothing scheduled this week.

The CHAIRMAN. Has Wyoming agreed?

Mr. SCHREIBER. Wyoming is very much interested in this. Would you like to have Mr. Lucking, Mr. Person, and Mr. Naughton?

Mr. BENNETT. What would you think of this, Senator, as a suggestion: When you get this transcript have Arizona, Colorado, and Utah read the transcript.

The CHAIRMAN. I think that is desirable. We will ask them to submit statements. We will try to find out then what you folks can do to those statements.

Mr. BENNETT. Then if you think another meeting with them would be appropriate, we are available.

The CHAIRMAN. Mr. Bennett has made an excellent suggestion and the Chair will act accordingly.

I will say that many members of the committee have been hoping we could try to find out what basis there is for this controversy and how much of it we might resolve ourselves. Therefore, any information of this nature that we can get will be useful to other members of the committee in trying to decide what, if anything, they desire to do and what, if any, representations should be made to the Appropria-

tions Committee. It is for that purpose that we will get these together.

I do this also because of the House Report No. 1087 on the Colorado River storage project, 1st session of the 84th Congress, in which there was language relating to the proposal of the private power company. This language is as follows [reads]:

The committee finds that this project is unique in that there is no public versus private power controversy involved. Representatives of the 10 private power companies operating in the area presented testimony before the committee indicating their desire to cooperate with the Federal Government in the transmission and marketing of electric power and energy from the Colorado River storage project.

Their proposal provides essentially that the Secretary construct the backbone transmission lines connecting major powerplants of the project and that use be made of the existing systems of the companies and additions thereto to market the power.

The companies assured the committee of their willingness to serve preference customers either through wheeling or through resales with appropriate safeguards to protect the rights and interests of the preference customers, and of the desire of the private utilities of the area to purchase power in excess of that taken by preference customers.

The proposal by the power companies seemed entirely reasonable to the committee. The proposal is consistent with the policy expressed by the Congress for many years in appropriation acts and elsewhere whereby the Federal Government builds the basic backbone transmission system and distribution is made through existing systems where satisfactory arrangements can be worked out. The procedure proposed is similar to that which has worked very satisfactorily for the Central Valley project.

The Department of the Interior advised the committee that it was sympathetic to the private power companies' proposal and indicated that the suggestions would be given studied consideration if the project were authorized. Therefore, the committee expects the proposal by the private power companies for cooperation in the development to be carefully considered by the Department of the Interior and the electric power and energy of the project to be marketed, so far as possible, through the facilities of the electric utilities operating in the area, provided, of course, that the power preference laws are complied with and project repayment and consumer power rates are not adversely affected.

Since this whole matter is coming constantly before the Congress, we will decide later whether we will use merely the transcripts or we will publish the material gathered this morning.

Thank you, gentlemen, for coming in this morning.

(Whereupon, the hearing was recessed at 12:30 p.m.)

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STATEMENT OF POSITIONS ON THE UPPER COLORADO RIVER STORAGE PROJECT

FRIDAY, JULY 21, 1961

U.S. SENATE,
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D.C.

The meeting convened at 2:30 p.m., in room 3112 of the New Senate Office Building, Senator Clinton P. Anderson (chairman of the committee) presiding.

Present: Senators Anderson (presiding), Bible, Carroll, Moss, Hickey, and Goldwater.

Present also: Senators Hayden and McGee.

Present, representing the Bureau of Reclamation: Floyd E. Dominy, Commissioner of Reclamation, Department of the Interior; N. B. Bennett, Assistant Commissioner; and Ken Cummings, Regional Power Supervisor, Salt Lake City, Bureau of Reclamation, Department of the Interior.

Present, representing Arizona Public Service Co.: Walter T. Lucking, president; Hennen Foreman, executive vice president; and William P. Reilly, vice president.

Present, representing Colorado Public Service Co.: Robert T. Person, president, and L. R. Patterson, vice president.

Present, representing Utah Power & Light Co.: D. L. Broussard, vice president; E. A. Hunter, assistant to president; and D. L. Bryner, staff engineer.

Present, representing Wyoming division, Pacific Power & Light Co.: G. F. Beard, assistant chief engineer, and Charles Heltzell, attorney.

Present, representing Public Service Co. of New Mexico: G. A. Schreiber, executive vice president, and B. L. Baugh, executive assistant.

Members of the committee staff present: Stewart French, chief counsel; Jerry Verkler, clerk; and Roy M. Whitacre, professional staff member.

The CHAIRMAN. We have been trying to see if we could help in any way in ironing out differences that exist in the presentations of the Bureau of Reclamation and the public utilities in the area served by the Colorado River and in particular served by the power that may be generated at Glen Canyon Dam and private plants in the vicinity of Glen Canyon Dam. There are differences in the figures.

I assume that everybody can multiply correctly if you start with the same assumption. Therefore, I conclude that the assumptions must be somewhat different and that we might benefit ourselves if we had a discussion of these things across the table so that if one group says, "We think the cost of completing this power should be so much,"

and somebody differs with that point of view, we can explore that and finally decide what the true answer ought to be. I do hope that we will come to a problem I did not think was answered very well in our first hearing on July 7 and that deals with this \$13 million that is required for additional lines which has to do with what happens if you go down to Phoenix or do not go down to Phoenix with an extra line, and where do you put that money if you do not do it that way, and so forth. I think all of you understand that problem.

The second one had to do with the wheeling offers. One set of figures was—I am not trying to be accurate—\$1.25 as I remember it and the other used the figure that built up to a different total. Maybe those figures were not in in the original presentation—I guess they were not—and therefore we ought to try to decide what the final answer should be on those.

Then we have a question of whether there is any effect of the recent modification of the all-Federal system on repayment and irrigation systems.

Those seemed to be the things we were just as far apart on the other day as we were when we started out and, therefore, they are legitimate matters of discussion in this little hearing today.

I have asked Senator Goldwater to come because his State was one in which we had this question arising over the number of lines that are going to run to Phoenix, and where the money should be charged.

Then I have written to each of the Senators in the adjoining States. You see Mr. Davis here from Senator Chavez' office along with Mr. Mutz from the Public Works Committee.

So you can see we have a good representation. Senator Hayden is represented by Mr. Eaton. Senator McGee, Senator Hickey, and Senator Bible and Roy Whitacre and Stewart French, representing the committee. Altogether we have a full houseful of folks and I hope we shall have considerable discussion.

Now if any Member of the Senate desires to make a statement I shall be glad to have that and then start getting down to the basic proposals.

Senator GOLDWATER. I have three paragraphs out of a letter I wrote to one of our Arizona attorneys, a very close friend of mine, Mr. Ted Regans, relative to a group of questions he asked and because these paragraphs do pertain to what we are going to talk about, I would like to read them into the record [reads]:

The five electric companies have made a firm wheeling offer so we know what it would cost to transmit the power if their offer is accepted. The Bureau of Reclamation has to build its lines so we only have its estimate of cost and it is not noted for living within its estimate. If its costs are higher than estimated the cost of transmitting power through an all-Federal system will be higher than contemplated.

I might add here that the consulting engineers employed to review its findings felt that the Bureau's estimates of cost for both construction and operation and maintenance were too low. So far as the company not being able to wheel the power at the prices they have offered is concerned, I doubt if they could if they were building a complete system for the sole purpose of wheeling the Government power but the companies would be building their system anyhow to take care of their own customers. So the cost to them of providing some capacity in their system to wheel the Government power is not nearly as much as if they were building the lines only for that purpose. It does not take an engineer to know that. It is like adding a few customers in a railroad car that is already well filled as against hauling the whole railroad car for only a few additional customers. It is hard for me to see how the conclusion is arrived at that wheeling power would

split off the profitable part of the project for private enterprise and leave the taxpayers holding the bag with unprofitable features? If it is going to cost the Government as much per kilowatt-hour to finance and operate the facilities for transmitting power as it can hire it done by contracting with others, how is that giving us the profitable part of the business? I suppose the companies might make some profit out of wheeling the power but if it is not costing the Government anything extra and the preference customers are getting power at the same price, where is the harm? I see nothing wrong in a reasonable profit.

If the companies make any profit on the arrangement they will have to pay better than half of it out in taxes and their shareholders will have to pay taxes on the dividends they receive. All of this goes to the support of government to provide our schools, roads and, yes, even reclamation projects.

Thank you, Mr. CHAIRMAN.

The CHAIRMAN. Do you have any statement you want to make, Senator Carroll?

Senator CARROLL. Not at this time except to commend the Chairman for calling this meeting so that we can find out what the facts are and as nearly as possible help some of us make a proper decision.

The CHAIRMAN. Senator Moss?

Senator MOSS. I have no statement at this time.

The CHAIRMAN. Senator McGee? Senator Hickey? Senator Bible?

Thank you, I want you to feel perfectly free to ask any questions that you wish.

Mr. Dominy, the other day I think the Bureau of Reclamation stated some of its convictions. Would you care to comment on this \$13 million that we were talking about the other day? We discussed that, Buz, a good deal. Do you want to say what the argument was the other day?

Mr. BENNETT. Well, you are diving right smack into the middle, Senator.

The CHAIRMAN. That is a good place to start.

Mr. BENNETT. One of the difficult points to understand—perhaps the way to approach it is to first indicate to you on the map on my left, to the right of some of you, which is called the “yardstick transmission system.”

The CHAIRMAN. Excuse me. I wish the record to show that Senator Hayden is now present.

Senator, we are just getting underway. Do you have any statement you wish to make or do you wish to move down here?

Senator HAYDEN. I will stay here to listen and learn.

The CHAIRMAN. I would just assume, Senator Hayden, you have no particular statement you wish to make at this time.

Senator HAYDEN. I just want to see what it is all about.

The CHAIRMAN. The first item we are going to discuss relates to the \$13 million charge for lines and this involves the lines that will be built down to Phoenix from Glen Canyon.

Mr. SCHREIBER. Before you start, we have some of these booklets, “Evaluation of Investor-Owned Utilities Wheeling Proposals and the All-Federal ‘Yardstick’ System,” June 1, 1961.

The CHAIRMAN. What page is that \$13 million on?

Mr. SCHREIBER. On the third and fourth pages, I believe, Senator. It lists six major points of difference.

The CHAIRMAN. The first item that we had was the analysis that the utilities made of the Bureau of Reclamation proposal which had to do with the minimum cost of transmission facilities to be added to the

Bureau of Reclamation estimate of the yardstick system cost because of its inability to make power deliveries under the Secretary's power-marketing criteria. This is exhibit 4. It is mentioned on page 3, \$13,933,000.

That was answered in a preliminary way the other day but I think it might be better to bring it up for everybody to look at it this time.

Mr. Bennett, you will then deal with that item and where the controversy arose. I will appreciate it.

Mr. BENNETT. Senator, on the map on my left, which is headed "Yardstick Transmission System," you will notice the black lines which—I think there are also some blue and red keyed into budget material and are not important for this particular purpose—that is the system which was laid out initially for purpose of economic analysis of the project as an all-Federal system which would form then a basis for comparison with the combination system involved under the utility proposal.

The main point that is involved in the \$13 million to which you refer is in the part of the system between Glen Canyon and Four Corners and Glen Canyon and Phoenix.

At the time the yardstick system was being laid out there were some inherent uncertainties. The uncertainties had to do with what at that time were in essence further plans.

It was becoming obvious that somebody would build a hydroplant at Marble Canyon which is downstream from Glen Canyon, but nobody knew who or when.

Arizona Public Service Co. had under very active consideration construction of a very large thermal plant in the Four Corners area of New Mexico. But it was still uncertain whether and when these items would come in existence.

So in laying out our system we first took a look at the loads that appeared to be in the areas involved. Now, these are loads to be experienced by preference customers and preference customers only. Those load data showed us that in the vicinity of Phoenix, which is a delivery point, the load on the storage project might be as high as 600,000 kilowatts initially. Under the marketing criteria that had been approved by then Secretary Seaton, the power to be marketed in the southern division was subject to withdrawal from southern division customers as northern division loads grew. There was, of course, a minimum below which the southern division loads would not be reduced. That minimum was 20 percent of project capability in the summer and 7 percent of capability in the winter months.

Under the withdrawal principle, it became clear to us that the northern division loads would grow to where the 600,000 kilowatts would not be available for marketing in the southern division for anything longer than about 6 years.

Now, to deliver 600,000 kilowatts to the Phoenix delivery point would require three 230-kilovolt lines. But we found that we would soon be drawn down to 450,000 kilowatts and this would occur in about 6 years.

Consequently, we did not feel that we were justified in constructing a third line south out of Glen Canyon to serve about 150,000 kilowatts for a 6-year period.

Let me add one other point. We also recognize that to get the power out of Glen Canyon, Glen Canyon installed capacity 900,000

kilowatts, to get the power out of Glen Canyon requires the equivalent of six 230,000-volt lines.

When we decided not to contemplate construction of the third line to the south, we recognized then that there would have to be a fourth line to the west or to Four Corners.

The CHAIRMAN. To the east.

Mr. BENNETT. To the east, excuse me.

So what we did was to show the lines dotted. We did not identify which one of those lines would be constructed but we left the money in the cost estimates to build either the third line to Phoenix or the fourth line to Four Corners. The money which we kept in the estimate for that purpose as well as other purposes was approximately \$13 million.

Now, to say this another way, the cost estimate of the yardstick system with the features which were identified is \$163 million. Now these are round numbers, Mr. Chairman, and to the \$163 million there was added approximately \$13 million in what we termed unidentified facilities, making the total cost estimate for the transmission division, which includes the substations at the various delivery points, of \$176 million in round numbers.

Now, the \$13 million which in some places has been termed "the floating \$13 million," is in the estimate of the \$176 million. It is there. It is more than adequate to build a third line to the south or a fourth line to the east. And in addition, it is adequate to build certain other features which we know have to be in the system but which were not identified, one of which is the requirement for a second line, 138 KV from Flaming Gorge to Vernal, which was not an identified line under the yardstick system, but the cost estimates are in there.

The CHAIRMAN. In other words, you have in \$163 million that will build the lines that you know have to be built and a \$13 million item to build a line that can be built either south or east but not both?

Mr. BENNETT. That is correct.

Mr. SCHREIBER. Mr. Baugh will answer for us, sir.

The CHAIRMAN. This also involves Arizona. I hope Arizona gets into this.

Mr. FORMAN. We have discussed that and we are in agreement with what Mr. Baugh will say.

The CHAIRMAN. Go ahead.

Mr. BAUGH. May I refer to the map?

The CHAIRMAN. Certainly.

Mr. BAUGH. On May 18, 1960, the Department of Interior announced marketing criteria for the Colorado storage project, together with an all-Federal yardstick system which was developed for the announced purpose of determining project power rates and for the purpose of evaluating wheeling offers made by the utility companies.

These criteria were developed on the power withdrawal premise in which the first priority power would be offered to preference users in the upper basin area. Power not immediately required by the preference users to the north would be made available next in order of priority to preference users in the southern division.

On the basis of these criteria, the Bureau of Reclamation developed their load estimates and prepared their evaluation of the utilities wheeling offers which was contained in a report prepared dated October 1960. Page 26 of the Bureau of Reclamation report contains the load estimates which were used.

In the earliest project, the report specified the delivery of approximately 600,000 kilowatts south of Glen Canyon into the lower basin area. Deliveries of these quantities would require the third line to Phoenix.

As the project develops power deliveries to the lower basin are reduced to a maximum during the winter months of approximately 80,000 kilowatts which will require a delivery east of Glen Canyon to Four Corners of approximately 700,000 kilowatts.

Again, for power deliveries of this magnitude, a fourth 230-kilovolt transmission line would be required from Glen Canyon to Four Corners.

Senator GOLDWATER. Would that requirement be an immediate one?

Mr. BAUGH. No, sir; this would be after the 6-year period.

Senator GOLDWATER. The third line would be an immediate requirement south?

Mr. BAUGH. The third line south is an immediate requirement.

The CHAIRMAN. Would it ever be used after the four lines were needed to Four Corners?

Mr. BAUGH. No, sir.

The CHAIRMAN. So you would be spending \$13 million for a very short time?

Mr. BAUGH. That is correct.

The CHAIRMAN. Do you think that would be economical?

Mr. BAUGH. No, sir, we do not. However, we have established that on the basis of this criteria a total of seven lines will be required from the Glen Canyon powerplant.

Now, the Bureau of Reclamation has announced that it will not be economically feasible to construct the third line to Phoenix for such a short-term delivery.

The CHAIRMAN. Do you agree with that?

Mr. BAUGH. I would like to say this, sir. Our engineering analysis which was prepared June 1, 1960, was prepared to compare directly with the Bureau's report of October 1960.

In the event the load conditions are changed from those contained in the report to a maximum delivery of 450,000 south, the entire report of October 1960 becomes invalid, load deliveries throughout the system have changed, wheeling charges, and construction charges have all changed, and an entirely new comparison must be made to accurately determine the cost of the two systems.

The CHAIRMAN. Therefore, if you were not to build the third line south, which might be uneconomical, you think there ought to be a whole restudy of the wheeling costs and the powerline costs?

Mr. BAUGH. We certainly do, sir.

The CHAIRMAN. Mr. Bennett, do you think that is a practical solution?

Mr. BENNETT. I do not, Senator, for this reason. If we may turn now to the other map headed "The Utility Proposal," I will explain why I made the statement I did.

The orange lines shown on that map are the lines which would be involved in construction by the utilities under their proposal.

The blue lines, I think they are blue—maybe there is one black one on there—blue and black—would be the lines which would be constructed by the Federal Government under the utility proposal. This is why it has been called the combination system.

Now, the proposal which was presented to us by the Arizona Public Service Co. involved interconnection of their system at Four Corners and at Pinnacle Peak, which is a spot out in the desert near Phoenix, and at Glen Canyon.

Note particularly that under the Federal portion of that proposal there is one line, one 230-kilovolt line from Glen Canyon to Four Corners, compared with three or four lines, as the case may be, under the yardstick system. Now, this is because of the way in which the power flows. When you interconnect at these points, the power will not flow in substantial quantities across the line from Glen Canyon to Four Corners. Rather, the power flows from Glen Canyon south. And, in turn, the Four Corners thermal power flows northeast into Colorado and southeast into New Mexico. This is what is known in the business as displacement. Call it substitution if you want to. It is the same thing.

Now, because of this displacement and under the offer made by Arizona Public Service Co., it would be necessary that they construct whatever lines are required from Glen Canyon south to move almost the entire output of Glen Canyon. It would not be all of it, of course, because some of it would flow into Utah to meet preference customer loads, and a very small amount, a peak as I remember of 50 megawatts, does flow across the one line to the east. But for all practical purposes they have to build under their offer enough lines to take almost the entire output of Glen Canyon to the south.

Now, this means a minimum of three 230-kilovolt lines. That is what was in their proposal of October 1959, as I remember.

In addition, they had a fourth line there which has now been built but not yet energized at 230 kilovolts, and is supplying power to the town of Page and to Merritt, Chapman & Scott, contractors for Glen Canyon. It is contemplated that line ultimately will be tied to the Utah Power & Light Co.

The CHAIRMAN. Where does the power come from now, does it come from Phoenix now?

Mr. FORMAN. It is energized by a lower voltage line. It runs from Flagstaff where we have a big line up into the Indian reservation and it is energized by the lower voltage temporarily to serve the construction power.

Mr. BENNETT. I might comment off the record a minute.

The CHAIRMAN. All right; off the record.

(Discussion off the record.)

The CHAIRMAN. Back on the record.

Go ahead.

Mr. BENNETT. The reason I raised this fourth line, there is a question whether or not it would be available to help in moving this Glen Canyon power to the south. This I think is an unknown element. Whether it is available or not will depend entirely upon the use to which the combination of Arizona Public Service-Utah Power & Light put it within their own systems. It may or may not be available for this. But the important thing is that under the interconnection proposal there have to be enough lines out of Glen Canyon to the south to carry almost the entire output of Glen Canyon.

The CHAIRMAN. I have a question there, Mr. Bennett.

If there is some limitation on the amount of power that you can deliver southward after 5 or 6 years on this yardstick map, which re-

lates to the all-Federal system, are they under the transmission system they are proposing always going to be able to move 900,000 kilowatts south or 700,000 kilowatts south? Why do you have a ceiling of 450,000 after about 6 years on the one map? What do you have on the other?

Mr. BENNETT. Senator, let me oversimplify this to illustrate the point.

After complete withdrawal, under the criterion which has been made to where you are down to the 80 megawatts which Mr. Baugh mentioned in the winter months, those lines would still be carrying the output of Glen Canyon.

Now let us, for ease of numbers, let us say it is the full 900,000. Although 900,000, in my example, of Glen Canyon power would be flowing to the south, only 80,000 would be Federal power; the 80,000 would be sold to the preference customers in the southern division. The remaining 820,000 in my example would be Arizona Public Service Co. power as if it had been generated on their thermal units.

Mr. DOMINY. A like amount would be flowing from Four Corners north.

Senator GOLDWATER. What are the requirements of preference customers south, the total, as of now?

Mr. BENNETT. Ken, do you have what they are using now?

Mr. CUMMINGS. Their total requirements are something like four or five hundred thousand, I believe.

Mr. BENNETT. It must be more than that now.

Mr. FORMAN. That is approximately right.

The CHAIRMAN. Maybe you have oversimplified for me. You started with 900,000 at Glen Canyon. You are only going to move 80,000 south.

Mr. BENNETT. As Federal power. You move all of the 900,000 south, but only 80,000 of it in my example is Federal power.

Now what happens? In turn, off the Arizona Public Service Co. generator at Four Corners they deliver the 820,000 into New Mexico, Colorado, northern Utah, and Wyoming. This is the substitution I am talking about. So you still have the requirement for all the lines to the south regardless of what we are marketing at the Phoenix delivery point. You are still moving the Glen Canyon power.

The CHAIRMAN. Will that continue in perpetuity? Is that like the other, it runs for 6 years?

Mr. BENNETT. No; it runs in perpetuity.

The CHAIRMAN. Does this line from Four Corners down to Phoenix, does that also run right along?

Mr. BENNETT. Yes.

The CHAIRMAN. It has no bearing on it.

Mr. BENNETT. Only an indirect bearing.

Now, to explain the statement I made a bit ago in answer to your initial question, why, I think there is not involved here any reevaluation of wheeling offers dependent upon the loads because the wheeling offer is related to the cost of investment and the investment does not change under these conditions. There still must be constructed enough lines south out of Glen Canyon to move the Glen Canyon power to the south.

This requires, as I said, a minimum of three 230-kilovolt lines.

I have a question in my mind, Senator, there is a question in the mind of our technical people whether those three lines are adequate but for the time being we will accept it as being adequate. But that has to be constructed in any event under the proposal which Arizona Public Service Co. made.

So, out of this I conclude, and I am sure maybe these gentlemen disagree with me, but I conclude that if there is involved a reevaluation here of a wheeling offer it must be a higher offer because if you are going to deliver as Federal power a lesser quantity of power and if your wheeling rate is reduced to a unit basis related to investment, investment remains the same, the kilowatt-hours go down, the unit cost goes up.

Now, it is perhaps that kind of reevaluation; I do not know. That is a possibility. That gets back to the question I cannot answer as to whether the rate quoted is a function of cost or whether it is not. I assume it is but perhaps it is not. I do not know.

Mr. FORMAN. May I comment on Mr. Bennett's remarks on a couple of points?

First, I will agree that he has correctly described the way that displacement power flows if there is interconnection. I do not agree on the quantities that would have to flow south. The board study I have before me indicates that for 1979—

The CHAIRMAN. Will you identify the board study?

Mr. FORMAN. That is what we call a calculating board. It is a machine of one variety or another that does our arithmetic for us.

Mr. BENNETT. Analyzer.

Mr. BROUSSARD. This is a joint study made by the utility, the Bureau of Reclamation, and the preference users' representatives in Phoenix.

Mr. FORMAN. So with a maximum need of 588,000 kilowatts—

Senator GOLDWATER. You did not give us the figure for 1979.

Mr. FORMAN. That is 588,000 kilowatts.

So the duty of that channel is for that quantity of power plus such additional quantities as we will get from Utah Power & Light under an interchange arrangement. The result is that, in my opinion, three 230-kilovolt lines will be sufficient.

Mr. Bennett is correct in his statement that regardless of the decline in contract power to Arizona preference customers, those lines continue to be loaded.

We, incidentally, think that is one of the advantages that let us do what we have.

I believe I understood Mr. Bennett correctly to say that we have agreed to an interconnection at Four Corners and that is correct.

In a conference early this year we expressed our willingness to interconnect at Four Corners provided we were adequately compensated for that interconnection. We feel that we have precedent for this.

Mr. Bennett mentioned the wheeling arrangements that we have with Reclamation. They were initiated in connection with our Saguaro powerplant of Phoenix, which was located in part for the benefit of the whole system of the State. As a result of that we contend—that plant is connected to the Bureau system, they wheel power for us—in connection with that we contended that the powerplant did enough good to the system so that we should pay no wheeling charges.

We were told by the Bureau that we were not entitled to a free ride on the train as a result of there being an empty seat and as a result of

these negotiations we did and still do pay them \$400,000 a year, which was right at our alternate cost.

Mr. BENNETT. May I inject here to be sure I understand you: This \$400,000 a year you are talking about is our contract with the Arizona Power Authority, not with Arizona Public Service?

Mr. FORMAN. Yes. There is a pair of contracts, Arizona Power Authority and Arizona Power Service to the Bureau. They were signed simultaneously.

Mr. BENNETT. I want to be sure we are talking about the same thing. For this \$400,000 which the Arizona Power Authority pays us, there is the complete use of the Parker-Davis system for all of the customers of the Arizona Power Authority. It is far more than the power that is generated at your Saguaro plant.

Mr. FORMAN. As a matter of fact they pay one million four, but in connection with this deal we pay four hundred. Yours was raised from a million to one million four.

Senator GOLDWATER. Do you not have to deal through Arizona Power Authority?

Mr. BENNETT. We do not have to, of course, but we prefer to deal with one entity. Our basic contract is with the Arizona Power Authority. In fact, we worked out this last contract through the Power Authority rather than directly with the service company.

Senator GOLDWATER. You are, in effect, dealing with Arizona Public Service, but through the Power Authority when the statement was made that \$400,000 was paid, that statement is a correct one?

Mr. BENNETT. Yes, it is paid to the Authority and then in turn they pay us for the use of the whole system.

Mr. PERSON. You are familiar with the fact that they were paying it. You knew the \$400,000 was coming from them to the Authority to you?

Mr. BENNETT. Yes.

Mr. FORMAN. The point I make here is that in that instance, despite the fact there was basis for the contention of perhaps no cost, no added cost on the part of the Bureau, we did and still do pay about what our alternate costs are. I think that should be remembered in this discussion because I think it is proper precedent for making a straightforward business deal on an interconnection here and I think if we do so we should be properly compensated. That this is worth, I think, about \$2 million a year to the Bureau.

I would like to address myself to one other point in agreement with what Mr. Baugh said that may not be clear.

The reevaluation that he suggested was not one of simply reevaluating the wheeling offer. It is one of reevaluating the Bureau's payout schedules. Now, the reason there is that in the newer schedules which cut back the Arizona deliveries from 600,000 to 450,000 kilowatts, the energy remained the same; that means that during these periods when it otherwise would have been up as high as 600,000, the load factors are substantially greater than the system load factors. They range up to 85 percent, if I remember correctly. With the result that I do not see how that power can be marketed into Arizona except during off-peak periods as fuel savings with the result it would bring more like 3 mills than the 6 mills which is set up for firm power.

I do not know what the overall result would be on the one hand cutting out a line and on the other hand making sales at a lower price. But I question whether or not such an evaluation should not be before Congress.

Mr. BENNETT. If I understood you correctly, and I am not sure I did there at one point, but if I did, I think the answer to your point, Mr. Forman, is that we have assurances now with the preference customers that they will purchase all the energy of this project at firm energy rates. In other words, we are not even contemplating now establishing a rate for nonfirm energy.

What we sell it at, actually, will be \$1.27½ per kilowatt-month plus 3 mills for the energy. They will take it all at that price. We are not contemplating even setting a rate for nonfirm project power.

Now, these are things, of course, that have happened subsequently. Whether they will actually come into being you do not know until you get a contract down and say, "Sign this."

Mr. PERSON. If I might interrupt. What assurances have they given you that they will contract for all the power?

Mr. BENNETT. In joint meetings they have made a statement. As I say, when you come down to a written contract sometimes they change.

Mr. PERSON. In other words, if the contract were given to capacity, the criteria do not require that the preference customers make payments which would reimburse the Bureau for either providing or reserving that amount of capacity, do they? In other words, it is quite simple for somebody to change their plans in the course of discussion like this on an informal basis to meet hypothetical conditions, particularly if that hypothetical condition in the first instance has earmarks of a forced balance.

Mr. BROUSSARD. In Mr. Dominy's testimony just a month ago he said that under the yardstick system the power not delivered to the southern division, with only two lines, would be available to nonpreference customers in the northern division. The amount of power to be wheeled by the utilities in the northern division would be the same whether 450,000 kilowatts or 600,000 kilowatts are delivered to the southern division because the sale of power to these utilities does not involve wheeling.

There are two or three points to be made in this.

One, the market for the power is, of course, assumed, and we have not been approached as utilities to discuss the sale of the power to us and if we are to be called upon to absorb 150,000-odd additional kilowatts, we must put that in our plans.

The other point to be made is that if this is not to involve wheeling, then the wheeling charge as it is put into the evaluation of our wheeling offer would have to be reduced by that amount.

As Mr. Person pointed out, the loads in the upper basin have been estimated by the preference users in the upper basin. If these loads to be served are the same magnitude originally included in the Secretary's criteria in the October report, we accept that. Now, those were the maximum uses.

If the additional power then is taken from the lower basin in the early years and put into the upper basin and, as Mr. Bennett says, absorbed by preference users, additional lines would have to be built,

additional markets would have to be defined, wheeling charges would have to be reexamined, they might go up or down.

The whole thing involves a reevaluation of the total premise which has gone into the evaluation of the utility wheeling offer.

The other thing is that there are a number of lines that would have to be changed as far as the inservice date. Some would have to be accelerated.

Each of these things changes the payout schedule and the amount of money available for irrigation in any given year in the future.

These are the reasons, in addition to those that have just been stated, that we believe totally upset the evaluation of both the payout of the project and of the utilities' wheeling offer.

The CHAIRMAN. Bill, we are ready for you again.

Mr. BAUGH. I would like to say that the analysis that the Bureau determined in favor of the all-Federal system was based upon conditions which we now see will fail to materialize. I think under those conditions that reevaluation certainly is in order. We have prepared our own rates based on information furnished by the Bureau of Reclamation.

Later on in the meeting we would like to cover those, sir.

Senator GOLDWATER. May I clear up one point that Mr. Bennett stated? Do I understand that you have been assured by the preference users that they will absorb all of the power of Glen Canyon?

Mr. BENNETT. Yes, plus Flaming Gorge and Curecanti.

Senator GOLDWATER. So you have no power to offer to any of the private utilities?

Mr. BENNETT. None to the private utilities.

Senator GOLDWATER. Did you anticipate that during the days we were legislating on this matter?

Mr. BENNETT. Well, initially, even a year ago it looked like for a short period of time there might be some firm power available for sale to the private utilities. The preference customer loads within the market area would not be able to absorb it as fast as it could come on the line.

The information we had available at the time of the authorization hearings, and I am shooting back in my memory now on this, was, naturally, pretty rough at that stage. As I recall it, it was based upon preference customers taking most of the power in any event. Now there may have been some in there. I do not think we ever got down to trying to split to see that preference customers would take X percent and it would be Y percent for private utilities. I think our testimony at that time, as I remember, went only to the point that the power could be marketed. There was no question of that. I would have to go back and check the record, Senator, to be sure. It has been several years, as you know, 1955 or 1954 when we testified on this.

Senator CARROLL. May I ask a question?

The CHAIRMAN. Senator Carroll.

Senator CARROLL. Following this same line of questioning, let us assume that the preference customers did not contract for all this power and some would be available to the private utilities. How would that affect the payout period?

Mr. BENNETT. This, then, becomes a matter of will the private utility purchase it from us at firm power rates? If they do, it will not

affect the payout at all. If, on the other hand, the private utilities wanted to purchase it at a price reflecting fuel replacement, for example, which happens in some areas, you would have some quantity there for which you would be getting $2\frac{1}{2}$ to 3 mills and not 6 mills.

Senator CARROLL. What has been the custom, generally speaking? You have firm contracts now with some private utilities?

Mr. BENNETT. Yes, indeed. For example, we have been marketing power to Montana Power Co., firm power, out of our Canyon Ferry project in Montana. They paid us firm power rates for that like a preference customer would.

Senator CARROLL. How do those rates compare with the preference customer?

Mr. BENNETT. The same.

Senator CARROLL. Do you have any contract with a private utility which is substantially lower than the preference customer?

Mr. BENNETT. Not for firm power, no, but we have many contracts.

Senator CARROLL. I am speaking of firm power.

Mr. BENNETT. No; we have no contracts for firm power that are at a rate less than the preference customer would pay, not firm power.

Senator CARROLL. I thought that was the issue, we were discussing the question whether the preference customer somewhere along the line—you say you have not nailed it down yet, as I understand your testimony, if there were excess power, firm power. Do I understand now your statement is there is no place in firm power that is being sold lower than the rate you get from a preference customer?

Mr. BENNETT. That is correct.

Senator HICKEY. Mr. Bennett, I have a question.

In view of what you said with regard to 6 years being the period of time during which you anticipate the additional power needs in the lower basin will be required, it occurs to me that about a year ago I met with some people who indicated by virtue of some graphs that particularly in the State of Wyoming the need for the excess by virtue of the criteria then set out to preference customers would be x amount and that the graph prepared as to the possibility of need in Wyoming extended long over 6 years, as I recall it was something like 15 to 18 years before the development of Wyoming would require what the criteria allowed for preference customers. At that time there was a question about that excess power being used in the lower basin area for that period of time.

Now the thing strikes me, the difference in your testimony today with regard to its being available for 6 years and the representations made then, that we would not have grown a sufficient need for a much longer period of time.

Mr. BENNETT. So far as Wyoming is concerned, Senator, I think that is probably an accurate statement. The Wyoming loads are growing relatively more slowly than they are in the other States. So, from the standpoint of comparability, your Wyoming preference customers would probably not be reaching a peak at the same time as some of the others. That is correct, I am quite sure.

Senator HICKEY. Now from the 6-year period, during the difference between that and the time when the project graph indicated we would need it, where would that power be directed to from that point on? Would it be directed back into the upper basin States?

Mr. BENNETT. Yes, sir.

Senator HICKEY. Or will it continue to go to Arizona?

Mr. BENNETT. No, on the particular amount we were talking about for the 6-year period, it would go into the upper basin States.

Senator HICKEY. Particularly in the Colorado area, is that correct?

Mr. BENNETT. I do not think we attempted to identify the location.

Senator HICKEY. The indication to me was that it would continue into the Arizona area for the period of time that power preference needs would not be required.

Mr. BENNETT. I think this is correct on any amount of the power that goes into the southern division above the minimum of 280,000 in the summer months and 80,000 in the winter months.

As the Wyoming loads grow, the power will be withdrawn from the southern division and furnished in the northern division. So there is that degree of protection. But that is a little different point than we were discussing a few minutes ago on this 6-year period. The 6-year period had to do only with the relationship between an estimate of 600,000 kilowatts and the estimate of 450,000. But the principle is the same.

Senator HICKEY. Thank you.

Mr. BROUSSARD. Senator, I think I have the answer to the question if I got the question right.

These are figures out of the load estimates presented by the Bureau of Reclamation in the October report. The loads would build to 596,000 kilowatts which is about half the total capability of the entire project, by 1971, about 10 years from now. By the year 1980, the total project power would have been absorbed. So that would mean in the interim, say 20 years, there will be a considerable amount of power in our opinion that must be absorbed by other entities other than the preference customers.

We presented this in a study. I believe Senator Goldwater has a copy of the study before him that we presented to the Bureau of Reclamation.

We have not quarreled with the estimates of the preference customers although they are rather optimistic. This is about the maximum rate at which we believe preference customers can absorb the power. Anything less than that will just mean that much more power that must be absorbed by other entities.

Mr. BENNETT. Now on this, Senator, if I may comment, we do not disagree with what was just said, nor do I think that it affects in any way the analyses that have been made. If that original estimate of loads ultimately turns out to be accurate, then there would, of course, be a period of time during which there would be firm power for sale to other than the preference customers. If it does not turn out to be accurate, which is our present estimate, it still makes no difference in terms of the analysis.

Mr. PATTERSON. Senator, there is one respect in which that does make a difference. For example, if some load which has been allocated to preference customers in the State of Colorado is not actually needed by them and the public service company purchases that energy, there will be no wheeling charge to the public service company for the energy flowing over its own system. So, in that respect it does make a difference in the analysis.

Mr. BROUSSARD. It makes another difference, too, I believe, in addition to that. The loads that are not absorbed by the preference

users in the upper basin would very likely, or would be under the Secretary's criteria left in Arizona where the load is growing more rapidly and would remain there for a number of years, a considerable number of years above the 6 years we are talking about there. That would make a considerable difference in the payout in the whole sequence of construction of transmission line facilities in the project.

Senator CARROLL. I wonder if I could have Mr. Bennett's comments on that last observation.

Mr. BENNETT. Well, I was trying to refresh my memory of what we did on a point or two. In one respect I am not sure I understood the last two comments because we have not attempted allocation by States. As a matter of fact, we have made no allocation at all. Perhaps we are talking words here, I am not sure, that is what disturbs me a little. I think what Mr. Patterson means by allocation is the figures that are in the chart as to probable load by States rather than by allocation. I think it is correct that we would not expect to pay wheeling on any power which we sold to the private utilities with one exception. If I recall the wheeling proposal of Arizona Public Service Co., we are required to pay wheeling on all displaced power out of Four Corners, according to the table attached to their proposal, regardless of who may be purchasing that power. So if Colorado Public Service is buying, let us say, 50,000 kilowatts of Glen Canyon power, they or somebody would have to pay Arizona Public Service Co.'s wheeling of that power from Four Corners north.

Am I correct in my interpretation?

Mr. FORMAN. You are entirely correct.

The CHAIRMAN. That is the first point we have agreed on all day.

Mr. FORMAN. I would go a step further and say that if I were to purchase power from you on a delivered basis and the price included my wheeling charge, I would still expect to collect the wheeling charge.

Mr. BENNETT. But it does not apply to Mr. Patterson of Colorado Service. He in turn would have to pay or by some arrangement in the rates or other pay wheeling by virtue of displacement even though none of the power may flow over any lines except those in Colorado.

This is one of the difficult points to understand in this wheeling proposal, this displacement question.

The CHAIRMAN. There are a lot of differences in this money factor. We are going to run out of time some of these days. Aren't there other points besides this \$13 million, these wheeling charges you want to discuss?

Mr. FORMAN. This is apropos of whether or not they would bring in the same revenues if the Arizona delivery is cut back to 450,000. Mr. Patterson here has just done some arithmetic on the rate quoted just now by Mr. Bennett. It shows that at an 80-percent load factor that rate would bring 5.2 mills. Just inspecting the rate, I believe it would bring the 6 that is contemplated at the average load factor of the system but as you go up in load factor the nature of the rate reduces the revenue per kilowatt hour and in this instance for 80-percent load factor it would be 5.2 mills.

Mr. BENNETT. I think I had better comment on that a little. There could be no question that in the usual type of a rate schedule that consists of two parts, capacity charge and energy charge, as the energy portion goes up the average return goes down. This is just the way the thing works, you cannot prevent it. The rate itself,

when you talk of an average rate of 6 mills, to get that average rate you set up a combination of capacity charge and energy charge which at the anticipated load factor produces that average.

Now so far as the storage project is concerned, you can select the two parts of your component anywhere you want and still produce the average. The \$1.275 is per kilowatt and 3 mills for energy produces the average of 6 mills at a 58½ percent load factor.

Now anybody whose load factor—and, incidentally, this simply means the relationship of the time at which you use your capacity—if you have 1 kilowatt of capacity and you use it straight through all year long you are going to use 8,760 kilowatt-hours. How is my memory, good?

Mr. PATTERSON. Very good.

Mr. BENNETT. If you use 50 percent load factor, you are going to use 4,580 kilowatt-hours. So don't be confused by the load factor expression.

Mr. PERSON. If I may comment—

The CHAIRMAN. Yes, indeed. I want to say to you, as is said at the wedding ceremony, when you get to the point, "Does anybody object to this wedding, if they do, speak out now or forever hold your peace." This is to give the utility a chance to make their comments on whatever the Bureau has published.

If you don't do it this afternoon, forever hold your peace.

Mr. PERSON. Mr. Bennett said earlier that substantially the system stays as it is, notwithstanding changes in power flows, new lines that are added and it lost \$13 million, and so on. Notwithstanding that, they have not as yet come up with a new payout schedule. We think it does have some material effect and we think some of the changes in load factor change the payout conditions. I think we are prepared to show what is our version of a revised payout at this time. I think the committee might be very interested in that because it goes to the heart of the question.

The CHAIRMAN. I shall be very glad to hear that.

Senator HICKEY. I only have one thing I would like to ask: The example you gave, Mr. Bennett, was the lower division. If the excess power that is not used in Wyoming, and they bring back up into the upper section without going into Wyoming, can we recapture when our peak arrives from the upper division in the same manner as below?

Mr. BENNETT. No, sir.

Senator HICKEY. If it is transferred up there?

Mr. BENNETT. It is recapturable only from the southern division.

The CHAIRMAN. We are ready now to have the statement of Mr. Broussard.

Mr. BROUSSARD. Before we get to the economics, I think it would be well to point out what is now in our judgment and as far as we know the latest modified yardstick system. I hate to waste all this argument we have just had, but if this is the true yardstick system now, if this is what was presented to the House Appropriations Committee last month, and if this is the new modified yardstick system that the Bureau of Reclamation intends to build, then most of the economics we have been discussing are academic. So we would now like to talk about the old yardstick system, how it evolves into the new yardstick system and the payout schedule, the contribution to irrigation and those things associated with it.

The CHAIRMAN. Excuse me one minute.

Off the record.

(Discussion off the record.)

Mr. BROUSSARD. As far as we are concerned, the yardstick system is an individual system and that is how we have considered it.

On this map is the new yardstick system which includes one 345,000-volt line to Phoenix and two 230,000-volt lines and one 345,000-volt line from Glen Canyon to Four Corners; then the same lines over into Colorado with a new addition (Poncha to Midway to Linon); the green lines are lower voltage additions, and then a considerable number of additions in Utah (Flaming Gorge-Hyrum-Springville; Sigurd-Gunnison; Glenwood-Fillmore; and Widstoe Junction-St. George). The total increase in line mileage is 582 miles.

Senator GOLDWATER. Could I interrupt at this point?

When you are talking about Four Corners with the Federal yardstick proposal you are not talking about the same Four Corners you are talking about on the utility proposal; are you?

Mr. BROUSSARD. As far as we know, we are in this system. That was in the comparison between the utilities proposal and the Federal yardstick system as it was presented in the October report. There was a different point of connection.

Senator GOLDWATER. Isn't the point actually 27 miles northwest of the plant that Arizona Public Service is now building?

Mr. BROUSSARD. Yes.

Senator GOLDWATER. We call it Four Corners, but the point where the line would turn northeast is actually 27 miles northwest of the utilities proposal.

Mr. BROUSSARD. That far away from the utilities powerplant?

The CHAIRMAN. It is closer to the Four Corners than the Arizona plant is?

Mr. BROUSSARD. That is true.

Senator GOLDWATER. I wanted to get that clear. From the reading of this, one who is not acquainted would assume they are the same points when there is a difference.

Mr. BROUSSARD. This is the system which we are comparing with the modified system.

The yardstick system is the system you see on the Bureau's map and which is supposed to be the underlay on this map.

These figures on this chart (exhibit A) for the "yardstick" system are out of the Bureau's October report. These figures for the modified system were given to us by the Bureau of Reclamation following our hearings before the House Appropriations Committee in June 1961. Not all of the figures were given to us. The basic figures were given to us and we have had to compute the other figures because as of now we have not been given a payout schedule on the new modified system by the Bureau. The power allocation (\$490 million) is the same under both. That is the allocation to those parts of the power project that are not transmission: powerplants and dams and those things allocated to power.

The Federal transmission facilities, the investment in the "yardstick" system is \$176 million. That does not include the second \$13 million that we in the utilities believe should be added.

EXHIBIT A.—Revenue analysis of Colorado River storage project, 86-year payout to year 2049

[All values in millions of dollars]

	All-Federal transmission system			Utilities proposals
	Yardstick (May 1960)	Modified (June 1961)	Difference	
	(I)	(II)		
Investment:				
Power allocation less transmission.....	490	490	0	490
Federal transmission facilities:				
Investment by Bureau.....	176	187	11	53
Interest during construction.....	6	7	1	2
Total power allocation.....	672	684	12	545
Irrigation allocation.....	90	90	0	90
Interest on power allocation.....	455	527	72	340
Total obligation to repay.....	1,217	1,301	84	975
Revenue from sale of power:				
From firm energy at 6 mills per kilowatt-hour.....	2,672	2,655	(17)	2,747
From nonfirm energy at 2.5 mills per kilowatt-hour.....	61	61	0	61
From excess capacity at \$15 per kilowatt.....	16	16	0	16
Total operating revenue.....	2,749	2,732	(17)	2,824
Operating costs:				
Operation and maintenance.....	386	401	15	255
Replacements.....	105	109	4	75
Hoover energy replacements at 5 mills per kilowatt-hour.....	2	2	0	2
Steam purchase at 4 mills per kilowatt-hour.....	87	87	0	87
Utilities wheeling charges.....				584
Total operating costs.....	580	599	19	1,003
Available for project repayment.....	2,169	2,133	(36)	1,821
Repayment of power allocation.....	672	684	12	545
Interest payments.....	455	527	72	340
Repayment of irrigation allocation.....	90	90	0	90
Balance to basin fund.....	952	832	(120)	846
Requirement of basin fund.....	426	426	0	426
Surplus over basin fund requirement.....	526	406	(120)	420
Additional benefits:				
Federal income taxes.....				105
State and local taxes.....				184
Government interest saved on irrigation allocation.....				68

The CHAIRMAN. In other words, it is a line south and a line east?

Mr. BROUSSARD. This \$176 million includes only one of those lines. That is the figure that was presented here as acceptable to the Bureau of Reclamation; \$176 million is their figure.

In the modified system we were presented by the Bureau with the figure of \$182 million plus which overlooks a change in the substation facilities at Glen Canyon necessary to raise the voltage from 230,000 volts to accommodate the 345,000-volt addition.

The CHAIRMAN. Do you agree with that, Mr. Bennett?

Mr. BENNETT. No. I do not agree with that. Let him finish and then I will proceed.

The CHAIRMAN. It is so hard to remember.

Mr. BROUSSARD. There is \$4½ million involved in this, and it is a pretty important item. All I can say is to change the substation

facility at the dam in connection with this change from 230,000 volts as it was in the yardstick system here to 345,000 volts involves money.

The CHAIRMAN. \$4½ million of it.

Mr. BROUSSARD. Yes.

The CHAIRMAN. Why do you say that is not so, Mr. Bennett?

Mr. BENNETT. For this reason, that, as I explained it the other day, any costs which we have in the total project that relate to switch-gear cost are not a part of the transmission division; we have never carried them there as yet. If there is a change in cost here, such as indicated, then it would be a part of Glen Canyon Dam costs, not a part of transmission division.

Now, incidentally, while I am on this point, we did not like to change our mind on going to 345 line to the south rather than two 230's. We made some cost comparisons of our own and including necessary switch-gear changes we find we will save about a million dollars by going to the one 345 line. So I do not agree that this \$4 million—Whatever it is—figure should be added.

Senator GOLDWATER. First of all, what is it going to cost to increase this four? Is \$4½ million a good guess, Mr. Bennett?

Mr. BENNETT. To increase?

Senator GOLDWATER. To raise it.

Mr. BENNETT. As a matter of fact, that part of the system which we carried in transmission division, when you think of that one line only it comes out at a lesser cost than it was before.

Senator GOLDWATER. What would your figure be?

Mr. BENNETT. It would be a million dollars lower. We save about a million dollars.

Mr. PERSON. What would be the cost at the dam assuming it is what you say it is?

Mr. BENNETT. I don't know.

Mr. PERSON. This is part of the reimbursable power cost?

Mr. BENNETT. Yes. If there is some increase it is part of the dam cost and as such it has no relationship to the transmission division cost which we are trying to analyze.

Senator GOLDWATER. How can it be part of the dam cost?

Mr. BROUSSARD. It does not make any difference for my part whether it is part of the dam or part of the powerplant or part of the transmission system. We will take it out of here and put it up here, reduce this by \$4½ million and it is immaterial.

Senator GOLDWATER. That is what I am trying to get at, it is \$4½ million, it makes no difference where it goes.

Mr. BROUSSARD. Of course when you take out three lines and add one 345 there is a saving. All of those changes involved and all of the substations involved—and we were given these figures by the Bureau of Reclamation—total up \$184 million plus. Now the substation cost increase just is not there for the necessary changes in the substation. There must be changes. Now if we put these cost increases in the dam, the \$490 million is increased to \$494.5 million, and the transmission becomes \$182 million. Now the interest during construction on the total facilities would be approximately \$6 and \$7 million. So the total power allocation changes from \$672 to \$684 million, or an increase of \$12 million, including interest during construction.

The irrigation allocation of \$90 million remains the same. The interest on the power allocation goes up by \$72 million. Now that is a large figure. The reason the interest on the power allocation goes up out of proportion to the amount of investment there is that in addition to putting in the added facility in the new modified system, many of the other transmission facilities are accelerated; they are put in at an earlier date.

Again we were advised of these accelerated dates by the Bureau of Reclamation.

The CHAIRMAN. Can I go back to the \$4½ million for a minute?

Will you supply the committee with your table of figures showing where this \$4½ million comes from?

Mr. BROUSSARD. Yes, sir.

The CHAIRMAN. Because the Bureau of Reclamation must have a reason to switch from two 230's to one 345, whatever it is. They thought that was economical. You say it is not economical. Therefore if you are right they should go back to the two 230's.

Mr. BROUSSARD. Of course that is not the only thing involved.

The CHAIRMAN. Well, it is in your discussion.

Mr. BROUSSARD. No, sir. There are many other lines involved and you have to take a composite to arrive at the total difference. The \$182 million estimate includes all of the additional lines and the change from the three lines to one and from the either three or four, whichever one you accept, to two 230's and one 345.

The CHAIRMAN. All I am trying to say is that to a person who is not an engineer this looks like the Bureau of Reclamation made a mistake. If you will send your figures in then they will have some of their own and show us why they reached their decision.

If it is a bad decision we had better back up on it.

Mr. BROUSSARD. I don't know that the \$4½ million is the difference between making a decision to go to this system or that one or not, but this just happened to be something that was overlooked, I believe.

The CHAIRMAN. If you want to add it in, then there must be something wrong with it. We want to take a look at it, that is all.

Mr. BROUSSARD. Yes, sir.

Now, the interest on the power allocation increase out of proportion to this, as I said, because there are other lines and other facilities that are accelerated. They come in earlier in the period and during the 86-year payout period on this project they accumulate interest to increase the amount by \$72 million. So the total obligation to repay changes from \$1,217 million to \$1,301 million, or an increase of \$84 million. The revenues from the sale of power, from the firm energy at 6 mills—

The CHAIRMAN. The table you have there on the interest on power allocations, that is worked out to where the Bureau of Reclamation can look at it and decide?

Mr. BROUSSARD. Yes, sir. We have a total payout schedule by years for 86 years. (Attached for Record is payout schedule showing interest tables.)

The CHAIRMAN. I assume, Mr. Bennett, you do not agree with that \$72 million.

Mr. BENNETT. I do not.

The CHAIRMAN. Therefore, we can get rebuttal from you.

REPAYMENT SCHEDULE OF AUTHORIZED UNITS OF COLORADO RIVER STORAGE PROJECT AND POWER FEATURES OF CENTRAL UTAH PROJECT
AND ESTABLISHMENT OF REVENUES AVAILABLE TO ASSIST IN IRRIGATION REPAYMENT OF PARTICIPATING PROJECTS
POWER RATE ANALYSIS - 6.0 MILL RATE - ALL-FEDERAL YARDSTICK (VERSION OF MAY 1961)

(Unit: \$1,000)

* Prepared by five investor-owned utilities.
Based on available data as furnished by the Bureau of Reclamation.

Year of Study	Fiscal year	Sales of electric energy (million kilowatt-hours)							Operating revenues				Annual operating costs				Energy purchases				Net operating revenues for repayment of:				Investment repayment from power revenues										Fiscal year	Year of study																																																																																																																																																																																																																																																																																																																						
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		Genera-tion*	Pur-chases	Total	Genera-tion	To replace Hoover defi-ciency	Total	1,000 kw Excess capac-ity	From firm energy at 6.0 mills per kw	From nonfirm energy at 2.5 mills per kw	Excess capacity at \$15.00 per kw	Total	Opera-tion and maintenance	Pro- vision for replacement	Operation, maintenance, and replacement	Total	At 5.0 mills to replace Hoover deficiency	At 4 mills per kw included in firm sales	Wheeling costs	Total annual cost	Curecanti and Central Utah power allocations	All other projects costs	Total	Interest at 2 7/8 percent	Prin- cipal	In service at end of year	Balance to be repaid	Interest at 2.632 percent	Prin- cipal	In service at end of year	Balance to be repaid	Invest- ment repay- ment	In service at end of year	Balance to be repaid			Invest- ment repay- ment	In service at end of year	Balance to be repaid	Invest- ment repay- ment	In service at end of year	Balance to be repaid	Invest- ment repay- ment	In service at end of year	Balance to be repaid	Invest- ment repay- 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Mr. BENNETT. I mean in terms of what he has shown there, there is a difference. I assume the arithmetic is correct, but I don't think that it is the correct figure.

Mr. BROUSSARD. Up until now we have not seen a computation of the Bureau's modified system payout and to my knowledge it does not exist.

The CHAIRMAN. You have got something that shows that \$72 million. If you will submit this then we have something we can carry back to them and say, how do you comment on this? That is what we are trying to do, is find out where these differences lie.

Mr. BROUSSARD. We will give you a payout for each year.

Senator GOLDWATER. Might I ask if it would not be proper to have at the same time a breakdown of the modified payout from the Bureau, if that has not been made available?

Mr. BENNETT. When he gets through, Senator, we will be very happy to write our numbers right alongside of his.

Mr. BROUSSARD. We would also like to see the payout of the Bureau for the 86 years by years.

The CHAIRMAN. We will try to get that altogether for you in the same document. So we can read out of the same book.

Mr. BROUSSARD. The firm energy sales, at 6 mills under each of the two proposals, is reduced under our computation by \$17 million. This is due principally because the modified system has added some 500 miles of lower voltage transmission lines; there are therefore more transmission losses, therefore less energy available for sale at the point of delivery. The other revenues, nonfirm energy and excess capacity remain the same.

Now the operating costs. The operating and maintenance costs have increased by \$15 million from the yardstick to the modified yardstick, principally because of the increase in investment and the O. & M. charge has been applied so far as we can determine on the percentage of investment basis. Replacements also have been increased by \$4 million because of increased facilities. Other costs remain the same. The total operating and maintenance costs, therefore, go up \$19 million.

The amount shown to be available for project repayment, which is a deduction of the operating cost from the revenues, is decreased by \$36 million as a result of the decrease in revenue of \$17 million and increase in O.M. & R. of \$19 million.

Now let's look at what has to be repaid out of the amount available for repayment.

The interest payments have been increased by \$72 million as shown. The repayment of transmission investment requires \$12 million more revenue. Irrigation repayment of \$90 million stays the same. The total available for the basin fund, which is the money available for irrigation, has decreased from \$952 million to \$832 million or a decrease by \$120 million.

The CHAIRMAN. You did not add that \$72 million in twice; did you?

Mr. BROUSSARD. No, sir; I hope not.

The CHAIRMAN. It is on the chart twice.

Mr. BROUSSARD. This is just brought down to show where the money goes. The money comes out of the revenues as part of the cost. It is repaid, the interest payments and the repayments of irrigation allocations are interest free.

The amount required for the irrigation projects, called participating projects, as contemplated by the authorization act requires \$426 million.

Therefore, there is in this yardstick system, according to the Bureau, a surplus over basin fund requirements of \$426 million; in the modification system there is only \$406 million, or \$120 million less for future projects.

Senator GOLDWATER. That first figure was \$526 million. You said \$426.

Mr. BROUSSARD. 526, excuse me.

Now I would like to go to a comparison between the modified system which, after all, is the current system we should be talking about, with the utility proposal which is over here on the right-hand side of the chart. To do that I have to use another chart.

The CHAIRMAN. Wait; you are not going to take this away from us?

Mr. BROUSSARD. Only this part of it.

The CHAIRMAN. I want to be sure I can look back and forth but go ahead.

Mr. BROUSSARD. I will bring it back if you like.

This chart, exhibit B, compares the all-Federal modified system of June 1961 with the utilities' proposal.

EXHIBIT B.—*Revenue analysis of Colorado River storage project—86-year payout to year 2049*

[All values in millions of dollars]

	All-Federal modified (June 1961)	Utilities proposal	Difference
Investment:			
Power allocation less transmission.....	490	490	0
Federal transmission facilities:			
Investment by Bureau.....	187	53	(134)
Interest during construction.....	7	2	(5)
Total, power allocation.....	684	545	(139)
Irrigation allocation.....	90	90	0
Interest on power allocation.....	527	340	(187)
Total obligation to repay.....	1,301	975	(326)
Revenue from sale of power:			
From firm energy, at 6 mills per kilowatt-hour.....	2,655	2,747	92
From nonfirm energy, at 2.5 mills per kilowatt-hour.....	61	61	0
From excess capacity, at \$15 per kilowatt.....	16	16	0
Total operating revenue.....	2,732	2,824	92
Operating costs:			
Operation and maintenance.....	401	255	(146)
Replacements.....	109	75	(34)
Hoover energy replacements, at 5 mills per kilowatt-hour.....	2	2	0
Steam purchase, at 4 mills per kilowatt-hour.....	87	87	0
Utilities wheeling charges.....		584	584
Total operating costs.....	599	1,003	404
Available for project repayment.....	2,133	1,821	(312)
Repayment of power allocation.....	684	545	(139)
Interest payments.....	527	340	(187)
Repayment of irrigation allocation.....	90	90	0
Balance to basin fund.....	832	846	14
Requirement of basin fund.....	426	426	0
Surplus over basin fund requirement.....	406	420	14
Additional benefits:			
Federal income taxes.....		105	105
State and local taxes.....		184	184
Government interest saved on irrigation allocation.....		68	68

This column is the all-Federal system modified. This column is the utilities' proposal. It is the same proposal that we have always given the Bureau. The power allocations of \$490 million stay the same. If we move some of this \$187 million allocated to transmission up into here it would increase this power allocation to \$495 million or an increase of \$5 million, and this allocation will be decreased to \$182 million. Interest during construction would not change as a result of moving the \$5 million. The first figure that is different under the utilities' proposal is the reduction in the investment made by the Bureau of Reclamation under the utilities' proposal, the difference being \$134 million in round numbers, which is the amount that the utilities would save the Bureau or the taxpayer immediately. They would not have to spend that \$134 million for transmission facilities. Interest during construction, of course, is reduced because of reduced Federal investment.

Senator GOLDWATER. You are not suggesting that the \$53 million of the utilities' proposal would build the entire system?

Mr. BROUSSARD. That is all that we propose the Bureau spend for facilities that they would build under our proposal. There are still lines under the utility proposal that we suggest the Bureau of Reclamation should build, and the \$53 million would build those lines.

The CHAIRMAN. In other words, you are recommending that the Bureau build less lines and the small number of lines would cost only \$53 million as against the \$187 million otherwise?

Mr. BROUSSARD. That is right. Those would be the lines that interconnect the Curecanti and Glen Canyon plants. They were the lines that were not shown in orange on the utilities' proposal map. Also the line from Flaming Gorge into Colorado.

The total power allocation is reduced by \$139 million including reduction in interest during construction. The irrigation allocation remains the same, \$90 million. Interest on power allocation is reduced from \$527 million to \$340 million, a reduction of \$187 million. The total obligation to repay is reduced from \$1,130 million to \$975 million, or reduction of \$326 million.

Revenues from the sale of power is increased from \$2,655 million to \$2,747 million, or an increase of \$92 million. The utility system is a bigger system, it will distribute more power to the consumer because shorter length of line means less transmission loss, and it will produce this much more revenue, \$92 million, for the project program.

Nonfirm energy and the excess capacity charges remain the same as they were on the previous chart and are the same in both columns. The total operating revenue increase is the \$92 million.

The operating and maintenance costs are reduced because of a reduction in the amount of facilities that the Bureau has to operate and maintain; the reduction is from \$401 million to \$255 million, or total reduction of \$146 million.

Again because of less facilities, replacements costs are less by \$34 million. Replacement energy from Hoover is the same. Steampower purchased is the same. Wheeling charges enter here for the first time and those are wheeling charges as we have computed them under our proposal.

I fail to see in all of this discussion why we should argue about the wheeling charges because we are willing to contract for these amounts.

The CHAIRMAN. Now you have been very critical of the Bureau's proposals.

Now, was the Bureau's proposal not based on what you originally furnished them? Have you not modified your proposal, too?

Mr. BROUSSARD. No, sir; we have not. Not one iota.

The CHAIRMAN. Then we had some pretty bad testimony or at least I remember it badly, I will put it that way. How in the world did the Bureau——

Mr. BROUSSARD. Maybe we should stop and talk about wheeling offers.

The CHAIRMAN. Did you ever make a wheeling offer other than the present wheeling offer?

Is there any company which made a different wheeling offer originally than it has used in these figures?

Mr. FORMAN. Yes, sir. Arizona Public Service has made earlier offers based on earlier schedules of power deliveries. They have been modified as new data was available from the Bureau on the amounts of power. We have so amended the figures which Mr. Broussard is including here, modern quotations based on the present conditions.

Mr. BEARD. I want to comment here, Senator. At the time that the original figures were made up our company did not own the power systems at Rock Springs, Wyo. The Bureau put in an extra wheeling charge for the line from Rock Springs to Flaming Gorge. That system has now become part of our system and it is a matter of record which the Bureau accepts willingly, that the extra wheeling charge would be eliminated and that elimination is taken into account in this chart.

Mr. SCHREIBER. That was the \$14 million that came up.

The CHAIRMAN. Yes. But the \$584 million figure is quite different from the Bureau of Reclamation figure.

Mr. DOMINY. Yes; it is considerably lower than ours.

The CHAIRMAN. Where did you get your figures, Mr. Bennett? Was there ever a quotation that you thought you got?

Mr. BENNETT. Yes, indeed. We had letters from each of the utilities and we applied those figures as we understood them to our material and we arrived at \$625 million in round numbers as the wheeling charge.

The CHAIRMAN. That is where the big difference is.

Mr. BEARD. It is \$14 million from Flaming Gorge to Rock Springs, which would take care of \$14 million difference.

The CHAIRMAN. That reduces it to \$609 million as against \$584 million, which is still \$25 million apart.

Mr. BENNETT. \$14 million should come out of the \$625 million, reducing it to \$611 million.

Mr. SCHREIBER. We discussed this on July 7, the difference between the \$6 a year and the 1.25 mills per kilowatt-hour in New Mexico was the difference in the total period of around \$7 million.

The CHAIRMAN. I am trying to put all of it together in this hearing today.

Mr. FORMAN. The difference in the Arizona quotation, in the Bureau's figures and ours, is almost \$18 million.

Mr. BROUSSARD. I think Mr. Hunter could clear up ours. He has a copy of our wheeling letter to the Bureau of Reclamation.

The CHAIRMAN. We are not apparently out as far as Wyoming is concerned. In other words, between \$625 million and \$584 million is \$41 million.

Mr. BROUSSARD. This is a figure based on some new loads that I believe would change that a little. We still deliver 600,000 to Arizona under this proposal too but those have been redistributed in the modified system.

The CHAIRMAN. Will you let me try this my way and then you can have it your way. I take 584 from 625 and I get 41. Now Mr. Bennett says he is willing to take out \$14 million for the Wyoming situation. Everybody agrees that is proper. That leaves 27, I hope. Arizona says there is a difference of \$18 million. That leaves about \$9 million.

Mr. Schreiber, is some of that in New Mexico?

Mr. SCHREIBER. \$7 million.

The CHAIRMAN. So we come down to where the figures are pretty close together even though one quotation was given originally and one load factor was used originally there is not much difference in that figure.

Mr. SCHREIBER. And Utah has another 2 million that is overstated in its account.

The CHAIRMAN. That balances it out.

Mr. PATTERSON. And there is some in the Public Service of Colorado, not that there was anything wrong with the way that the Bureau interpreted our wheeling figures; Mr. Bennett stated correctly that I had written him a letter in which I said they had applied it right but what I did not know was that under the Federal yardstick system they were going to assume that there would be no charge for what we call inadvertent flows. Well, if we are not going to make a charge for inadvertent flows there, then we won't make any charge for inadvertent flows under our proposal. It is free under one, it is free in the other.

Under this new modified system the loads have been shifted to the extent that there will be very little inadvertent flow anyway. So that will wash out.

The CHAIRMAN. Except Mr. Bennett will not agree to the way the load factors are applied. Is that correct?

Mr. BENNETT. That is correct.

The CHAIRMAN. We at least agree on the rates that are to be charged by the utilities.

Mr. BROUSSARD. 584 million enters for the first time under the utilities proposal as a cost, under the operating cost of the Bureau of Reclamation, so that increases the cost there by \$584 million. Therefore, the total operating cost increase from \$599 million to \$1,003 million, or a net figure subtracting these decreases from the wheeling charge increase, a net increase of \$404 million.

Now let's look at the total available for the project repayment. The repayment of the power allocation changes from \$684 million to \$545 million, or a decrease of \$139 million. The interest payment decreases from \$527 million to \$340 million or decrease of \$187 million under the utilities proposal.

The CHAIRMAN. Are you using the same interest rate for both the Government and private utilities?

Mr. BROUSSARD. Yes.

The CHAIRMAN. Are you able to borrow at the same rate that the Government is?

Mr. BROUSSARD. These are not the figures that would be borrowed by us. These are the Bureau of Reclamation figures including our

wheeling offer. This is the Bureau's payout of the project, not ours. We do not assume payout of the project. This is the only time that the utilities enter into this.

The CHAIRMAN. Let me put it another way. The repayment of power allocation would be larger if you used a high interest rate than if you used a small interest rate. What interest rate did you use?

Mr. BRYNER. We used the same values as used in the Bureau's analysis, 2½-percent interest for Glen Canyon power transmission and the 2.632, I believe it is, for Curecanti. Exactly the same interest rates.

Mr. SCHREIBER. Senator, the wheeling charges, the companies when they build the lines they have under construction, our interest rates are in the \$584 million. We are getting our repayment in the \$584 million, our wheeling charges. Our cost of money is in the \$584 million. That is the only place where the utility interest rates would come in. The rest would be using the Bureau's figures.

The CHAIRMAN. Where it says interest payments if they had used 4 percent, the difference between the two when the investment is reduced would be very much greater at the high rate of interest than at the lower rate of interest. You have used a proper figure, I think, if you use 2½.

Mr. BROUSSARD. The identical figures are used on the Government facilities in either case.

The CHAIRMAN. That is the proper figure to use.

Mr. BROUSSARD. Of course, these interest payments include interest on the total power allocation as well as the power allocation to transmission. Therefore, these figures are still relatively high because the interest over 86 years would apply on the total power costs as well as transmission. In other words, the total interest in spite of the reduced transmission investment still is a relatively large figure, \$340 million. But the interest is decreased by \$187 million. The repayment of irrigation allocation without interest is the same, \$90 million. The balance to the basin fund under the all-Federal modified system, \$832 million. The balance to the basin fund under the utilities proposal is \$846 million, or an increase of \$14 million to total available in the basin fund for the repayment of irrigation projects under the utilities proposal. The requirement of the basin fund remains the same as it was on the other chart, \$426 million. The surplus available for other irrigation projects in the future is \$406 million under the all-Federal system, \$420 million under the utilities' proposal.

Now, this is without any comparison of the payments that we make in taxes. These figures at the bottom show the Federal income taxes that we pay out of our wheeling payments that we receive, \$105 million under the utility proposal—none under the all-Federal system. The State and local taxes, the taxes related to those facilities which we would build in connection with this project, those that would be dedicated to the use of the project in time, \$184 million, and the Government interest saved on irrigation allocation, \$68 million.

Now, of course, irrigation allocation does not require repayment of interest but the money dedicated to that use does cost the Government some money. So I think this is a figure that should be included.

The CHAIRMAN. How does that enter into the transmission line? How do you get irrigation interest in the transmission line?

Mr. BROUSSARD. It is interest we save the Government because it does not have to put Government money into facilities that are—

The CHAIRMAN. Why do you take it from irrigation?

Mr. BROUSSARD. A part of the power facilities are allocated to irrigation.

The CHAIRMAN. That is right.

Mr. BROUSSARD. Those facilities that are allocated to irrigation do not require interest. They do not have to pay interest. Now, those moneys that are appropriated from Government funds have to come from somewhere. We believe they must come from a source that requires an interest payment on a Government debt. During the period that that money is invested in irrigation facilities, even though those irrigation facilities are repaid without interest, that money costs money to the Government. This is the cost we have shown here.

The CHAIRMAN. Do you figure that on every irrigation project in the country?

Mr. BROUSSARD. Sir?

The CHAIRMAN. Do you folks make an analysis for all the irrigation projects and try to assess interest against irrigation features of it?

Mr. BROUSSARD. Only in an interest such as this when we save the Government the expenditure of that money because we reduce the payout period and save them that money under our proposition.

The CHAIRMAN. How do you save them again the \$68 million? You are going to pay out in the same period of years, are you not?

Mr. BROUSSARD. Earlier.

The CHAIRMAN. Earlier?

Mr. BROUSSARD. Yes, sir; at a more rapid rate.

The CHAIRMAN. The requirements for the basin fund is the same in both instances?

Mr. BROUSSARD. That will go to the next chart, which is the summary of years. This is at the end of the 86th year.

May I cover this chart now with the summary?

The CHAIRMAN. You tell me more about this \$68 million at a later date then.

Mr. BROUSSARD. Let me take down another chart.

EXHIBIT C.—Revenue analysis of Colorado River storage project—Summary of irrigation assistance required and available

[All values in millions of dollars]

Basin fund irrigation assistance	Modified all-Federal (June 1961)	Utilities proposal	Difference
By year 2015:			
Available.....	24	160	136
Required.....	23	23	0
Surplus.....	1	137	136
By year 2027:			
Available.....	333	423	90
Required.....	283	283	0
Surplus.....	50	140	90
By year 2049:			
Available.....	832	846	14
Required.....	426	426	0
Surplus.....	406	420	14

This is the summary of three payouts at the end of three different periods: The first period—and these are chosen by the Bureau of Reclamation as key periods throughout the payout period of 86 years—by the year 2015, and this is the choice made by the Bureau of Reclamation—

Mr. DOMINY. Let me say it is not exactly a choice made by us. It is a choice made by Congress in the date they authorized the construction of the Vernal unit and the requirements of the authorizing act fixes that as a key year. It was not just an arbitrary choice. It had already been fixed by development of the project.

Mr. BROUSSARD. I wanted to make the point that I did not choose it. It is a figure fixed. The payout requirement for the power allocation is 50 years, the payout for irrigation is a longer period beyond the development period. But by 2015 the amount of money available in the basin fund, and this compares to the \$832 million figure on the other chart, under the all-Federal modified system is \$24 million, the amount required is \$23 million. So there is a net balance or surplus in the basin fund of approximately a million dollars.

Under the utilities' proposal, there will be available in the basin fund by the year 2015, \$160 million. The amount required is \$23 million. So there is \$137 million surplus available in the basin fund towards repayment of irrigation. That would accelerate the repayment of those projects. Any time that the project repayment is accelerated within those years you reduce the amount of interest that you would have to pay on those projects if you reduce the whole project or if you pay out power allocation sooner, then the interest on the noninterest bearing allocation to irrigation is increased.

The CHAIRMAN. Then do I understand that if the utilities build the powerlines instead of the Federal Government, even though the Federal Government puts something into the transmission lines, that there will be put in the Federal Treasury for the payment of irrigation obligations only \$1 million in the all-Federal program but somehow \$137 million would get there from the utilities?

Mr. BROUSSARD. Yes, sir.

The CHAIRMAN. Is there a sales tax, property tax?

Mr. BROUSSARD. Increased revenue to the project. No taxes are involved in these figures here. Those were attached on the bottom yet because no one has agreed we should get credit for the taxes paid.

The CHAIRMAN. The utility will pay the Federal Government \$137 million more than the Government would get by itself.

Mr. BROUSSARD. We will save, not pay. We will save the Federal Government in this project during that period and contribute more to the basin fund. We would not contribute it, we would make it possible for the Bureau of Reclamation in its projects to contribute that much to the basin fund during that period by accepting our wheeling offer.

There is a good reason for this. There are many reasons. We will charge the Bureau of Reclamation by unit. A kilowatt wheeled is a kilowatt-hour paid for. The Bureau pays only for what we wheel. The first kilowatt-hour the Bureau line carries has to stand the total cost of the line. The Bureau line has to be fully loaded to get its cost down.

It has to be in service to do that job. During the earlier period we can wheel these small amounts of power for a lot less money than a fixed cost on the Bureau line.

The CHAIRMAN. Would it be that this amount of money represents money that the Federal Government does not have to invest?

Mr. BROUSSARD. It could be but I think not because this is contribution to the basin fund. If these facilities are constructed at the time that are contemplated by this schedule of construction and authorization of them, if it comes in at the right time or the time that is anticipated, I think not. It is one of the results of the Bureau having to spend less money, with associated saving in operating costs, interest, etc.

But the figure we saw on the other map of \$134 million is money that Congress either does not have to appropriate now or can spend for irrigation now.

By the way, that \$134 million would pay for 10 out of the 11 participating projects in total.

The CHAIRMAN. Let us take a look at this other chart.

Strangely, that is about the same sum that you have on the other side, is it not?

Mr. BROUSSARD. Yes, sir.

The CHAIRMAN. In other words, that is saving in capital?

Mr. BROUSSARD. I think it has to go for the operation and construction. Mr. Dominy can tell you where it would go. Towards irrigation, though.

The CHAIRMAN. It is money that the Federal Government would not have to invest if it did not build the lines.

Mr. BENNETT. No, that is not what he is saying. If I can help him out. I don't agree with his position but I will be glad to help him.

What he is saying here is that if we accepted the utility proposal and if we accepted all the figures which they have, then under thier proposal in the year 2015 there would be \$137 million in the basin fund as contrasted in his figure to only \$1 million in the basin fund in the 2015 year.

The CHAIRMAN. But the Government is paying back the facility.

Mr. BENNETT. The Government would have been paying back its own facilities and in turn paying rent on the lines and according to his figures would have accumulated this kind of surplus in the basin fund which is then available to assist in paying out the participating projects.

Mr. BROUSSARD. If that \$137 million were applied to the irrigation projects at that time, that is true. The Congress would not have to appropriate money to build these additional irrigation projects in the future.

By the year 2027 the difference between the surplus in the basin fund under the modified Federal system and the utility proposal is \$50 million compared to \$140 million or an increase of \$90 million under the utilities' proposal.

By the year 2049 which just repeats the figure that we had on the previous chart, the utilities would make possible production of \$420 million in the basin fund as compared to \$406 million under the Federal system, or increase of \$14 million over total 86-year period; \$420 million under our proposal as compared to \$406 million under the all-Federal system.

The CHAIRMAN. Under the all-Federal system the Federal Government would then own the transmission lines and here it will not. Is that the difference?

Mr. BROUSSARD. I would like to comment about that: Mr. Edison only discovered the business of electricity some 80 years ago and 86 years is a long time to anticipate that any electric facility will be used or useful. It is possible some parts of that system might still be standing. We would not argue the point but I don't think any utility would ever count on it. Certainly atomic energy ought to be developed by that time to a stage where it would make obsolete most of our methods that we use now.

The CHAIRMAN. Mr. Bennett, would you put your figures right beside your other figures?

Mr. BENNETT. I will be glad to, Senator.

The CHAIRMAN. Do we have this long chart in a form where we can follow it?

Mr. PERSON. We have the 86-year payout chart.

Mr. LUCKING. May I comment? I believe this points up very clearly the problem that the utilities have been having in that one criteria was established, and a yardstick was established to be used as a method of judging the utilities' offer, and of course, since that time a modified system has been developed. So, in effect, we have been answering in the past couple of months answers on the two systems. One, the system on which we have been judged and, two, the modified system which is the one that is now the latest proposed system to be built.

I think this points this up very clearly.

Mr. BENNETT. Senator, I would like to first place this situation in its right context. When Secretary Udall reviewed the findings in regard to all Federal lines versus utility proposals, he asked that we take a look at two things. One, whether we could and should better serve the Utah preference customers and whether we could and should make a stronger intertie between the upper Colorado system and the Western Missouri River Basin system.

We have been doing this. Now we testified to the House Appropriations Committee that out of our considerations we have reached certain firm conclusions on these lines which are what we would consider generally minor changes over the yardstick system. If you will compare the two maps on there you will see that the systems are still basically the same systems.

We have reached conclusions that the lines out of Flaming Gorge down to Vernal and to Rangely should be 138 kilovolts instead of 115.

This was provided for in the yardstick system. They were set up alternatively. We found that we saved money by going to the 138 kilovolts, so we have decided to do that. The line from Flaming Gorge to Pilot Butte in the yardstick system was so located on the assumption that construction of Yellowtail Dam was unknown. Subsequently, however, Congress appropriated funds for construction of Yellowtail, so it is a known fact.

As a result, the technicalities of power flow dictated that the tie to that portion of the Missouri Basin system ought to be at Sinclair rather than at Pilot Butte. So you save quite a bit of money by building your line from Craig to Sinclair rather than from Flaming Gorge to Pilot Butte.

As I say, because of the construction of Yellowtail being a known fact, we have instead of that line from Pilot Butte to Flaming Gorge,

one from Craig to Sinclair. It accomplishes the same thing that the other line would, but it is considerably less costly.

Senator GOLDWATER. That ties you into the Missouri Basin.

Mr. BENNETT. This is one of the decisions we have made.

Another decision which we made was that the line from Glen Canyon to Phoenix, rather than being two 230 lines, should be one 345 line, with a supplemental line of 230 capacity from Pinnacle Peak to Mesa for a good tie to our Parker Davis system. The point shown on that map which has not yet been firmed up but is under active consideration is the possible change of routing one of the lines on the northern part rather than going directly to Heber, from Flaming Gorge to Hyrum and then down to Springville. That is under consideration.

Another factor under consideration is the change in southern Utah. After discussing this matter with the Utah preference customers they proposed that rather than the line from Glen Canyon to Sigurd and the line from Glen Canyon to Fredonia that we build a line from Glen Canyon to Gunnison with the spurs that are shown over to St. George and up to Filmore.

In addition to that our studies indicate that a good strong tie with the western division of the MRB could take place if we built a 230 line from Midway to Limon in Colorado. That is still under consideration. That particular line, if we do finally decide to build it, has benefit to both the upper Colorado and to the Missouri Basin and its cost should be shared by the two projects. However, without looking at that aspect, we did price out this new system and our cost estimates show a cost, without interconnection at Four Corners, of roughly \$182 million as compared with \$176 million for the initial yardstick.

Now, as a part of our consideration, whether we should or should not adopt these other changes, we did make a quick analysis of what this does and here we disagree with what the private utilities have done. I will be glad to give you our figures which you can write down in the next column.

Senator GOLDWATER. Do you have those in mimeograph form?

Mr. BENNETT. No, I do not. We received this form only yesterday and have just completed our own studies.

The CHAIRMAN. Will you have available for us the first of the week a tabulation, putting all of these in? Would that be possible or one set of these fitted in?

Mr. BENNETT. Yes, we can do that. Would you like to take them down now?

The CHAIRMAN. Yes.

Senator GOLDWATER. Have these figures been used before that you are now giving us?

Mr. BENNETT. No, sir; only by ourselves.

Mr. PERSON. I might point out that they could have made this table. It is one of our contentions that there has been no payout schedule until today.

Mr. BENNETT. Of course, we agree with the power allocation. There is no question on that, that is essentially our figure. In other words, the 489,519,000. We do not agree with the 187,724,000. That takes us back to the point we talked about before on the \$4.5 million. That number in our judgment ought to be \$182.945 million.

Mr. BROUSSARD. Do you add anything to the 489 for substation facilities?

Mr. BENNETT. No, we do not.

Mr. BROUSSARD. Those are free?

The CHAIRMAN. He says those go into the dam. You and I know it comes out of the same Treasury.

Mr. BROUSSARD. \$489 is the dam?

Mr. BENNETT. If there is an increase here and we are not sure there is, you have a \$50 million project here at Glen Canyon, \$4.5 million is lost, if it is \$4.5 million, you have a contingency item in Glen Canyon Dam which probably is in the order of \$25 million already built into it. So even if there is an increase here which we question, it would be inappropriate in our judgment to add it in.

Senator GOLDWATER. Mr. Bennett, whether it is \$4.5 million or \$1 million, whatever it is, whether it comes out of the contingency fund it is money.

You just can't say we put this into bookkeeping.

Mr. DOMINY. He says our estimates for Glen Canyon Dam already contains a \$25 million contingency. We think if there is a change in this cost that it will balance out in the total job still within the estimate that we now have for the total facility.

The CHAIRMAN. To get back to your comment a moment ago, I admit I don't understand these things as well as you do, but what I have said was that the figure is \$490 million and he thinks the \$4.5 million should be added to that. I don't think it should not be taken into consideration.

Mr. BROUSSARD. I asked him if he didn't want it in the \$187 million, was it there, and if it is not there, we should add it to the \$489 million because \$489 million is the cost of the dam and is allocated to power and has to be repaid with interest.

Mr. BENNETT. If there is an increase it is already in the 489.

Senator CARROLL. May I ask a question at this point?

If I understood the testimony given before, switchyards are not a part of the transmission system. That is to say, the costs of it.

Mr. BENNETT. That is right.

Senator CARROLL. Now, in the construction of other dams, I am thinking now of the system, the precedent, the construction of other dams. Have the switchyards been a cost of the transmission system?

Mr. BENNETT. We have always carried in our accounts the switchyard as a cost of the dam.

The CHAIRMAN. But it is going to have to be paid for out of some pocket.

Mr. DOMINY. It will be paid for out of our revenues.

Mr. BENNETT. There will be a slight increase in interest during construction because you have increase in investment. But our figures give this as \$6,352,000, not the \$6,571,000. In other words, the total power allocation is 678,716,000. Irrigation allocation remains the same.

Now, the interest on the power allocation, \$486,983,000.

The CHAIRMAN. Off the record.

(Discussion off the record.)

Mr. BENNETT. Therefore, our total obligation to repay, as it is termed here, is \$1,256,177,000. Now, on our revenue from sale of power, \$2,671,662. We do not believe that that revenue figure changes

for this reason. The analysis made by private utilities, as I understood the explanation, was based on the assumption that under the modified system there would be greater losses. With this we disagree. We think that at a minimum the losses would be the same but we think more likely, the losses are less than they would be under the yardstick system.

Senator GOLDWATER. Why do you reason that?

Mr. BENNETT. The losses in the first place, in going from two 230 lines to one 345 line from Glen Canyon to Phoenix are substantially less.

Senator GOLDWATER. Would that have been the line most of your shortages would have occurred on?

Mr. BENNETT. No. I would hate to answer that that would be most of them. You get losses over the entire system but you know you get less losses with the one 345 line than you do with the two 230 lines.

If you go to this one 138 line, your losses would be little less than they would have been on the one 115-kilovolt line. Even though you have some increase in length of lines, you do have some higher voltages. As a minimum, we think they would offset. That is the way we have used them in our study.

The CHAIRMAN. Now, we are getting into what I regard is important. The Bureau of Reclamation thinks that the interest on power allocation is only 485 million against the figure that you folks have of 526 million. It thinks that the energy losses or energy receipts will be the same. These are the points of difference on which we need to have comments from both sides back and forth until we can come to our own conclusion.

Mr. BROUSSARD. In the first place, the interest we would have to compute on a year-by-year basis. But the other, the loss figure, we computed these as we did in conjunction with the Bureau's own people in the beginning on data processing equipment. They are board studies. They are not estimates. They are computed, the losses are. When you say few more lines, there are 560-odd miles more of lower voltage line in the modified system than there was in the other. As I say, we didn't estimate it. We computed it.

Senator GOLDWATER. What was in the original yardstick system in miling?

Mr. BENNETT. About 3,000 circuit miles, as I remember. Close to 3,000 miles.

Mr. BRYNER. In the original yardstick we have 2,375 miles of line. In the modified system, 2,957 miles of line, of which 1,239 was 230-kilovolt line.

The miles of line on the modified system is 2,957. These are my additions out of the Bureau numbers for a total increase of 582 miles.

Mr. BENNETT. We do not agree with that either. I don't know what is wrong with your arithmetic. We used our numbers but we can't get that figure.

The revenues, then, remain the same as they show under the yardstick system. I won't read them. Now, the operating costs, "Operation and maintenance," \$399,646,000.

Senator GOLDWATER. That is total?

Mr. BENNETT. Replacement, \$105,079,000. The Hoover energy replacement is the same, \$1,750,000. The steam purchase is the same, \$87,520,000. Or a total operating cost——

The CHAIRMAN. Excuse me one minute.

Mr. BENNETT. Total operating cost, \$594,013,000.

Senator GOLDWATER. Your figure is \$87,520,000.

Mr. BENNETT. Yes.

Senator GOLDWATER. Have you any plans of where that would be purchased or is this new construction?

Mr. BENNETT. We have not attempted to identify where it was purchased. There are many places it can be purchased.

Senator GOLDWATER. Would there be any plans in constructing your own steamplants?

Mr. BENNETT. No, sir. This is purchased from existing or to-be-built system by others.

Senator CARROLL. This relates to the same point. What is your figure on that?

Mr. BENNETT. Which is that?

The CHAIRMAN. \$87,520,000.

Senator CARROLL. On the steam purchased?

Mr. BENNETT. Yes.

Senator CARROLL. Is that based on your modified plan?

Mr. BENNETT. This is the same regardless of the transmission system. This is a purchase of steam energy figured on an average annual—this happens to be a total basis in order, in years of low runoff, to permit us to sell energy equal to that produced in the average year of runoff.

Senator CARROLL. Perhaps I am confused. I am looking at the analysis given by the private utilities.

Mr. BENNETT. This is the same figure.

Mr. DOMINY. The third page, Senator Carroll.

Senator CARROLL. I have it. Thank you.

Mr. BENNETT. Did you get our total operating cost, \$594,013,000?

Senator CARROLL. Yes, I have it.

Mr. BENNETT. Now available for project repayment, \$2,155,325,000.

Senator GOLDWATER. \$2 billion?

Mr. BENNETT. Yes.

Senator GOLDWATER. I thought you said \$2 million.

Mr. BENNETT. Well, I am not reading the three zeros at the end.

The next number is \$678,716,000. The next number, \$486,983,000. The next number is the same, \$90,478,000. The next number, balance to basin fund \$899,148,000. Requirements of the basin fund remain the same. Surplus, \$472,997,000.

Now, those figures which I have read are numbers we would have in the column in the table which says modified. We, of course, do not agree with all of the aspects of the figures in the column under the utilities proposal.

Senator GOLDWATER. Mr. Bennett, had you seen the utilities' proposal figures before today?

Mr. BENNETT. I assumed these are the figures coming out of their June 1 report. I have not had an opportunity to compare them.

Mr. BAUGH. The June 1 report went to the yardstick system. These were prepared on the modified system.

Mr. BROUSSARD. There would be some new figures.

The CHAIRMAN. I don't believe these were in the June 1 report before us.

Mr. BROUSSARD. There are certain changes that are associated with the modified transmission.

The CHAIRMAN. You have to modify them and they have had to modify them as conditions changed. They changed their requirements.

Mr. BROUSSARD. There are different loads.

The CHAIRMAN. I think the utilities have been fine in giving us this information. We are glad to get your comments. It tells us where the fight is centered. The points that need to be cleared up. Now, I think we ought to go to some other points and then say that we will be glad to have comments of the utilities on these figures. I don't want to keep all the Senators here forever.

Does this cover the two principal grounds? Have we covered in any degree the areas of conflict this afternoon or are there many other things that ought to be gone into?

Mr. SCHREIBER. I believe there is only one other point. This is the interpretation of wheeling offers. You will remember our meeting of July 7. Mr. Baugh and myself went over the New Mexico wheeling offer.

The CHAIRMAN. We did not attempt to get over the wheeling offers.

Mr. SCHREIBER. That is right.

The CHAIRMAN. Do the utilities have any comments to make with reference to wheeling offers?

Mr. FORMAN. Yes, Senator Anderson.

The CHAIRMAN. You may proceed, Mr. Forman.

Mr. FORMAN. I am speaking now for Arizona Public—the major difference, the one that is really important, is the fact that we have quoted to the Bureau alternate rates. We have quoted two rates, one based on mills per kilowatt-hour, the other based on dollars per kilowatt-year.

Now, we quote briefly from our letter of quotations on that. This is the rate (a) per kilowatt-hour for all energy delivered, 1.177 mills. This rate is applicable to the total annual energy shown on exhibit 1 as a minimum. That was an attachment including the schedule of deliveries. Energy wheeled above the minimum annual quantity will be at no charge.

(b) Alternate, \$6.74 per kilowatt-year for the yearly peak load as per exhibit 2. Again, according to the Bureau's load.

The language, I think, speaks for itself. The trouble is that as we understand it the Bureau has interpreted the minimum dollars computed under the first alternate as being applicable whether they choose it or the second. We think the language is clear.

I would also point out that at a later date we have pointed that out explicitly to them.

The second point with relation to our wheeling charges is that it has been stated that we applied our quantities to too small an amount of energy handled. On that point there is room for disagreement due to the fact that this is a loop system under combined plan in the north end. Opinions can differ on actually how the power will flow. That will depend on how you operate the plants and exactly where the loads are at a given time. There is room for difference of opinion. We have not seen the Bureau computation based on the kilowatt-year

alternate. We assume they have not made one due to their interpretation of the minimum but we do have figures available if the kilowatt-year rate is used.

On that point, we differ from them by about seven-tenths of 1 percent. I would conclude that if they computed the dollars per kilowatt-year alternately there would be little difference of opinion and that contributes to 17.7 million difference in our computation.

The CHAIRMAN. Now, Mr. Bennett, you commented on that previously. I don't know whether you want to make any additional comment now but I would think after you saw the prepared statement by Arizona Public Service that you might wish to put a footnote or comment below it in the record. If you do we will permit you to do that.

Mr. BENNETT. I will do that. I believe Mr. Forman has correctly expressed our position and our interpretation of the offer which under the language that was in this we could not read any other way and which even after we discussed it with them they did not point out this difference to us.

Mr. FORMAN. I think I will have to disagree on that, Mr. Bennett. We wrote you at least on one occasion on March 21 of this year.

Mr. BENNETT. I am talking about at the time we prepared our report.

The CHAIRMAN. There are days that passed and clarifications are coming along and we hope that all these points get clarified so that we at least know what the proposals are.

Now I think the Bureau does understand your proposal as you have now outlined it.

Mr. HUNTER. In the discussion on June 7, there was some criticism leveled against Utah Power & Light Co. because the Bureau maintained we had modified our wheeling offer. The statement was made that we had told the Bureau to use \$7.75 per kilowatt-year where in reality we had turned around and used \$7.739. Now we have a copy, which I have presented here, of our actual wheeling offer to the Secretary of the Interior, dated April 8, 1960.

On page 2, the third paragraph is what we actually offered. You will note that there is an offer to wheel for 1.55 mills per kilowatt-hour based on an annual load factor of 57 percent.

The CHAIRMAN. Does that come out to the figure that you had used or the figure that they used?

Mr. HUNTER. That comes out to the figure we used. The Bureau asked us if it was not true that that was a kilowatt demand rate. We said it was. It is. Simple computation, multiplying the 1.5 times the number of hours in a year (8,760) times the 57 percent load factor gives you \$7.739 per kilowatt-year, and that is the figure that we used.

So I don't see how there could be any question on that point.

Mr. BENNETT. I make only this comment, Senator. I was not at the particular meeting that Mr. Cummings held with the representatives of Utah Power & Light but he tells me at that meeting it was agreed between the Bureau and the company that the Bureau should use this \$7.75, or whatever the number is, I think it is \$7.75, that we should use that.

The CHAIRMAN. Where did that meeting take place?

Mr. CUMMINGS. Salt Lake City.

The CHAIRMAN. Did you keep minutes of it?

Mr. CUMMINGS. We have minutes of the meeting.

The CHAIRMAN. Do you dispute that?

Mr. HUNTER. Yes, sir.

The CHAIRMAN. That will be simple. We can go back to the minutes of the meeting.

Mr. HUNTER. The magnitude we are talking about is 1 cent per kilowatt-year, and if it were 50,000 kilowatts, it would amount to \$500 a year. I think it is a minor point.

The CHAIRMAN. It is a very major point. They say you made a proposal in a meeting in Salt Lake and you say you did not.

Mr. HUNTER. Our whole offer is contained in our letter of April 8, 1960.

The CHAIRMAN. Did you have any other discussions?

Mr. HUNTER. We had discussions as to whether or not this was a demand-type rate. We said it was, that was our intention.

Mr. BROUSSARD. There was never offered any other rate at any other time. It is simple arithmetic to convert that, like pints to quarts.

The CHAIRMAN. I have dealt with the Bureau a long time. I do not think they purposely tried to distort what people say to them in a conference.

Mr. HUNTER. I think it is a matter of rounding figures. I think it is an honest misunderstanding. I would not say that anyone is deliberately misrepresenting the facts. I think it is a misunderstanding because of rounding.

Mr. CUMMINGS. Can I add something, Mr. Chairman.

The CHAIRMAN. Yes.

Mr. CUMMINGS. In Salt Lake City in the Bureau of Reclamation office we had a discussion with Mr. Hunter of Utah Power & Light Co. in which he explained how they developed their wheeling charge.

As a matter of fact, as we understood at that time, they developed the wheeling charge from a kilowatt-year charge that was developed in the process of their computations. If my memory serves me correctly, this kilowatt-year charge was slightly above \$7.75. In the computation going back and forth from kilowatt-year to kilowatt-hours, it is a matter of rounding one way or the other.

Mr. HUNTER. I think he is essentially right in his recollection but actually it was based on annual dollars. Annual dollars worked back to a kilowatt basis.

The CHAIRMAN. In any event, you regard this proposal of April 8, 1960, as the only proposal you have made and the one you now desire to have regarded as having made?

Mr. HUNTER. That is correct.

Mr. BENNETT. Senator, I would like to make this comment and I think now is perhaps an appropriate time. These offers on the kilowatt basis frankly are disturbing to us for this reason, as I explained in the July 7 meeting. Our understanding of the kilowatt offer both on the part of Arizona Public Service and on the part of New Mexico Public Service, whether they are on an annual basis or monthly basis, particularly on a monthly basis, would be applicable to the maximum 15-minute demand during that month. This means to us that any time you reach a peak in that month, whether you ever hit is again for the remaining part of the year or 6 months or whatever the term

may be, that rate is applicable regardless of what is delivered. We think this actually is a pretty shaky way of approaching this thing because you can't really in our judgment put a peak into it. So we have in the two cases, rightly or wrongly, used the kilowatt-hour figures regardless of what the multiplication of a kilowatt charge times a kilowatt figure in a table might have shown. I simply want to make that comment because to use it is very significant in terms of what any wheeling proposal might ultimately cost us.

Now, actually one more comment on this. Go back to the point we made—I was going to say this morning, I guess it was earlier this afternoon—the wheeling rate that we are charging Arizona Public Service Co. to wheel power up to Flagstaff and then they take it up to Page, Ariz., is on a kilowatt-year basis, 1 mill per kilowatt-hour but limited to \$2 per kilowatt.

Now, this kind of a wheeling proposal is something I think you can get your teeth into, maybe you can't but at least it sets your ceiling if nothing else.

I only make this comment to point out we shudder in our shoes over these capacity charge wheeling rates in terms of complications.

The CHAIRMAN. May I clear up one point here?

In the hearing we had awhile back we got to a discussion of Utah Power & Light Co. which stated that in making its computations it has used a less rate than did the Bureau in computing their wheeling costs. Also they did not include the loads of the St. George and the surrounding area. This can only mean the company is not willing to wheel power to the preference customers of southwestern Utah.

Do you have any comment on that?

Mr. HUNTER. Yes, sir. I think that statement is not correct. I think what actually is involved is this, and I think I can perhaps illustrate it better by referring to the map. You will notice on the original yardstick system the Bureau built a short stub of line from the Glen Canyon plant out to a small town in Arizona—Fredonia. That town will be served directly off the Glen Canyon bus. There is the Garkane REA that has built down to the vicinity of the Glen Canyon plant, and they will take delivery at Glen Canyon so that power will not be wheeled. That is the power we have deducted from the wheeling calculations and power that goes to St. George has not been included in our deduction. It is our intention that we wheel it (St. George power), and that is the way our calculations have been made.

Now, there is another point raised at the meeting last week and that was with respect to the overcharge that we think the Bureau made in the deliveries of this local power.

As we read the charts and tables, it appears to us that they had included in their analysis of our wheeling offer that power that goes to the local loads that actually won't be wheeled. But in order to back up our understanding of what has happened, I would refer to table 6 on page 26 of the Bureau's October analysis to the footnote 3, which says that the load shown at Glen Canyon and Fredonia are assumed to be delivered to Sigurd under the utilities proposal. So if there is any difference in that, we should be advised by the Bureau because that is the way we considered it.

Mr. BENNETT. This point can be cleared up very quickly, we did not include those loads at Fredonia.

Mr. HUNTER. Then we will modify the footnote to keep it straight.

Mr. FORMAN. Mr. Bennett has discussed his attitude with respect to a kilowatt-year type of rate. That is quite important. The one we think is most advantages is based on that.

Incidentally, in passing, Mr. Bennett, I am not quite sure about that \$2. I believe as it comes out from APA to us it is \$2 flat.

Mr. BENNETT. What APA may have done to you I don't know. Our cost to them is a mill per kilowatt-hour with a \$2 ceiling.

Mr. FORMAN. I would point out in passing that with the demand charge you sell your own power that is not unusual but most important in the case of our proposal is this: We have stated that the charge is applicable to the scheduled amount of energy in the August 1960 schedules and that to the extent of any excess capacity in these lines you may have additional wheeling at no more cost which I think should minimize the fear that was expressed about the inflexibility.

Mr. BENNETT. So far as the kilowatt-hour rate is concerned, that is correct. As I remember, your proposal had 1.17 mills, wasn't it, rate applicable to the energy in table 1 and anything above that was for free as far as energy was concerned, but I didn't think that applied on the kilowatt rate.

Mr. FORMAN. That is also true as to the kilowatt rate. It was done at a later date after conferences in Phoenix in which we realized that you were in a box of quoting on schedules.

Those were perhaps the best estimates that could be made but we all recognized that they are estimates. So we had a problem pertaining to flexibility. We wrote you to that effect on a later date.

The CHAIRMAN. What about Colorado?

Mr. PATTERSON. I believe, Senator, in my comment a while ago I pointed out that apparently the only difference between the Bureau's analysis and ours was with respect to the inadvertent flow and as I previously said, we think that if inadvertent flows are going to be free under one analysis they should be free under the other analysis to put them both on the same basis.

There is one point that I would like to mention, and that is this: Under the Secretary's marketing criteria it was stated that the Bureau would take the power from certain major load centers and it was up to the preference customers to get it from those load centers to their own locations. In a meeting in my office on September 13, 1960, with representatives of the Bureau, when we were talking about our wheeling rates, I pointed out that the 1 mill which we offered in the case of a good many preference customers to whom we are presently wheeling the Thompson power—in other words, they already interconnected with our system, that this same 1 mill would not only get the project power to the load centers, but it would get it to the substations of some of these preference customers.

The Bureau said that in view of the fact that the criteria only called for the getting of power to the load centers that we could not receive any credit or recognition for the fact that for the same mill we could move it directly to the preference customers at load centers.

So that is a value which is in our offer but yet there is no way of giving it any credit.

The CHAIRMAN. You referred again to this 1 mill rate.

Now, let me start down through the States and ask you how firm these offers are. Are they more than initial offers subject to change

from time to time as State regulatory commissions may decree during the 86-year period?

Mr. PERSON. I might comment to the extent I can as far as I am concerned.

The CHAIRMAN. That is as to Colorado?

Mr. PERSON. Yes. We consider our offer firm at the present time and perhaps the best illustration I can give is to the firmness of these offers if the fact that we have just completed a 10-year wheeling contract earlier part of this year with the Bureau in connection with the Colorado-Big Thompson project.

Our contract has been renewed for an additional 15 years this year and as a matter of fact, in that contract the zones which determine the wheeling rate, were expanded to the extent that it resulted in a reduction in the wheeling charges to the preference customers for whom we are wheeling at this time.

I mention that simply by way of illustration. This covers a 25-year span.

The CHAIRMAN. I assume these charges we have put up on this table are based on 86 years and would vary if there was some change in that wheeling rate, would they not?

Mr. PERSON. I would say there could be some variables. I think there could always be variables in an 86-year plan of any kind whether the Government does it or not, the depreciation is more or less down the line or what it might be.

The CHAIRMAN. Would you then say these offers are as firm as you can make them?

Mr. PERSON. As firm as reasonably can be made.

Mr. LUCKING. We would anticipate that we would contract for wheeling for as long a time as the Bureau would contract with the preference customers.

The CHAIRMAN. Can the Bureau contract for 86 years?

Mr. BENNETT. No, we have authority in law only to contract for 50 years for sale of power.

The CHAIRMAN. At least you could say it for 50 years.

Mr. LUCKING. In the State of Arizona, we do regard this as a firm rate. We have an opinion from our counsel that this particular quotation made to a sovereign body of the Federal Government would not be subject to the jurisdiction of local regulatory bodies.

Mr. PERSON. We concur in this, too.

As a matter of fact, we have been through rate proceedings within the last 2 years and they in no way affected the wheeling rates which we prescribed in our contract with the Bureau.

The CHAIRMAN. How about Utah?

Mr. BROUSSARD. In Utah ours is a firm rate. We would not say that the public utilities commission does not have broad powers to examine our operating costs and so forth, but it has been our experience, and I am sure this would be correct, that they would not upset a contract of this kind for any reasonable period of time.

As Mr. Lucking pointed out, we would contract with the Bureau for any reasonable length of time and I would like to make one more comment, that those elements in our costs that would be subject to any change would be exactly those elements that would be subject to change in a Federal system. They would be labor, et cetera. So I would not anticipate the difference would be anything at all between the comparisons.

Mr. BEARD. In Wyoming ours is a firm rate, a firm quotation. I would also like to mention that it is exactly the same rate and comes entirely within the provisions of a wheeling contract that we now have with the Bureau of Reclamation which was renewed a year ago for a 10-year period.

Now just to follow what we are talking about, Wyoming, the only adjustment that needs to be made in the Bureau's analysis relating to this is the same \$14 million that we talked of a short time ago where the Bureau had doubled up actually on the wheeling of Flaming Gorge power into Wyoming which they now recognize.

The CHAIRMAN. They had no alternative at the time they put it in the original calculations I saw. Now they have taken it out.

Mr. BEARD. It has not been taken out in the figures that have yet been presented unless it was in these this afternoon.

Mr. BENNETT. Except in our basic report, we did make the comment that the wheeling rates were overstated by \$14 million because of this change.

Mr. PERSON. As a matter of fact, I think this was pointed out by your consultant rather than the Bureau, is that right?

Mr. BENNETT. They did point it out. We had just about simultaneously received a letter from P.P. & L. advising us of the situation.

Mr. SCHREIBER. Our wheeling rate to the Bureau is firm. We would not speak for the Commission but we feel that this would be a reasonable length of time, our wheeling rate to the Bureau would be firm.

As a matter of side issue, we now pay the Bureau 1 mill for wheeling over the Rio Grande system from Albuquerque to Denver. Our rate to the Bureau is 1.067 mills.

Mr. PERSON. I did not want to leave a mistaken impression as to our Commission. The Commission of course under regulation would have a perfect right to look at this but perhaps not alter the contract. In those circumstances I think opinion would indicate that they might allocate investment and allocate wheeling revenues and move those to one side and remove those from any general changes in the rate regulations not interfering with them but neither requiring the balance of your customers to underwrite any deficiency if this was in this.

Mr. BENNETT. That is an interesting point.

Mr. Lucking raised the point first with his legal opinion from his attorney. What happens if your costs, operation and maintenance presumably, I suppose mostly operation costs, were to go up rather quickly? Let us say we had a contract for 20 years and within that 20-year period your costs of operation on this particular line went up rather sharply, which they could do with strikes or wage rates increase, then what happens? Who then pays the increase in cost?

Mr. FORMAN. The things of that nature would be covered in detail in negotiations looking toward a definitive contract. I would think that the equitable thing to do would be to cover by escalation, if this contract runs too long, the direct operation and maintenance items. That has been done in many contracts.

Mr. BENNETT. Your offer is not firm at that level. It is firm plus some kind of an escalation in the contract to take care of these contingencies.

Mr. FORMAN. I would think that would be equitable. I would point out, though, that such items contribute to about 6 or 7 percent of the wheeling cost and they are the identical items on which the Bureau would have increased costs.

The CHAIRMAN. That is the question I was trying to raise. If this goes up, making the wheeling cost go up, wouldn't operation and maintenance go up in the operation of the Bureau of Reclamation?

Mr. FORMAN. Yes, sir.

The CHAIRMAN. Now where were we with the comments that might be made on the wheeling charges?

Are there others who want to comment on wheeling?

Mr. SCHREIBER. I believe you have covered them, Senator.

Senator CARROLL. I would like to ask a question on wheeling.

Let us assume that the Federal system is adopted. What would be the annual transmission cost during the power payout?

Mr. BENNETT. I just happen to have that.

Senator CARROLL. Then I would like to know what the annual transmission costs are after the payout, based on the power payout which is 44 years and after that it would be 42 years. Either under the Federal system or under, I won't call it the modified system, but the evidence that we have had here today.

Mr. BENNETT. The total costs of the all-Federal system is \$176 million. The annual cost over the 44-year payout period of the power costs—this includes amortization and operation and maintenance and replacement, is \$9,332,000. After payout the annual costs are \$2,798,000. In other words, you have gotten rid of your amortization components of the cost.

Senator CARROLL. That was based upon your yardstick plan of May 1960?

Now, under your modified plan would that annual transmission cost go up?

Mr. BENNETT. It would be somewhat higher because you are amortizing \$182 million rather than \$176 million. I don't want to speak too quickly on this. I do not have the figure. If you held the 44 years constant your annual cost would be a little higher but I think we went 2 more years in payout, did we not, or something a little longer? It would be very close to the same figure.

Senator CARROLL. What about the plan which has been presented here today, modified?

Mr. BENNETT. We could compute it.

Senator CARROLL. I also like to have the annual revenue available to participating projects after the power payouts under this modified plan which you have testified to today and the other evidence presented here.

I tell you what I have in mind, Mr. Chairman. This is very important to Colorado.

First of all, I would like to know about the cost of wheeling under the modified plan that you presented here today and under the plans which have been presented by the private utilities for this period of time and after the payout. Then I want to assure its relationship to our participating projects in Colorado, because Colorado's share of this revenue is about 46 percent. Then I would like to have some statement along the line here what this means if you can set it up,

the amount of money available to the participating projects over the project life of 86 years.

In other words, I would like this broken down. When is this money available? Give us some general idea of whether we are just talking about power or its relationship to the participation projects.

This is very important to the gentlemen here from the Public Service Co. of Colorado. They have most of our water down there in Glen Canyon. Sherman would not agree to this, of course, but we do get 46 percent of that revenue.

If I understand it, during this interim period we may begin to use participating projects money.

The CHAIRMAN. Mr. Bennett, would you supply this information for the record?

Mr. BENNETT. That is correct, Senator Carroll. We will be very glad to put those figures in the record, Mr. Chairman. I think in all fairness I want to state that this is one of the points of disagreement between ourselves and the private utilities as to what are these figures that you are asking for.

(Mr. Bennett of the Bureau of Reclamation subsequently submitted a document for the record. See p. 95.)

They have their figures on their chart. Their figure as to the amount they need. They had another chart there that had the years 2015, 2027, and 2049.

Senator CARROLL. Does this go specifically into the question I asked about the money available for participating projects?

Mr. BENNETT. Yes.

Senator CARROLL. Its availability?

Mr. BENNETT. Yes. Here I say we disagree.

Senator CARROLL. I wish you would set that up so that we can distinguish. I think it would be very helpful to us.

Mr. SCHREIBER. Is it possible for the Bureau to estimate our pay-out schedule like we have estimated theirs but using the modified system?

The CHAIRMAN. Had you not better do that yourself? You can argue about how they use the figures. You let me handle the other fellow's figures and I can make a good case for myself.

Are there additional questions?

Senator CARROLL. I want to say I think this has been most helpful to meet today. This is what we used to try to do in the antimonopoly hearings when we had in the Steelworkers and United States Steel and we tried to get them around the table, but we could never really get them around the table in these important discussions. I think if we had had them around the table we might have averted a strike. We met separately. I think that this has been very helpful. We had some very constructive testimony, very intelligent, and we will try to resolve the differences and I hope we can do this as intelligently as they have presented it on both sides.

The CHAIRMAN. We will keep this record open for a while.

I don't want to keep it open forever because you will probably have some questions arise in the Senate when the House Appropriations look over this. We already have had quite a little discussion of it. We will keep it open at least a week if you want to take a look at what you have said today. You may want to make comments back and forth.

I do not want this to generate just an exchange of memorandums; but I do think where there is a vital question that you ought to be able to state your position and give the Bureau of Reclamation a chance to state its position on it so that anyone picking it up can find what the differences are and how the different viewpoints are developed and why they are developed.

Mr. SCHREIBER. I just wanted to say, speaking for the five utilities, we are very grateful to you for arranging this meeting. We appreciate these gentlemen attending.

The CHAIRMAN. Thank you all for being here.

(Whereupon, at 5:40 p.m., the committee was recessed subject to call.)

APPENDIX

(The following exhibits and communications were submitted subsequent to the first and second days' proceedings. They were ordered printed by the chairman.)

PUBLIC SERVICE CO. OF NEW MEXICO,
July 11, 1961.

HON. CLINTON P. ANDERSON,
Senate Office Building, Washington, D.C.

MY DEAR SENATOR ANDERSON: I'm sure you realize how much we appreciated the opportunity to discuss with you the problem of the transmission line controversy of the Colorado River storage project.

We also are grateful to you for having Mr. N. B. Bennett present as this was the first time we have had the opportunity to sit down with representatives of the Department of Interior, together with Members of Congress, to review, compare, and try to reconcile the differences in the Bureau of Reclamation figures and our figures.

After reviewing the transcript, there are many points we would like to discuss further. But, too, we would like to document at this time: On page 26 of the transcript Mr. Bennett states: "So we took our computations to each one of the private utilities. We sat down with them, and we went over our computations, how we applied their offer, and in each case none of them said 'you have misapplied our offer.'"

Representatives of the Bureau did meet with us on September 14, 1960. As a result of this discussion we submitted a revised wheeling offer dated September 24, 1960—and it was this offer that was incorrectly applied by the Bureau. Copy is attached as exhibit I.

During November of 1960 information was received that we would not be allowed to review or discuss the Bureau's analysis; and a telegram (copy attached as exhibit II) was sent on December 2, 1960, to former Secretary Seaton, requesting that all five utilities be given an opportunity to review and comment on the Bureau's analysis, including wheeling rates. We did not receive an answer to our telegram. The Department of the Interior ignored our request until January 19, 1961, when former Secretary Seaton advised us that he had approved the all-Federal system. Copy of Secretary Seaton's letter is attached as exhibit III.

On pages 31 and 53 of the transcript Mr. Bennett first stated that our wheeling costs would amount to an average annual cost of \$867,000. After discussion of the 50 cents per kilowatt per month rate compared to the 1.25 mills per kilowatt-hour rate for wheeling, the average annual cost of wheeling over our system was reduced to \$767,000 by Mr. Bennett. This was compared to the average annual cost of \$320,000 to \$325,000 for the all-Federal system, a difference of \$447,000 per year in favor of the all-Federal system.

Attached as exhibit IV is a tabulation entitled "Comparison of Four Corners-Albuquerque Power Transmission Cost for Colorado River Storage Project," which is based on our estimates of the preference customers' loads, and takes into consideration the existing capability and announced additions to preference customers' generating facilities (Plains Electric Generation & Transmission Cooperative). This tabulation shows that for the 50-year period, 1964-2013 the Bureau would have fixed charges of \$29,100,000 compared to wheeling costs of \$20,136,000, a difference of \$8,964,000 in favor of wheeling over our facilities without considering any taxes or interest costs to the Federal Government. If taxes are added, the difference in favor of wheeling over our facilities increases to \$16,898,000 over the period 1964-2013.

Using the Bureau's revised load estimates of June 10, 1961, exhibit V shows that for the first 50 years, to the year 2013, the present worth of the Bureau's fixed costs for the Four Corners-Albuquerque line would amount to \$15,337,000; while the present worth of the wheeling charge offered by our company would

amount to \$15,260,000, or a difference of \$77,000 in favor of our wheeling offer, without including taxes. If taxes are included, the advantage favoring our wheeling offer would increase to \$6,084,000 by the end of 1913.

For the 86-year period (the year 2049), using the Bureau's revised load forecasts, the present worth of the Bureau's fixed costs is \$16,264,000 while the wheeling charges would amount to \$19,013,000 or a difference of \$2,749,000 in favor of the Federal line. However, if taxes are included, the results at 2049 would be reversed and the advantages would favor our company's wheeling offer by \$4,735,000.

We are enclosing for your information a tabulation showing our analysis of how the Bureau arrived at the \$320,000 to \$325,000 average annual fixed charges for the Federal line mentioned in the testimony. We believe this figure is incorrect as the Bureau fails to include the effect of interest charges. This tabulation also illustrates how we arrived at the 5.39 percent which we used in computing the Bureau's fixed costs for the Four Corners-Albuquerque transmission line.

Senator, Bill and I are available at any time, to you or any member of your staff to answer any question or provide supporting data as to our position in this matter. Again, many, many thanks, Senator, for your interest and consideration.

Sincerely,

G. A. SCHREIBER, *Executive Vice President.*

EXHIBIT I

PUBLIC SERVICE CO. OF NEW MEXICO,
Albuquerque, N. Mex., September 24, 1960.

U. S. BUREAU OF RECLAMATION,
Salt Lake City, Utah.

(Attention: Mr. F. M. Clinton, regional director.)

GENTLEMEN: During a meeting in Albuquerque on September 14, 1960, Bureau representatives requested that Public Service Co. of New Mexico restate its proposal of April 4, 1960, to wheel power from the Colorado River storage project on the basis of power and energy delivered to project customers at the Albuquerque point of delivery. The purpose of this modification would be to permit comparison of the wheeling offer with the Bureau's yardstick transmission system without the necessity of evaluating transmission losses at this time. The resulting comparison would be predicated upon the assumption that transmission losses for both systems would be approximately equal.

Accordingly, our offer to wheel electric power and energy for the Colorado River storage project may be considered as outlined in our letter of April 4, 1960, to the Secretary of the Interior, or if you prefer we would be willing to transmit power and energy for the Bureau under either of the following proposals:

1. A capacity charge of 50 cents per kilowatt per month based upon the maximum demand delivered by the Bureau at the Albuquerque point of delivery at 115,000 volts during the preceding 12-month period; transmission losses associated with the power deliveries to be furnished by the Bureau; or
2. A wheeling charge of 1.25 mills per kilowatt-hour delivered at Albuquerque at 115,000 volts; transmission losses associated with the power deliveries to be furnished by the Bureau.

I trust that this information will be sufficient to permit you to proceed with your necessary studies, however should you desire additional information, or if we can be of further assistance to you in this matter please advise.

Yours very truly,

D. W. REEVES, *President.*

EXHIBIT II

PUBLIC SERVICE CO. OF NEW MEXICO,
Albuquerque, N. Mex., December 2, 1960.

HON. FRED J. SEATON,
*Secretary of the Interior,
Department of the Interior, Washington, D.C.*

We have been advised by the Bureau of Reclamation that information relative to economic comparisons of wheeling offers by the utility companies compared to Federal yardstick system, and the Bureau's recommendations to the Department, would not be available to the utilities for review and comments prior to the time that this information is forwarded to your office for consideration. For this reason we respectfully request an opportunity to review and comment upon the Bureau's studies prior to final decision by the Department of the Interior as to the electrical transmission system arrangement.

M. C. HEFFELMAN,
*Senior Vice President,
Public Service Co. of New Mexico.*

EXHIBIT III

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., January 19, 1961.

MR. M. C. HEFFELMAN,
*Senior Vice President, Public Service Co., of New Mexico,
Albuquerque, N. Mex.*

DEAR MR. HEFFELMAN: Because of your expressed interest in the transmission system for the Colorado River project, I regret to inform you that I have today approved the Bureau of Reclamation's recommendation for an all-Federal back-bone-grid system.

The Bureau, I am informed, extensively consulted with the various utilities involved, as to the intent and application of their offers in connection with its evaluation of the offers. Subsequent to the Bureau's evaluation of the offers, the Bureau had the benefit of review by two independent consultants of its findings with respect to the utility proposal.

Because of these facts, the delay that would be entailed in further review and comment, as you requested, is not possible under the circumstances.

Sincerely yours,

FRED A. SEATON,
Secretary of the Interior.

EXHIBIT No. IV

Public Service Co. of New Mexico—Comparison of Four Corners-Albuquerque power transmission costs for Colorado River storage project
 [Estimated preference customer requirements less existing resources and announced additions]

Year	Estimated delivery of project power to Albuquerque		Bureau of Reclamation annual fixed charges, \$10,800,000 at 3.39 percent		Wheeling charge under public service company proposal		Direct savings to Bureau of Reclamation	Federal income tax chargeable to wheeling	State and local ad valorem taxes chargeable to wheeling	Total savings available by wheeling under public service company proposal	
	Mega-watts	Millions of kilowatt-hours	Millions of dollars	Millions of kilowatt-hours	Millions of dollars	Millions of kilowatt-hours				Annual	Cumulative
1964							582	0	0	582	582
1965							582	0	0	582	1,164
1966							582	0	0	582	1,746
1967							582	0	0	582	2,328
1968							582	0	0	582	2,910
1969	7	38		15.3	42	1.1	540	9	7	556	3,466
1970	15	81		7.2	90	1.1	492	19	16	527	3,993
1971	23	124		4.7	138	1.1	444	30	25	499	4,492
1972	30	162		3.6	180	1.1	402	39	32	473	4,965
1973	33	177		3.3	198	1.1	384	43	35	462	5,427
1974	36	192		3.0	216	1.1	366	46	39	451	5,878
1975	44	240		2.4	270	1.1	312	58	48	418	6,296
1976	54	289		2.0	324	1.1	258	70	58	386	6,682
1977	64	342		1.7	384	1.1	198	83	68	349	7,031
1978	74	395		1.5	444	1.1	138	95	79	312	7,343
1979	85	454		1.3	510	1.1	72	110	91	273	7,616
2013	85	454		1.3	510	1.1	72	110	91	273	16,898
50-year total			1 29,100	1 20,136			8,964				

Without considering any taxes or interest saving to Federal Government.

NOTES—(1) The Bureau report is based upon an estimated investment for the Four Corners-Albuquerque transmission line of \$12,131,000, including interest during construction, and a pro rata share of service facilities. Public service company's estimate of U.S. Bureau of Reclamation investment of \$10,800,000 used in above tabulation represents a reduction in line length from 183 to 160 miles, the actual transmission line distance which can be eliminated by use of public service company's transmission facilities. Both estimates are based upon January 1960 prices and should be escalated at least 10 percent to represent installed prices. Public service company's wheeling offer is firm and therefore escalation would result in even greater savings under public service company's wheeling offer than indicated in the above tabulation.

(2) Public service company's transmission facilities will be completed by the 2d quarter of 1963 and will reflect additional Federal income tax and State and local property tax when first devoted to service. For purposes of this comparison, Federal income taxes chargeable to wheeling are those directly associated with wheeling revenue, and State

and local taxes are based upon actual line capacity reserved for wheeling to "preference customers."

(3) Above costs are not directly comparable since wheeling over public service company's facilities will involve 2 or more transmission lines as opposed to a single line proposed by U.S. Bureau of Reclamation. For equivalent service, the Bureau should compare wheeling charges against 2 Federal lines to Albuquerque which would represent firm transmission services.

(4) Extension of the above analysis for a period of 86 years (until the year 2049) is considered extremely unrealistic, particularly on the Bureau's assumption that annual costs of the Federal line for the last 36 years would be less than 30 percent of annual costs for the initial 50-year period. However, even on this unrealistic basis, the present worth of direct savings to the Bureau and the project for wheeling over public service company's facilities from Four Corners to Albuquerque would amount to \$4,591,000 and the present worth of total savings including Federal and State taxes would amount to \$9,186,000 for the 86-year period.

EXHIBIT V

Public Service Co. of New Mexico—Comparison of Four Corners-Albuquerque power transmission costs for Colorado River storage project

[Based upon Bureau of Reclamation load estimates of June 10, 1961]

Year	Bureau of Reclamation load estimates		Bureau of Reclamation annual fixed charges, \$10,800,000 at 5.39 percent	Present worth of annual charges at 2 7/8 percent	Wheeling charges	Present worth of wheeling charges at 2 7/8 percent	Direct savings due to wheeling		Federal, State, and local taxes chargeable to wheeling	Present worth, total saving
	Megawatts	Kilowatt-hours $\times 10^6$					Annual	Present worth		
1964	13	73	Millions \$582	Millions \$566	Millions \$78	Millions \$76	Millions \$504	Millions \$490	Millions \$31	Millions \$520
1965	19	108		1,116	114	184	468	932	45	1,005
1966	37	203		1,651	222	388	360	1,263	87	1,416
1967	44	247		2,171	264	624	318	1,547	104	1,793
1968	53	299		2,676	318	900	264	1,776	125	2,130
1969	62	346		3,167	372	1,214	210	1,953	146	2,430
1970	72	409		3,644	432	1,568	150	2,076	170	2,692
1971	82	455		4,108	480	1,951	102	2,157	189	2,924
1972	96	542		4,559	575	2,397	6	2,162	227	3,105
1973	110	622		4,997	660	2,894	(78)	2,103	260	3,242
1974	116	650		5,423	696	3,404	(114)	2,020	274	3,360
1975	116	650		5,837	696	3,899	(114)	1,939	274	3,474
2013	116	650	582	15,337	696	15,260	(114)	77	274	6,084

NOTE.—Extension of the above analysis for a period of 86 years (until the year 2049) is considered extremely unrealistic, particularly as the Bureau's assumption that annual costs of the Federal line for the last 36 years would be less than 30 percent of annual costs for the initial 50-year period. However, on this basis, if wheeling costs are assumed to be constant for the last 86 years, the present worth of annual charges for the Federal line would be \$16,264,000 and the present worth of wheeling charges for the same period would be \$19,013,000. If taxes are considered, the present worth of total savings due to wheeling would amount to \$4,735,000.

*Public Service Co. of New Mexico—Estimated cost to U.S. Bureau of Reclamation
of Four Corners-Albuquerque transmission line*

Bureau of Reclamation investment in line and Albuquerque sub-stations.....	\$10, 200, 000
Interest during construction at 3.5 percent.....	357, 000
Service facilities.....	306, 000
Total.....	10, 863, 000
Use.....	10, 800, 000
Bureau of Reclamation amortization rate, 50 years at 2½ percent.....	3. 80
Operation and maintenance per yardstick system.....do.....	1. 29
Reserve for replacement per yardstick system.....do.....	. 30
Total fixed costs.....do.....	5. 39
Present worth of Bureau of Reclamation payments:	
1st 50 years, $10,800 \times 5.39 \text{ percent} \times 26.352$	\$15, 337, 000
Next 36 years, $10,800 \times 1.59 \text{ percent} \times 5.392$	927, 000
Present worth of 86-year payment.....	16, 264, 000
Annual cost for 1st 50 years, $5.39 \text{ percent} \times \$10,800,000$	582, 000
Annual cost for next 36 years, $1.59 \text{ percent} \times \$10,800,000$	172, 000
86-year arithmetical average:	
50 $\times$ \$582,000.....	29, 100, 000
36 $\times$ \$172,000.....	6, 200, 000
Total, 86 years.....	35, 300, 000
Arithmetical average (per year).....	¹ 410, 000

¹ If amortized in 44 years instead of 50 years and if operation, maintenance, and replacement expenses are reduced from 1.59 to 1.12 percent, arithmetical average would be \$325,000.

PUBLIC SERVICE CO. OF NEW MEXICO,
August 1, 1961.

HON. CLINTON P. ANDERSON,
Senate Office Building, Washington, D.C.

DEAR SENATOR ANDERSON: In order that you and other interested Members of the Senate may have full information on the Colorado River storage project, enclosed are detailed answers to the questions raised during the hearing you kindly arranged on July 21, 1961.

In the event that you choose to print the testimony taken at the hearing, we would appreciate having this information included in the printed record.

Sincerely,

G. A. SCHREIBER, *Executive Vice President.*

BACKGROUND

To date the Bureau has proposed four different versions of an all-Federal transmission system for the Colorado River storage project as shown on exhibit 1. The third version is the "yardstick" system which accompanied the Secretary of Interior's release of May 18, 1960, and was the basis of the Bureau's analysis dated October 1960. The fourth version is the "modified" system of June 1961.

The Bureau's analysis of the utilities' wheeling proposals dated October 1960 and the utilities' analysis dated June 1, 1961, is based on the yardstick all-Federal transmission system and load estimates.

DESCRIPTION OF "MODIFIED" SYSTEM

The basic changes in the modified system as compared with the yardstick system are:

(1) The transmission system has been expanded to include more points of delivery for project customers. The yardstick system had 15 delivery points and the modified system has 24 delivery points, an increase of 9 delivery points. (See exhibit 2.)

(2) The estimates of project customers' loads and load distribution had been changed. Under the modified system it is assumed that project customers of the upper division can absorb their share of project power 5 years earlier. The yardstick assumed this to occur in year 1979 and the modified now assumes the year 1974. (See exhibit 3.)

(3) The marketing of power in Arizona in the early years has also been altered. Whereas under the yardstick system, a total of 600 megawatts was to be delivered to Arizona, the modified system requires a delivery of only 435 megawatts. This means a reduction in firm power available for sale of approximately 165 megawatts. The firm energy formerly associated with this 165 megawatts is now assumed to be delivered to Arizona at off peak hours.

(4) Comparison of transmission mileage and costs of the yardstick and modified systems are shown in detail on exhibit 4 and are summarized in the following table:

	Yardstick	Modified	Increase
Line-miles.....	2,375	2,957	582
Circuit-miles.....	3,094	3,729	635
Investment.....	\$176,245,000	\$182,945,000	\$6,700,000

It is significant to note that an increase of 21 percent in circuit-miles of line has resulted in only 4 percent increase in investment. If the cost of the increased circuit-miles of line were to be determined by applying the unit cost per circuit-mile of yardstick line costs (see exhibit 4), an increase in transmission costs of \$32,172,000 would result.

(5) The total number of and cost of substations from the Bureau's data on exhibits 5 and 6 are as follows:

	Yardstick	Modified	Increase
Number of substations.....	17	23	6
Number of series capacitor stations.....	1	6	5
Cost of total substations.....	\$52,130,000	\$50,860,000	(\$1,270,000)

Although the number of substations has increased by 6, their total cost has decreased.

BASIS OF REPAYMENT SCHEDULE (PAYOUT) FOR MODIFIED SYSTEM

As the transmission investment in the modified system has now increased and the new load schedules require the installation of such facilities at an earlier date, it was necessary to prepare a new payout to show the effect of these items on the magnitude of irrigation assistance available. A detailed payout for the 86-year period of study selected by the Bureau is shown on exhibit 7. The basic considerations which now differ from the yardstick analysis are as follows:

1. Revenue: Detailed calculations involving electronic computers show that the transmission system losses on the modified system will be at least 9,000 kilowatts higher than with the yardstick system. This increase in transmission losses reduces the amount of project power available for sale and therefore reduces the revenue available for project repayment. Firm generation (col. 3 of payout) and revenue from firm energy sales (col. 10) have been reduced by 0.64 percent to reflect this loss of revenue.

Under the new modified load schedule there will be a loss of firm power sales due to the sale of power at offpeak hours to Arizona which would otherwise be

available for sale at firm rates. This assumption by the Bureau will reduce project revenue by at least \$7,654,000 (exhibit 9). However, the Bureau informed us on June 10, 1961, that they have assumed that this condition will not reduce revenue. Although the utilities believe that this will be a very real loss in revenue, such loss in revenue has not been reflected in its payout.

2. Transmission investment: The Bureau's detailed investment in the modified system was furnished the utilities on June 10, 1961, and is shown on exhibit 6. The Bureau did not furnish data on increased costs at Glen Canyon under the modified system but the utilities have included such increased costs (exhibit 10) in their payout. The total transmission investment, included in the payout is as follows:

Transmission lines and substations-----	\$182, 945, 000
Increased cost at Glen Canyon-----	4, 780, 000
Subtotal-----	187, 725, 000
Interest during construction-----	6, 570, 000
Total transmission investment-----	194, 295, 000

On June 8, 1961, the utilities requested that the Bureau also furnish a schedule of investment "inservice at end of year." The Bureau stated that such data was not available and the utilities therefore proceeded to prepare their own "inservice" schedule of investment predicated on schedule of loads furnished by the Bureau.

3. Operation, maintenance, and replacement costs: On June 9, 1961, the Bureau informed the utilities that the annual operation, maintenance, and replacement costs associated with the transmission investment furnished would be \$2,900,000 per year. This represents an annual cost of 1.59 percent of transmission investment, the same percent determined with respect to the yardstick system. The increase of such annual costs therefore also bears the 1.59 percent relation to the increased investment. In addition to the \$2,900,000 per year also has been added \$76,000 which is 1.59 percent of the \$4,780,000 increase in investment at Glen Canyon.

BASIS OF REPAYMENT SCHEDULE (PAYOUT) FOR UTILITIES' PROPOSAL

A detailed payout for the 86-year period of study selected by the Bureau is shown on exhibit 8 and is based on the following:

1. Revenue: The savings in losses and resulting increase in project revenue under the utilities' proposal as described in its June 1, 1961, analysis remains the same.

Although the utilities' proposal delivers the full 600,000 kilowatts to Arizona in accordance with the Secretary's marketing criteria and thereby increases the amount of firm energy sales and revenue, but this change in revenue was not reflected in the payout. Once again, the Federal system with a single 345-kilovolt line cannot deliver 600,000 kilowatts to Arizona and must be restricted to 435,000 kilowatts. If the Bureau were to deliver this same quantity of power to Arizona, a second 345-kilowatt circuit would be required.

2. Federal transmission investment: The transmission system proposed by the utilities readily accommodates the redistribution of power and there would therefore be no change in the Bureau's transmission investment as shown in the utilities' June 1, 1961, analysis.

3. Operation, maintenance, and replacement costs: As the transmission facilities to be constructed by the Bureau, under the utilities' proposal, do not change; the operation, maintenance, and replacement costs of these facilities do not change and remain the same as in the utilities' June 1, 1961, analysis.

4. Wheeling charges: The redistribution of project power and its accelerated use by the upper division customers necessitates a new computation of wheeling charges. This computation is shown on exhibit 11. It should be noted, however, that wheeling costs are still included for delivering 600,000 kilowatts to Arizona in accordance with the Secretary of the Interior's marketing criteria of May 18, 1960, in contrast with the modified system's ability to deliver only 435,000 kilowatts.

ADDITIONAL COSTS OF MODIFIED SYSTEM

To fulfill a request of Congress the utilities requested data from the Bureau concerning the modified system on June 8, 1961. The Bureau furnished what data they had available at the time and the utilities were not in a position to completely evaluate all the aspects of the modifications. Subsequent to that time, the utilities have been able to more fully analyze the Bureau's data and have found the following items which have not been reflected in the payout calculations:

1. The substitution of a single 345-kilovolt line from Glen Canyon to Phoenix in lieu of the two 230-kilovolt lines results in an unstable system. This was thoroughly discussed with the Bureau in October of 1959 concerning the same single 345-kilovolt line which they had proposed in their second version of a Federal system as shown on exhibit 1. Further, a single 345-kilovolt line will not market project power in accordance with the Secretary's marketing criteria of May 18, 1960, in that a single 345-kilovolt line cannot deliver 600 megawatts and must be restricted to 435 megawatts.

Therefore, if the modified system is to be an operable system and also meet the Secretary's marketing criteria, its investment should be increased by \$18,625,000 for a second 345-kilovolt line from Glen Canyon to Phoenix.

2. The unit cost per circuit-mile of transmission line in the modified system is substantially lower than that used in the yardstick system. If the unit cost per circuit-mile of the modified system were to be made compatible with the unit costs of the yardstick system, the increase in investment for identified lines would be \$32,172,000. The increase in the Bureau's estimate for identified transmission lines is only \$16,995,000 or \$15,177,000 less. (See exhibit 4 for detail development.)

3. The delivery of only 435 megawatts of power to Arizona and the sale of firm energy at offpeak hours for only 3 mills per kilowatt-hour reduces project revenue by \$7,654,000 as shown in exhibit 9.

Based on the above, the cost of the "modified" Federal transmission system should be—

Bureau's estimate.....	\$182, 945, 000
Increased substation costs at Glen Canyon.....	4, 780, 000
Add 2d 345-kilovolt line to Phoenix (item 1 above).....	18, 625, 000
Increase due to reconciled unit costs (item 2 above).....	15, 177, 000
Total investment in modified system.....	221, 527, 000

EFFECT OF INCREASED TRANSMISSION COSTS

The \$18,625,000 increase for a second 345-kilovolt line to Phoenix together with the \$15,177,000 increase to reconcile the Bureau's unit costs, total \$33,802,000. This increase in the modified system cost has not been included in the payouts. Although a payout has not been prepared to determine its effect on irrigation assistance, it is estimated that this increase in investment would reduce irrigation assistance by approximately \$170 million under the modified all-Federal system.

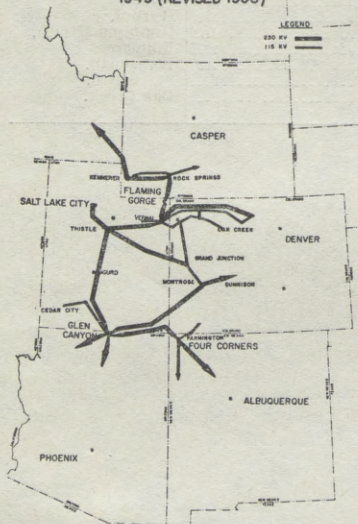
OTHER BENEFITS OF UTILITIES' PROPOSAL

The new load schedules have altered the total wheeling charges and have therefore altered the magnitude of Federal income taxes the utilities would pay out of wheeling revenue received. The new total of Federal income taxes to be paid over the 86-year period is \$105,100,000. (See exhibit 12.)

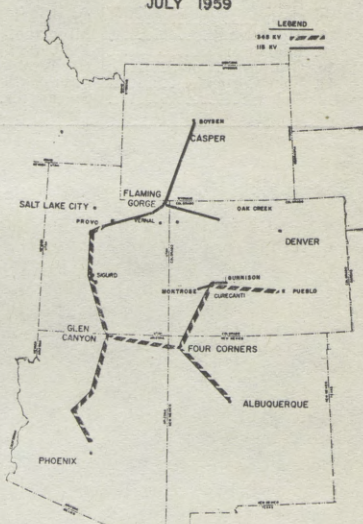
Storage project costs allocated to irrigation (\$90,478,000) by law, does not have to be repaid with interest; however, there is a real interest cost to the Federal Treasury which should not be ignored. As the utilities' proposals would repay these authorized participating projects 6 years earlier than an all-Federal system, the actual interest cost to the Treasury would be reduced by \$68,386,000 (exhibit 13).

EXHIBIT 1
TRANSMISSION SYSTEM PROPOSALS
OF THE BUREAU OF RECLAMATION
COLORADO RIVER STORAGE PROJECT

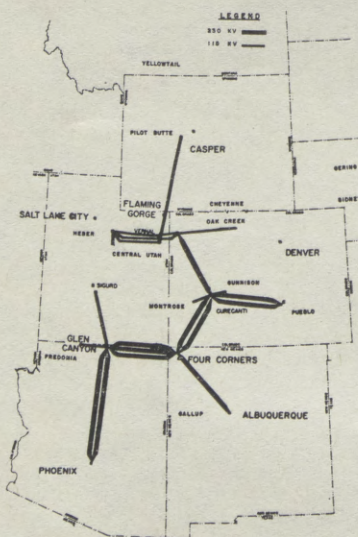
FIRST VERSION
1949 (REVISED 1950)



SECOND VERSION
JULY 1959



THIRD VERSION
MAY 1960



FOURTH VERSION
JUNE 1961

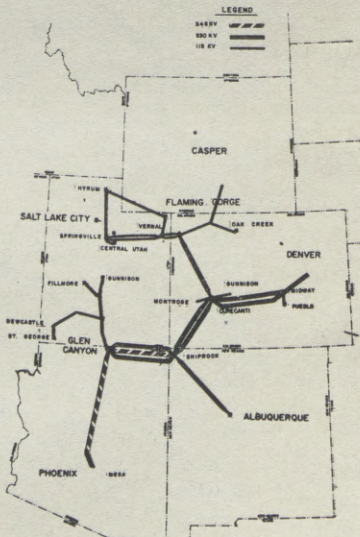


EXHIBIT 2.—*Delivery points for project power*

Yardstick system (May 1960)	Modified system (June 1961)	Yardstick system (May 1960)	Modified system (June 1961)
1. Flaming Gorge.....	Flaming Gorge.	13. Pilot Butte.....	Sinclair.
2. Sigurd.....	Sigurd.	14. Phoenix.....	Pinnacle Peak.
3. Vernal.....	Vernal.	15. Fredonia.....	Mesa.
4. Albuquerque.....	Albuquerque.	16.	Limon.
5. Glen Canyon.....	Glen Canyon.	17.	Midway.
6. Rangely.....	Rangely.	18.	Salida.
7. Craig.....	Craig.	19.	Hyrum.
8. Montrose.....	Montrose.	20.	Gunnison (Utah).
9. Pueblo.....	Pueblo.	21.	Fillmore.
10. Gunnison (Colo.).....	Gunnison (Colo.).	22.	Paragonah.
11. Four Corners.....	Shiprock.	23.	St. George.
12. Heber.....	Springville.	24.	Oak Creek.

EXHIBIT 3

ESTIMATED DISTRIBUTION OF COLORADO RIVER STORAGE PROJECT POWER AND ENERGY - MODIFIED SYSTEM WITHOUT INTERCONNECTION TO FOUR CORNERS STEAMPLANT

NORTHERN DIVISION PREFERENCE CUSTOMERS AT TENTATIVELY SELECTED LOAD CENTERS																							So. Div. Pref. Customers	Peaking Capacity	Total CRSP	
Calendar Year	Item	Hyrum	Springville	Gunnison Utah	Fillmore	Sigurd	Paragonah	St. George	Vernal	Ship-Rock	Albuquerque	Rangely	Craig	Oak Creek	Montrose	Gunnison (Colo.)	Salida	Pueblo	Midway	Limon	Flaming Gorge	Sinclair	Total	Pinnacle Peak	Avail. from Glen Canyon	Capability at Loads
1963	Peak MW-Aug.	1.5	10.5	0	0	0	0	0	3.1	0	0	1.7	2.3	2.0	2.5	1.6	2.2	2.5	0	0	1.1	0	31.0	0	0	31.0
	-Dec.	4.6	31.6	0	0	0	0	0	9.7	0	0	5.0	6.8	6.0	7.7	4.7	6.5	7.5	0	0	3.2	0	93.3	0	0	93.3
	Million KWH	7.5	51.8	0	0	0	0	0	15.9	0	0	8.2	11.2	9.8	12.6	7.7	10.7	12.4	0	0	5.2	0	153.0	0	-	153.0
1964	Peak MW-Aug.	8.2	21.1	15.6	4.1	0	2.1	10.4	9.6	18.7	12.1	4.6	7.1	4.9	0	5.6	18.8	35.0	0	0	3.0	5.1	186.0	114.0	0	300.0
	-Dec.	12.7	35.5	17.3	4.1	0	2.3	10.4	10.7	27.2	13.2	6.4	8.5	5.9	0	5.2	7.0	39.8	0	0	3.3	22.1	231.6	169.4	0	401.0
	Million KWH	53.7	149.2	41.8	9.0	0	6.2	26.7	60.8	84.1	42.8	33.4	48.6	34.8	0	28.2	75.6	114.5	0	0	13.6	56.9	879.9	616.1	-	1496.0
1965	Peak MW-Aug.	17.6	24.5	16.6	4.7	0	2.3	11.5	10.6	30.2	19.5	6.0	7.9	5.5	0	6.2	19.3	37.0	0	0	3.2	17.2	239.8	363.7	0	603.5
	-Dec.	23.4	39.9	18.3	4.4	0	2.4	10.9	11.7	38.4	18.1	8.4	9.5	6.6	0	5.8	7.5	41.4	0	5.6	3.5	30.6	286.4	222.6	196.0	705.0
	Million KWH	98.8	167.5	75.7	17.7	0	11.2	50.5	66.3	155.9	108.2	43.7	56.2	40.1	0	31.2	77.5	177.9	0	24.7	14.4	134.8	1352.3	2721.7	-	4074.0
1966	Peak MW-Aug.	20.3	32.4	17.5	5.2	.2	2.4	11.9	11.3	47.6	36.8	7.2	8.9	6.2	0	6.8	20.0	38.9	0	.6	4.4	0	278.6	435.2	247.2	961.0
	-Dec.	26.8	49.0	19.3	4.6	.0	2.5	11.5	12.5	56.0	35.5	9.8	10.6	7.4	.7	6.4	8.0	42.8	0	15.4	4.7	0	323.5	266.4	371.1	961.0
	Million KWH	112.7	204.8	79.5	19.4	.9	11.6	52.1	70.6	226.3	203.3	50.8	62.5	44.9	3.5	34.0	80.0	182.7	0	67.6	19.3	0	1526.5	2703.5	-	4230.0
1967	Peak MW-Aug.	23.0	36.6	18.6	5.8	.7	2.6	12.4	12.1	60.1	44.5	8.5	10.0	6.9	0	7.4	20.5	41.0	0	9.9	4.7	4.7	330.0	435.2	195.8	961.0
	-Dec.	30.4	54.1	20.6	4.8	.5	2.7	12.0	13.4	66.5	43.2	11.3	11.9	8.3	3.2	7.0	8.6	45.4	4.8	26.1	4.9	14.4	394.1	266.4	300.5	961.0
	Million KWH	128.5	227.3	85.3	21.8	3.3	12.6	54.6	76.1	270.1	247.2	58.9	70.5	50.5	16.2	37.2	82.4	194.8	23.8	115.1	20.2	63.5	1859.9	2800.1	-	4660.0
1968	Peak MW-Aug.	25.7	41.3	19.6	6.4	1.2	2.7	12.9	12.9	71.9	53.1	9.8	11.2	7.7	1.8	8.0	21.1	43.7	0	24.1	4.9	9.3	389.3	435.2	136.5	961.0
	-Dec.	35.0	59.6	21.7	5.1	.9	2.8	12.6	14.4	78.0	51.3	13.0	13.4	9.2	5.7	7.7	9.2	48.0	14.9	44.6	5.1	17.0	469.2	266.4	225.4	961.0
	Million KWH	150.0	256.0	91.1	24.3	5.8	13.3	57.6	82.9	318.8	298.8	69.9	82.6	56.7	29.3	40.7	85.9	208.7	74.8	204.9	21.3	78.0	2251.4	2492.6	-	4744.0
1969	Peak MW-Aug.	29.3	48.5	20.6	9.9	1.6	2.9	13.3	13.9	83.4	61.6	11.4	12.6	8.6	4.2	8.7	22.2	46.4	0	44.2	5.2	13.0	461.5	435.2	64.3	961.0
	-Dec.	39.6	67.9	23.0	5.7	1.4	3.1	13.1	15.4	88.1	59.8	14.8	15.3	10.3	8.3	8.4	9.9	50.5	27.7	65.3	5.4	19.0	552.0	266.4	178.6	997.0
	Million KWH	169.3	290.9	96.4	37.5	7.6	14.7	59.2	88.4	359.2	345.7	79.3	94.1	63.4	42.5	44.2	90.1	219.0	138.6	299.2	22.6	87.0	2648.9	2143.1	-	4792.0
1970	Peak MW-Aug.	33.3	54.6	21.8	10.5	2.1	3.1	13.7	14.8	112.6	69.3	12.9	14.1	9.7	6.7	9.5	23.1	48.9	6.2	62.1	5.4	15.9	550.3	435.2	65.5	1051.0
	-Dec.	44.6	74.4	24.1	6.2	1.9	3.2	13.7	16.5	119.5	72.1	16.7	16.8	11.6	10.9	9.2	10.6	53.8	30.5	87.9	5.7	21.2	651.1	266.4	133.5	1051.0
	Million KWH	192.6	322.0	102.0	40.2	10.1	15.3	61.6	95.7	492.0	408.6	90.4	104.3	72.0	56.3	48.7	94.7	235.6	154.2	406.6	24.0	98.1	3125.0	2168.0	-	5293.0
1971	Peak MW-Aug.	38.1	59.2	22.8	10.9	2.7	3.3	14.3	15.9	124.6	78.0	14.8	15.8	10.8	9.5	10.5	24.2	51.5	17.2	85.8	5.6	18.6	634.1	416.9	0	1051.0
	-Dec.	50.6	81.1	25.5	6.5	2.5	3.5	14.2	17.6	132.2	80.3	18.7	18.9	12.9	13.6	10.3	11.5	56.2	55.4	116.4	6.0	23.5	757.4	255.1	38.5	1051.0
	Million KWH	218.5	351.0	107.9	41.7	13.0	16.7	64.3	102.1	544.3	455.1	101.2	117.4	80.1	70.3	53.8	99.2	246.2	280.0	538.4	25.3	108.7	3635.2	1833.8	-	5469.0
1972	Peak MW-Aug.	43.3	65.6	23.9	11.4	3.3	3.5	14.6	17.0	137.3	87.3	16.6	17.7	12.1	11.9	11.5	25.3	55.1	33.3	109.6	5.8	21.7	727.8	323.2	0	1051.0
	-Dec.	57.0	88.8	26.7	6.9	3.0	3.7	14.8	18.9	145.8	95.6	21.0	21.1	14.5	16.6	11.3	12.5	60.4	72.5	140.7	6.1	25.9	863.8	187.2	0	1051.0
	Million KWH	246.2	384.3	113.0	43.6	15.8	17.7	66.5	109.6	600.3	541.8	113.7	131.0	90.1	85.8	58.9	103.7	264.6	366.5	650.8	25.7	120.0	4149.6	1366.4	-	5516.0
1973	Peak MW-Aug.	48.8	80.3	25.2	11.8	3.9	3.7	15.0	18.2	150.8	97.2	18.7	19.8	13.6	15.1	12.6	26.9	59.8	47.4	135.4	5.9	23.8	833.9	276.1	0	1110.0
	-Dec.	63.6	105.3	28.1	7.2	3.6	3.9	15.3	20.2	159.8	109.7	23.4	23.6	16.3	19.6	12.3	13.5	66.3	90.5	172.0	6.2	28.2	988.6	121.4	0	1110.0
	Million KWH	274.7	455.7	118.9	45.2	18.7	18.7	68.8	117.1	657.9	621.7	126.7	146.6	101.2	101.3	64.6	110.3	290.4	457.4	795.5	26.1	130.4	4747.9	982.1	-	5730.0
1974	Peak MW-Aug.	51.2	83.4	25.8	12.0	4.2	3.8	15.2	18.7	157.8	103.1	19.7	20.8	14.3	16.3	13.2	27.3	60.8	53.9	144.3	6.0	26.2	878.0	232.0	0	1110.0
	-Dec.	66.4	108.4	28.6	7.4	3.8	4.0	15.5	20.7	166.2	115.6	24.4	24.5	17.0	20.7	12.8	13.8	67.2	97.7	179.0	6.3	30.0	1030.0	80.0	0	1110.0
	Million KWH	284.7	465.0	120.0	45.6	20.0	19.0	69.1	119.1	677.9	650.0	131.1	151.1	104.9	106.3	67.2	111.2	292.0	490.6	821.5	26.3	137.4	4910.0	1213.0	-	6123.0
1975-1979	Peak MW-Aug.	51.2	83.4	25.8	12.0	4.2	3.8	15.2	18.7	157.8	103.1	19.7	20.8	14.3	16.3	13.2	27.3	60.8	53.9	144.3	6.0	26.2	878.0	232.0	0	1110.0
	-Dec.	66.4	108.4	28.6	7.4	3.8	4.0	15.5	20.7	166.2	115.6	24.4	24.5	17.0	20.7	12.8	13.8	67.2	97.7	179.0	6.3	30.0	1030.0	80.0	0	1110.0
	Million KWH	284.7	465.0	120.0	45.6	20.0	19.0	69.1	119.1	677.9	650.0	131.1	151.1	104.9	106.3	67.2	111.2	292.0	490.6	821.5	26.3	137.4	4910.0	1125.0	-	6035.0

June 10, 1961
Revised June 19, 1961

NOTES
1. Estimates of KWH distribution are based on application of customers' estimated load factors to peak MW shown in table except non-firm energy is included in estimates of energy to Southern Division.
2. Peak July deliveries to Pinnacle Peak are 1.034 times the August peaks shown on table

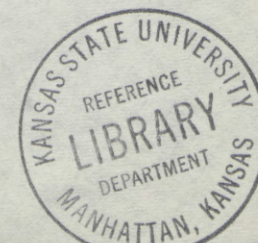


EXHIBIT 4
Comparison of "yardstick" and "modified" all-Federal systems

	Miles of transmission			Average cost per circuit-mile			Expected increase in transmission costs (thousands)
	Yardstick system (May 1960) ¹	Modified system (June 1961) ²	Increase	Yardstick system (May 1960)	Modified system (June 1961)	Increase	
Line-miles:							
138-kilovolt lines.....	1,136	1,372	236				
230-kilovolt lines.....	1,239	1,186	(53)				
345-kilovolt lines.....	0	429	429				
Total.....	2,375	2,957	582				
Circuit-miles:							
138-kilovolt lines.....	1,136	1,372	236	\$17,205	\$17,908	\$703	\$ 4,080
230-kilovolt lines.....	1,458	1,928	(30)	43,922	35,550	(\$ 372)	\$ (1,318)
345-kilovolt lines.....	0	429	429		68,601	68,601	29,430
Total.....	3,094	3,729	635				32,172
Transmission investment:							
Transmission lines.....	Thousands \$105,545	Thousands \$122,540	Thousands \$16,995				
Undertaken.....	13,070	4,345	(8,725)				
Subtotal.....	118,615	126,885	8,270				
Substations.....	52,130	50,860	(1,270)				
Service facilities.....	5,500	5,200	(300)				
Total.....	176,245	182,945	6,700				

¹ From table 3, p. 22, Bureau analysis dated October 1960, copy attached.

² From table furnished by Bureau's Salt Lake City office on June 9, 1961, copy attached.

³ Based on average cost per circuit-mile of line of yardstick system.

EXHIBIT 5

TABLE 3.—Bureau of Reclamation—Colorado River storage project—All-Federal yardstick transmission system construction cost

[Prices as of January 1960]

Item	Circuit	Voltage (kilovolt)	Length in miles	Total costs
Transmission lines:				
Wood-pole, H-frame, single-circuit transmission lines:				
Glen Canyon-Fredonia.....	Single.....	138	70.0	\$1,340,000
Glen-Canyon-Sigurd.....	do.....	138	166.0	3,360,000
Curecanti-Gunnison.....	do.....	115	41.0	830,000
Curecanti-Montrose.....	do.....	115	18.0	330,000
Rangely-Craig.....	do.....	115	79.0	1,320,000
Craig-Oak Creek.....	do.....	115	40.0	720,000
Kremmling-Green Mountain.....	do.....	115	15.0	270,000
Vernal-Rangely No. 1.....	do.....	115	39.0	610,000
Vernal-Rangely No. 2.....	do.....	115	39.0	610,000
Vernal-Heber No. 1.....	do.....	115	114.0	1,780,000
Vernal-Heber No. 2.....	do.....	115	114.0	1,780,000
Vernal-Heber No. 3.....	do.....	115	114.0	1,780,000
Heber-Central Utah.....	do.....	115	35.0	660,000
Central Utah plants.....	do.....	115	22.0	445,000
Flaming Gorge-Vernal.....	do.....	115	43.0	850,000
Flaming Gorge-Pilot Butte.....	do.....	115	187.0	2,860,000
Total.....			1,136.0	19,545,000
230-kilovolt steel tower transmission lines:				
Glen Canyon-Flagstaff No. 1.....	Double.....	230	129.0	9,430,000
Flagstaff-Phoenix.....	do.....	230	110.0	9,120,000
Glen Canyon-Kayenta No. 1.....	do.....	230	81.5	7,340,000
Glen Canyon-Kayenta No. 2.....	Single.....	230	81.5	3,770,000
Kayenta-Four Corners No. 1.....	Double.....	230	81.5	7,340,000
Kayenta-Four Corners No. 2.....	Single.....	230	81.5	3,770,000
Four Corners-Albuquerque.....	do.....	230	183.0	7,910,000
Four Corners-Curecanti.....	Double.....	230	134.0	12,390,000
Curecanti-Pueblo.....	do.....	230	183.0	16,530,000
Curecanti-Rangely.....	Single.....	230	174.0	8,400,000
Total.....			1,239.0	86,000,000
Total, transmission lines.....				105,545,000
Stations:				
Phoenix substation.....				5,000,000
Flagstaff substation.....				6,000,000
Sigurd substation.....				1,540,000
Fredonia substation.....				200,000
Kayenta substation.....				7,370,000
Four Corners substation.....				5,330,000
Albuquerque substation.....				3,170,000
Curecanti substation.....				5,940,000
Pueblo substation.....				6,290,000
Gunnison substation.....				400,000
Montrose substation.....				160,000
Rangely substation.....				3,670,000
Craig substation.....				1,900,000
Oak Creek substation additions.....				190,000
Green Mountain switchyard additions.....				350,000
Vernal substation.....				1,320,000
Heber substation.....				2,700,000
Pilot Butte switchyard additions.....				600,000
Total, substations.....				52,130,000
Total, lines and substations.....				157,675,000
Service facilities (3 percent).....				5,500,000
Future lines and substations.....				13,070,000
Grand total, transmission system.....				176,245,000

EXHIBIT 6

Bureau of Reclamation—Colorado River storage project—Modified transmission system without interconnection at Four Corners steamplant, construction cost

[Prices as of January 1960]

Item	Length in miles	Circuit	Voltage (kilo- volts)	Total costs
Transmission lines:				
Wood pole, H-frame, single-circuit lines:				
Flaming Gorge-Vernal-Rangely.....	1 86	SC	138	\$1,520,000
Vernal-Rangely No. 2.....	44	SC	138	720,000
Rangley-Craig, Craig-Oak Creek, Kremmling- Gore tap, Kremmling-Green Mountain.....	1 138	SC	115-69	2,290,000
Gunnison-Blue Mesa.....	25	SC	115	480,000
Blue Mesa-Curecanti.....	16	SC	115	310,000
Curecanti-Montrose.....	18	SC	115	350,000
Craig-Sinclair.....	103	SC	115	1,540,000
Vernal-Springville No. 1.....	122	SC	138	2,000,000
Vernal-Springville No. 2.....	122	SC	138	2,000,000
Flaming Gorge-Hyrum.....	147	SC	138	2,810,000
Hyrum-Springville.....	130	SC	138	2,350,000
Springville-Central Utah.....	13	SC	138	260,000
Central Utah plants.....	22	SC	138	470,000
Midway-Pueblo.....	25	SC	115	420,000
Glen Canyon-Widtsoe.....	78	SC	138	1,740,000
Widtsoe-Glenwood.....	82	SC	138	1,380,000
Glenwood-Gunnison (Utah).....	31	SC	138	530,000
Glenwood-Fillmore.....	29	SC	138	640,000
Widtsoe-Paragonah.....	45	SC	138	980,000
Paragonah-Newcastle.....	49	SC	138	860,000
Newcastle-St. George.....	47	SC	138	920,000
Total.....	1,372			24,570,000
Steel tower lines:				
Glen Canyon-Pinnacle Peak.....	247	SC	345	16,720,000
Pinnacle Peak-Mesa.....	22	SC	230	1,000,000
Glen Canyon-Shiprock No. 1.....	182	SC	230	8,260,000
Glen Canyon-Skiprock No. 2.....	182	SC	230	8,260,000
Glen Canyon-Shiprock No. 3.....	182	SC	345	12,710,000
Shiprock-Albuquerque.....	175	SC	230	7,530,000
Shiprock-Curecanti.....	156	DC	230	14,650,000
Curecanti-Rangely.....	174	SC	230	8,350,000
Curecanti-Midway.....	187	DC	230	17,020,000
Midway-Limon.....	78	SC	230	3,380,000
Total.....	1,585			97,970,000
Total, transmission lines.....				122,540,000

¹ Surveyed mileage.

Item	[Prices as of January 1960]	Total costs
Stations:		
Pinnacle Peak	-----	\$7, 590, 000
Shiprock	-----	7, 300, 000
Albuquerque additions	-----	2, 640, 000
Curecanti	-----	3, 840, 000
Midway	-----	6, 160, 000
Limon additions	-----	1, 390, 000
Mesa additions	-----	320, 000
Vernal	-----	1, 640, 000
Rangely	-----	3, 280, 000
Craig	-----	1, 840, 000
Oak Creek additions	-----	50, 000
Green Mountain additions	-----	270, 000
Skito	-----	220, 000
Montrose	-----	160, 000
Sinclair additions	-----	50, 000
Springville	-----	2, 770, 000
Hyrum	-----	1, 100, 000
Pueblo	-----	600, 000
Series capacitor station:		
Dolores No. 1	-----	1, 330, 000
Dolores No. 2	-----	1, 330, 000
Poncha No. 1	-----	1, 420, 000
Poncha No. 2	-----	1, 420, 000
Fillmore	-----	200, 000
Gunnison (Utah)	-----	200, 000
Widtsoe	-----	490, 000
Paragonah	-----	250, 000
St. George	-----	200, 000
Series capacitor station:		
Kayenta No. 1	-----	1, 400, 000
Kayenta No. 2	-----	1, 400, 000
Total stations	-----	50, 860, 000
Total lines and stations	-----	173, 400, 000
Permanent operating facilities and service facilities	-----	5, 200, 000
Future lines and stations	-----	4, 345, 000
Grand total, transmission system	-----	182, 945, 000

REPAYMENT SCHEDULE OF AUTHORIZED UNITS OF COLORADO RIVER STORAGE PROJECT AND POWER FEATURES OF CENTRAL UTAH PROJECT
AND ESTABLISHMENT OF REVENUES AVAILABLE TO ASSIST IN IRRIGATION REPAYMENT OF PARTICIPATING PROJECTS
POWER RATE ANALYSIS - 6.0 MILL RATE - ALL-FEDERAL YARDSTICK (VERSION OF MAY 1961)

(Unit: \$1,000)

* Prepared by five investor-owned utilities and based on revised load data furnished by the Bureau of Reclamation on June 10, 1961.

Sales of electric energy (million kilowatt-hours)										Operating revenues				Operation, maintenance, and replacement costs			Energy purchases				Net operating revenues for repayment of:				Investment repayment from power revenues										Excess power revenues to states		Fiscal year		Year of study	
Year of Study	Fiscal year	Gener- ation	Firm Pur- chases	Total	Gener- ation	Nonfirm			From firm energy at 6.0 mills per kw	From nonfirm energy at 2.5 mills per kw	From excess capac- ity at \$15.00 per kw	Total	Opera- tion and mainte- nance	Pro- vision for replac- ement	Total operation, mainte- nance, and replac- ement	At 5.0 mills per kw to replace Hoover defi- ciency	At 4 mills per kw included in firm sales	Wheeling costs	Total annual cost	Cure- anti and Central Utah power alloca- tions	All other projects costs	Total	Interest bearing allocation to commercial electric plant				Cureanti and Central Utah power allocation				Interest free allocation to irrigation plant			Allowable unpaid balance	Excess power revenues to states	Fiscal year	Year of study			
						Interest at 2 7/8 percent	Prin- cipal	service at end of year															Balance to be repaid	Interest at 2.632 percent	Prin- cipal	service at end of year	Balance to be repaid	Invest- ment repay- ment	service at end of year	Balance to be repaid	Commer- cial electric plant	Irri- gation plant								
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)		
0	1963																																							
1	64	408		408	20	20	0		2,448			2,448	39	1	40	875			915				903	-903	31,412	31,412							45,548	45,548	31,412	45,548	1963	0		
2	65	1,599		1,599	1,430	821	609		9,594	1,523	0	11,117	2,690	609	3,299	875			1,801																					
3	66	2,833		2,833	1,518	499	1,019		16,998	2,547		19,545	3,173	754	3,927	0			3,299		7,550																			
4	67	3,619	13	3,632	789	226	563		21,792	1,408		23,200	3,694	879	4,573		60		3,927		15,618																			
5	68	4,269	47	4,316	358	0	358		25,896	895		26,791	3,789	901	4,690		200		4,633		17,838																			
6	69	4,571	77	4,648	90		90		27,888	225		28,113	3,881	922	4,803		332		4,890		18,716																			
7	1970	4,709	102	4,811	201		201		28,866	503		29,369	4,040	959	4,999		440		4,439		19,491																			
8	71	5,001	127	5,128	220		220		30,768	550		31,318	4,490	1,045	5,535		548		4,681		20,554																			
9	72	5,161	149	5,310	149		149		31,860	372		32,232	4,555	1,060	5,615		640		4,819		21,158																			
10	73	5,191	167	5,358	163		163		32,148	406		32,556	4,755	1,271	6,026		720		4,788		21,022																			
11	74	5,468	185	5,653	304		304		33,918	760		34,678	4,777	1,269	6,046		800		5,163		22,669																			
12	75	5,394	261	5,655	349		349		33,930	872		34,802	4,798	1,288	6,086		1,124		7,210		5,118																			
13	76												4,809	1,318	6,127				7,251		5,111																			
14	77												4,808	1,318	6,126				7,250																					
15	78																																							
16	79																																							
17	1980																																							
18	81																																							
19	82																																							
20	83																																							
21	84	5,394	261	5,655	349		349		33,930	872		34,802	4,807	1,319	6,126		1,124		7,250		5,111		22,441	27,552	12,017	10,424	407,565	2,519	2,592	556	93,671		683,814		83	21				
22	85	5,325	330	5,655	344		344		33,930	860		34,790	4,807	1,319	6,126		1,424		7,550		5,053		22,187	27,240	11,717	10,470	397,095	2,465	2,588		91,083				85	22				
23	86																																							
24	87																																							
25	88																																							
26	89																																							
27	1990																																							
28	91																																							
29	92																																							
30	93																																							
31	94	5,325	330	5,655	344		344	0	33,930	860	0	34,790	4,807	1,319	6,126		1,424		7,550		5,053		22,187	27,240	11,717	10,470	397,095	2,465	2,588		91,083				86	23				
32	95	5,229	335	5,564	344		344	18	33,384	860	270	34,514	4,807	1,319	6,126		1,440		7,566		4,999		21,949	26,948	11,416	10,771	386,384	2,397	2,656		88,427				87	24				
33	96																																							
34	97																																							
35	98																																							
36	99																																							
37	2000																																							
38	01																																							
39	02																																							
40	03																																							

* Arizona Public Service Company	Utah Power & Light Company
Public Service Company of Colorado	Pacific Power & Light Company
Public Service Company of New Mexico	

* Prepared by five investor-owned utilities and based on revised load data furnished by the Bureau of Reclamation on June 10, 1961.

* Arizona Public Service Company	Utah Power & Light Company
Public Service Company of Colorado	Pacific Power & Light Company
Public Service Company of New Mexico	

Columns 3, 5 and 10 increased to reflect increase in sales due to savings in losses.
Columns 14, 15 and 16 decreased due to reduction in Bureau investment.
Column 19 Proper application of Utility wheeling charges.
Column 26 same as Bureau Analysis except year 1964 decreased by \$4,999,000. Based upon revised load allocation data as furnished by Bureau on June 10, 1961.

EXHIBIT 9

Loss of revenue due to sale of firm energy to southern division at other than firm rate

Year	Scheduled delivery to southern division		Delivery of firm energy	Offpeak energy	Loss of revenue ²
	Megawatts	Million kilowatt-hours			
			<i>Million kilowatt-hours ¹</i>	<i>Million kilowatt-hours</i>	<i>Thousands</i>
1964-----	114.0	616.1	581.4	347.0	\$1,041
1965-----	363.7	2,721.7	1,854.9	866.8	2,600
1966-----	435.2	2,703.5	2,219.5	484.0	1,452
1967-----	435.2	2,800.1	2,219.5	580.6	1,742
1968-----	435.2	2,492.6	2,219.5	273.1	819
Total loss of revenue-----					7,654

¹ Based on 5,100 hours per year.

² Based on 3 mills per kilowatt-hour for offpeak energy.

EXHIBIT 10

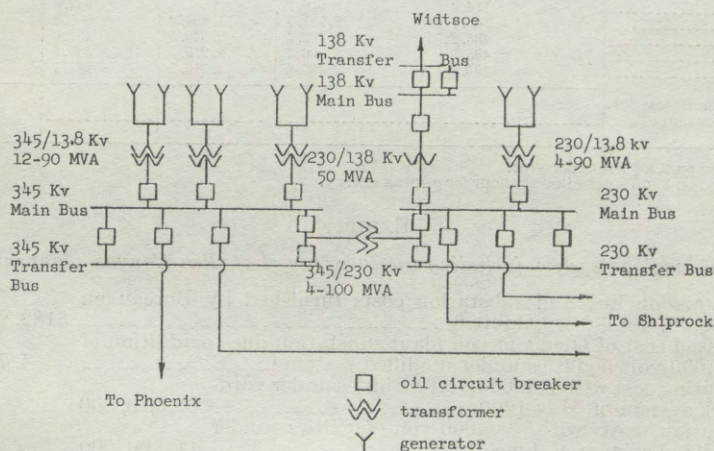
Cost of modified system, including increase in cost of Glen Canyon plant substation

Transmission line and substation costs furnished by Bureau on June 10, 1961 (see exhibit 6)-----	\$182,945,000
Increased cost of Glen Canyon plant substation due to addition of 345,000-volt facilities under modified system ¹ -----	4,780,000
Substation cost with 230,000-volt facilities under yardstick system of May 1960-----	\$6,910,000
Substation cost with 345,000-volt facilities under modified system of June 1961-----	11,690,000
Difference-----	4,780,000
Total construction cost of transmission facilities under modified system-----	187,725,000
Interest during construction at 3.5 percent ² -----	6,570,000
Total cost of transmission-----	194,295,000

¹ Does not include Bureau's standard overhead charge of 20 percent. This would add \$956,000 to the increased costs but has not been taken into consideration.

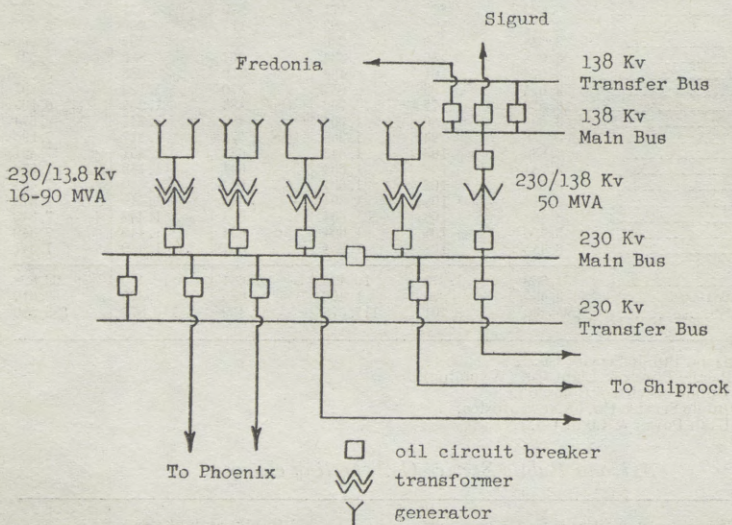
² 3.5 percent interest during construction is value used by Bureau in its October 1960 analysis.

EXHIBIT 10
COST OF GLEN CANYON PLANT SUBSTATION
WITH "MODIFIED" SYSTEM OF JUNE 1961



	<u>Description</u>	<u>Estimated Cost-Installed</u>	
		<u>Unit</u>	<u>Total</u>
8 ea	345,000 volt oil circuit breakers, (five transformer breakers, two line breakers, and one bus tie breaker)	\$625,000	\$5,000,000
7 ea	230,000 volt oil circuit breakers, (four transformer breakers, two line breakers, and one bus tie breaker)	300,000	2,100,000
2 ea	138,000 volt oil circuit breakers, (one transformer breaker, and one line breaker)	150,000	300,000
12 ea	345,000/13,800 volt, 90,000 kva, FOW, single phase generator step-up transformers (Four units per bank includes spare)	210,000	2,520,000
4 ea	345,000/230,000 volt, 100,000 kva, FOW, single phase transformers (Four unit bank includes spare)	245,000	980,000
4 ea	230,000/13,800 volt, 90,000 kva, FOW, single phase, generator step-up transformers (Four unit bank includes spare)	160,000	640,000
1 ea	230,000/138,000 volt, 50,000 kva, FOW three phase, autotransformer	150,000	150,000
Total Estimated Cost			\$11,690,000

EXHIBIT 10
COST OF GLEN CANYON PLANT SUBSTATION
WITH "YARDSTICK" SYSTEM OF MAY 1960



	<u>Description</u>	<u>Estimated Cost-Installed</u>	
		<u>Unit</u>	<u>Total</u>
12 ea	230,000 volt oil circuit breakers, (five transformer breakers, five line breakers, and two bus breakers)	\$300,000	\$3,600,000
4 ea	138,000 volt oil circuit breakers, (two line breakers, one transformer breaker, and one bus breaker)	150,000	600,000
16 ea	230,000/13,800 volt, 90,000 kva, FOW single phase, generator step-up transformers (four units per bank includes spare)	160,000	2,560,000
1 ea	230,000/138,000, 50,000 kva, FOW, three phase autotransformer	150,000	150,000
Total Estimated Cost			\$6,910,000

EXHIBIT 11

Summary of utility wheeling charges properly applied

[In thousands]

Fiscal year	Annual wheeling cost					Total annual cost
	APS Co. ¹	PP&L Co. ²	PS of Colo. ³	PS of NM ⁴	UP&L Co. ⁵	
1964.....	\$565	0	\$12	0	\$279	\$856
1965.....	682	\$77	171	\$79	557	1,566
1966.....	2,512	106	203	117	689	3,627
1967.....	3,728	0	250	221	797	4,996
1968.....	3,998	50	334	267	882	5,531
1969.....	3,674	61	488	319	983	5,525
1970.....	3,674	68	657	370	1,122	5,891
1971.....	3,572	77	796	433	1,231	6,109
1972.....	3,694	86	1,065	482	1,347	6,674
1973.....	3,728	94	1,282	574	1,517	7,195
1974.....	3,836	103	1,543	658	1,351	7,491
1975.....	3,734	108	1,604	694	1,449	7,589
1976.....	3,599	108	1,604	694	1,449	7,454
1977.....	3,518	108	1,604	694	1,449	7,373
1978.....	3,485	108	1,604	694	1,449	7,340
1979.....	3,485	108	1,604	694	1,449	7,340
1980.....	3,485	108	1,604	694	1,450	7,341
Subtotal.....	54,969	1,370	16,425	7,684	19,450	99,898
Average, 1981-2049.....	3,485	99	1,466	635	1,325	7,010
Total to 2049.....	295,430	8,201	117,575	51,499	110,875	583,580

¹ APS Co.: Arizona Public Service Co.² PP&L Co.: Pacific Power & Light Co. (Wyoming).³ PS of Colo.: Public Service of Colorado.⁴ PS of NM: Public Service Co. of New Mexico.⁵ UP&L Co.: Utah Power & Light Co.*Arizona Public Service Co. wheeling charges*

Fiscal year	Wheeling quantities ¹		Wheeling charges ² (thousands)	Fiscal year	Wheeling quantities ¹		Wheeling charges ² (thousands)
	Million kilowatt-hours	Thousand kilowatt			Million kilowatt-hours	Thousand kilowatt	
1964.....			\$565	1976.....	3,136	533	\$3,599
1965.....	726	101	682	1977.....	3,135	521	3,518
1966.....	2,944	372	2,512	1978.....	3,150	516	3,485
1967.....	2,883	552	3,728	1979.....	3,382	516	3,485
1968.....	3,045	592	3,998	1980.....	3,170	516	3,485
1969.....	2,838	544	3,674	Subtotal.....			54,969
1970.....	2,705	544	3,674	Average, 1981-2049.....			3,485
1971.....	2,815	529	3,572	Total to 2049.....			295,430
1972.....	2,680	547	3,694				
1973.....	2,762	552	3,728				
1974.....	2,904	568	3,836				
1975.....	3,043	553	3,734				

¹ Based on original "yardstick" schedule which meets the Secretary's marketing criteria.² Based on 6.753 per kilowatt per year.

Public Service Co. of Colorado wheeling charges

Fiscal year	Wheeling quantities ¹	Wheeling charges ²	Fiscal year	Wheeling quantities ¹	Wheeling charges ²
	<i>Million kilowatt-hours</i>	<i>Thousands</i>		<i>Million kilowatt-hours</i>	<i>Thousands</i>
1964-----	12.4	\$12	1975-----	1,604.1	\$1,604
1965-----	170.8	171	1976-----	1,604.1	1,604
1966-----	202.6	203	1977-----	1,604.1	1,604
1967-----	250.3	250	1978-----	1,604.1	1,604
1968-----	353.7	334	1979-----	1,604.1	1,604
1969-----	488.4	488	1980-----	1,604.1	1,604
1970-----	656.8	657			
1971-----	796.4	796	Subtotal-----		16,425
1972-----	1,064.6	1,065	Average, 1981-2049-----		1,466
1973-----	1,281.9	1,282	Total to 2049-----		117,575
1974-----	1,543.3	1,543			

¹ Based on "modified" load schedule furnished by Bureau, but does not include "inadvertent" flow which is common to both Federal and utility proposals.

² Based on 1 mill per kilowatt-hour wheeling charge.

Public Service Co. of New Mexico wheeling charges

Fiscal year	Wheeling quantities ¹	Wheeling charges ²	Fiscal year	Wheeling quantities ¹	Wheeling charges ²
	<i>Thousand kilowatt-hours</i>	<i>Thousands</i>		<i>Thousand kilowatt-hours</i>	<i>Thousands</i>
1964-----	0	0	1975-----	115.6	\$694
1965-----	13.2	\$79	1976-----	115.6	694
1966-----	19.5	117	1977-----	115.6	694
1967-----	36.8	221	1978-----	115.6	694
1968-----	44.5	267	1979-----	115.6	694
1969-----	53.1	319	1980-----	115.6	694
1970-----	61.6	370			
1971-----	72.1	433	Subtotal-----		7,684
1972-----	80.3	482	Average, 1981-2049-----		635
1973-----	95.6	574	Total to 2049-----		51,499
1974-----	109.7	658			

¹ Power delivered to Albuquerque load center under "modified" load schedule.

² Based on wheeling charge of \$6 per kilowatt per year.

Pacific Power & Light Co. wheeling charges

Fiscal year	Wheeling quantities ¹	Wheeling charges ²	Fiscal year	Wheeling quantities ¹	Wheeling charges ²
	<i>Million kilowatt-hours</i>	<i>Thousands</i>		<i>Million kilowatt-hours</i>	<i>Thousands</i>
1964-----	0	0	1975-----	108.1	\$108
1965-----	76.7	\$77	1976-----	108.1	108
1966-----	106.0	106	1977-----	108.1	108
1967-----	0	0	1978-----	108.1	108
1968-----	49.9	50	1979-----	108.1	108
1969-----	61.3	61	1980-----	108.1	108
1970-----	68.4	68			
1971-----	77.2	77	Subtotal-----	1,370.6	1,370
1972-----	85.5	86	Average, 1981-2049-----		99
1973-----	94.4	94	Total to 2049-----		8,201
1974-----	102.6	103			

¹ Energy delivered to Sinclair under "modified" load schedule less inadvertent flow to eastern Wyoming through Public Service of Colorado and existing Bureau system in same proportion as Bureau used in its October 1960 analysis.

² Based on wheeling charge of 1 mill per kilowatt-hour.

Utah Power & Light Co. wheeling charges

Fiscal year	Wheeling quantities				Wheeling charges ² (thousands)	
	Utah load (mega-watts) ¹	Displace- ment (mega-watts)	Central Utah generation			Net mega- watts
			Megawatts	Thousand kilowatt, hours		
1964.....	36	0	0	0	36	\$279
1965.....	72	0	0	0	72	557
1966.....	89	0	0	0	89	689
1967.....	103	0	0	0	103	797
1968.....	114	0	0	0	114	882
1969.....	127	0	0	0	127	983
1970.....	145	0	0	0	145	1,122
1971.....	159	0	0	0	159	1,231
1972.....	174	0	0	0	174	1,347
1973.....	191	5	0	0	196	1,517
1974.....	217	10	55	133	172	1,351
1975.....	224	13	55	270	182	1,449
1976.....	224	13	55	272	182	1,449
1977.....	224	13	55	273	182	1,449
1978.....	224	13	55	275	182	1,449
1949.....	224	13	55	276	182	1,449
1980.....	224	13	55	278	182	1,450
Subtotal.....						19,450
Average 1981-2049.....						1,325
Total to 2049.....						110,875

¹ Based on "modified" load schedules less GarKane REA load to be delivered at Glen Canyon.

² Based on \$7.739 per kilowatt per year for net megawatt load plus 0.15 mills per kilowatt-hour for central Utah.

EXHIBIT 12

Federal and State taxes associated with delivery of Colorado River storage project power over utility transmission lines

[In thousands]

	Arizona	Colorado	New Mexico	Utah	Wyoming	Total
STATE AND LOCAL TAXES						
Transmission investment associated with project.....	\$33,500	\$18,300	\$8,000	\$36,600	\$8,400	\$104,800
Annual tax payments:						
To schools.....	320	250	40	470	80	1,160
To others.....	420	170	120	230	40	980
Total State and local taxes.....	740	420	160	700	120	2,140
86-year accumulated tax payments:						
To schools.....	27,400	21,400	3,400	40,600	6,700	99,500
To others.....	36,000	14,800	10,300	19,800	3,400	84,300
Total State and local taxes.....	63,400	36,200	13,700	60,400	10,100	183,800
State and local taxes as percent of investment:						
To schools.....	0.95	1.36	0.50	1.29	0.93	-----
To others.....	1.25	0.94	1.50	0.63	0.47	-----
FEDERAL INCOME TAXES						
86-year wheeling revenue.....	\$295,430	\$117,575	\$51,499	\$110,875	\$8,201	\$583,580
86-year tax payments.....	\$43,400	\$25,400	\$11,100	\$23,400	\$1,800	\$105,100
Average annual tax payments.....	\$500	\$300	\$130	\$270	\$20	\$1,220
Federal income tax as percent of wheeling revenue.....	14.7	21.6	21.5	21.1	21.8	-----

EXHIBIT 13

Interest cost saving to Federal Treasury due to earlier repayment of storage project costs allocated to irrigation

Fiscal year	Interest cost under utilities' proposal			Interest cost under "modified" system		
	Balance to be repaid irrigation allocation ¹	Years accumulating interest	Accumulated interest, at 2½ percent	Balance to be repaid irrigation allocation ²	Years accumulating interest	Accumulated interest, at 2½ percent
	<i>Thousands</i>		<i>Thousands</i>	<i>Thousands</i>		<i>Thousands</i>
1963.....	\$45,548	44	\$4,559	\$45,548	51	\$5,560
1964.....	88,174	43	8,576	88,174	50	10,459
1965.....	88,174	42	8,337	88,174	49	10,166
1966.....	90,478	41	↓	90,478	48	↑
↑	↑	↑	³ 196,189	↑	↑	↑
2003.....	90,478	4	2,806	90,478	4	261,484
2004.....	89,648	3	2,037	81,865	3	2,563
2005.....	66,941	2	1,309	55,244	2	1,681
2006.....	44,234	1	619	28,623	1	847
2007.....	21,527	0		2,002	0	58
2008.....	0					
2009.....	0					
2010.....	0					
2011.....	0					
2012.....	0					
2013.....	0					
2014.....	0					
Total interest costs.....			224,432			292,818
Savings under utilities proposal.....				68,386		

¹ See col. 34 of exhibit 8.

² See col. 34 of exhibit 7.

³ This interest is for the period 1966 to 2003, inclusive.

⁴ This interest is for the period 1966 to 2010, inclusive.

(Mr. Bennett of the Bureau of Reclamation subsequently submitted the following document containing information requested at the hearings:)

BUREAU OF RECLAMATION, DEPARTMENT OF THE INTERIOR

In response to the request for certain information, the attached tables are presented for the record.

Table I shows the Bureau's computations for the several items of analysis similar to those shown on the table presented by the private utilities. The columns show the results of studies under various assumptions. Columns 1 and 2 show the accomplishments under all Federal systems and may be compared with each other to see the difference between the so-called modified system unconnected at Four Corners and the yardstick system.

Columns 3, 4, and 5 show the accomplishments under the wheeling proposals of the private utilities. Column 3 is the original Bureau analysis and should be compared with the results shown in column 1. Columns 4 and 5 should be compared with the results shown in column 2.

Particularly to be noted is that in all analyses under the private utilities' proposal there is not sufficient money in the basin fund at the end of two of the critical time periods, year 2015 and 2027. This is so, even in the instance where the Bureau used the private utilities' own interpretation of their wheeling offers. By 2049 the other critical period, the wheeling proposal also shows a detrimental effect on the basin fund. The years 2015 and 2027 are most critical because there must be sufficient revenue in the basin account by 2015 to accomplish payout of the Vernal unit and by 2027 to payout the Seedskaadee unit.

Table II further summarizes the results shown on table I and is designed particularly to answer the request made by Senator Carroll for data on the effects of the private utilities' proposal on the basin fund. This table does not include the

data shown in column 5 of table I. Again there is to be noted under the private utilities' wheeling proposal at the same power rate as under either of the all-Federal systems, the deficiency in the fund to pay off the Vernal unit as well as the lack of sufficient funds in year 2027 to repay costs of participating projects.

Table III compares only annual costs of transmission during and after the power payout period. The revenues which go into the basin fund after the power payout period are those which were used to amortize the power investment. This is true of both the transmission system costs and the other power costs. It is obvious from the results shown in this table that the private utilities' wheeling proposal cannot produce the same irrigation assistance as can be obtained under the all-Federal system.

Although we do not have a detail payout analysis purporting to back up the summary data shown on the tables presented by the private utilities, it appears from inspection that they have made generally the same unilateral changes outlined by the Bureau during the hearing on July 7. These unilateral changes for the analysis under the private utilities' proposal are (1) reduction in cost of the Federal portion of the system, (2) reduction in operation, maintenance, and replacement costs of the Federal portion of the system, (3) increase in revenues due to reduced transmission losses, and (4) decrease in wheeling costs.

Inspection of their tables also shows that they have changed their analyses to not now erroneously add some \$13 million to the cost of the all-Federal system. This is an appropriate change. They are now, however, decreasing revenues under the all-Federal modified system due to a purported difference in losses between the "yardstick system" and the modified system. The Bureau has studied these two systems on computers and on its analyzer board and finds that there is practically no net difference in losses between the two systems. Consequently, it is inappropriate to consider any difference in losses.

We also note that although less revenues and more cost are claimed for the all-Federal modified system due to purported differences between the two all-Federal systems, the corresponding costs of the Federal system under the private utilities' proposal have not been corrected to reflect the changes between the two systems.

TABLE I
Colorado River Storage Project
Bureau's Comparison of Financial Analyses of
Federal Transmission System with Wheeling Proposals
Oct. 1960 Analysis of
Private Utilities
Cost Unit - \$1000

Item Number and Description	1 Yardstick System-Basic Analysis Oct. 1960 Study		2 Modified Federal Transmis- sion System Not Intercon- nected to Four Transmission Steam Plant, June 1961 Study		3 Oct. 1960 Analysis of Private Utilities' Proposal		4 July 1961 Analysis of Private Utilities' Proposal Using Bureau's Transmission System and Intercon- nection of Wheeling offices 1/		5 July 1961 Analysis of Private Utilities' Proposal Using Bureau's Transmission System and Intercon- nection of Wheeling offices 1/ Oct. 1960 Analysis 1/	
	2007 2011	2009 2012	2009 2012	2017	2012 2017	2012 2017	2011 2016	2015 2027	2013 2018	2015 2027
1 Year of Power Payout										
2 Year of Irrigation Payout										
3 Years for Power Payout										
4 Year of Irrigation Payout										
5 Power Allocation without transmission investment	\$ 489,419	182,945 2/	\$ 489,419		\$ 489,419	\$ 489,419	\$ 489,419	\$ 489,419	\$ 489,419	\$ 489,419
6 Construction Cost - Transmission	176,245	5,352	182,945 2/		57,770	60,030 2/	60,030 2/	60,030 2/	60,030 2/	60,030 2/
7 Interest during Construction	6,252	6,352	6,352		4,531	4,531	4,531	4,531	4,531	4,531
8 Total Power Allocation	161,452	12,704	174,156		62,301	64,561	64,561	64,561	64,561	64,561
9 Total Power Allocation	90,478	90,478	90,478		90,478	90,478	90,478	90,478	90,478	90,478
10 Interest on Power Allocation	454,737	486,983	486,983		421,128	415,021	415,021	415,021	415,021	415,021
11 Total Repayment obligation	1,217,171	1,256,177	1,256,177		1,061,236	1,056,178	1,056,178	1,056,178	1,077,862	1,077,862
12 Total operating Revenue	By 2015	By 2027	By 2027	By 2049	By 2015	By 2027	By 2027	By 2049	By 2015	By 2049
13 Operation and Maintenance	1,698,444	2,100,930	2,100,930	2,749,338	1,698,444	2,100,930	2,100,930	2,749,338	1,698,444	2,100,930
14 Replacements	\$ 227,287	\$ 283,147	\$ 293,870	\$ 399,646	\$ 182,931	\$ 227,411	\$ 308,921	\$ 182,848	\$ 227,308	\$ 308,818
15 Steam Energy Purchases 2/	61,450	76,858	105,106	105,097	43,188	54,036	73,920	44,221	55,321	75,671
16 Wheeling Charge Payments	61,210	78,490	89,270	89,270	61,210	78,490	89,270	61,210	78,490	89,270
17 Total Operating Costs	359,147	438,492	598,236	598,236	374,681	466,883	637,110	374,681	466,883	637,110
18 Net Revenues	1,348,024	1,621,438	1,657,941	2,151,102	1,323,763	1,634,147	1,464,820	1,323,763	1,634,147	1,464,820
19 Repayment of Investment	1,348,024	1,621,438	1,657,941	2,151,102	1,323,763	1,634,147	1,464,820	1,323,763	1,634,147	1,464,820
20 Requirement for Irrigation	454,737	454,737	454,737	454,737	454,737	454,737	454,737	454,737	454,737	454,737
21 Total Interest and Repayment	1,217,171	1,217,171	1,256,177	1,256,177	1,061,236	1,061,236	1,061,236	1,056,178	1,077,862	1,077,862
22 Irrigation Assistance to States	131,326	445,264	932,234	83,306	-24,818	212,878	590,854	-3,567	238,989	625,408
23 Requirement for Irrigation Assistance to States	22,647	283,078	426,151	426,151	22,647	283,078	426,151	22,647	283,078	426,151

1/ Using new load data as revised June 19, 1961, and revised Federal costs based on line under construction, often Canyon to Shiprock, and other recent cost data.

2/ Preliminary.

3/ Cost is necessarily larger than previously shown because only increased costs of the modified system can be reflected in this part of the system. There are no offsetting decreases in this portion of the system as is the case in arriving at the \$183 million estimated for the total modified system.

4/ Short of repayment of irrigation allocation within 50 years as required by law.

5/ Includes \$1,750,000 for Hoover replacements.

TABLE II.—*Colorado River storage project—comparison of project payout and amounts for irrigation assistance under Federal transmission system and wheeling proposals of private utilities*

	Yardstick system basic analysis, October 1960	Modified transmission system, June 1961	October 1960 analysis of private utility proposal	July 1961 analysis of private utility proposal ^a
	(1)	(2)	(3)	(4)
Rate for firm energy (mills per kilowatt-hour) ¹	6.00	6.00	6.00	6.00
Power allocation (thousands).....	\$671,956	\$678,716	\$549,630	\$551,679
Irrigation allocation (thousands) ²	\$90,478	\$90,478	\$90,478	\$90,478
Year of repayment for—				
Power allocation.....	2,007	2,009	2,012	2,011
Irrigation allocation.....	2,011	2,012	2,017	2,016
Years required for payout of—				
Power allocation.....	44	46	49	48
Irrigation allocation.....	48	49	54	53
Irrigation assistance to States (thousands):				
By fiscal year 2015.....	\$131,326	\$83,306	³ 0	³ 0
By fiscal year 2027.....	\$445,264	\$395,456	\$212,878	\$238,989
By fiscal year 2049.....	\$952,234	\$899,148	\$590,854	\$625,408
Required amount for irrigation assistance to States (thousands): ⁴				
By fiscal year 2015.....	\$22,647	\$22,647	\$22,647	\$22,647
By fiscal year 2027.....	\$283,078	\$283,078	\$283,078	\$283,078
By fiscal year 2049.....	\$426,151	\$426,151	\$426,151	\$426,151

¹ Rates for nonfirm energy maintained at 2.50 mills per kilowatt-hour and for peaking capacity at \$15 per kilowatt-year.

² The cost of storage units allocated to irrigation.

³ Actually there is a deficiency at this point.

⁴ Based on present construction schedules and development periods of currently authorized projects.

^a Using private utilities interpretation of wheeling offers, new load data and revised Federal costs based on line under construction Glen Canyon to Shiprock, and other recent cost data.

TABLE III.—*Transmission system costs*

	All Federal, October 1960	Modified system, June 1961	Federal costs under private utilities proposal	
			October 1960 analysis	July 1961 ¹ analysis
Transmission construction cost.....	\$176,245,000	² \$182,945,000	\$57,770,000	² \$60,030,000
Annual transmission costs:				
During power payout period.....	\$9,332,000	\$9,728,000	\$10,802,000	\$10,539,000
After power payout period.....	\$2,798,000	\$2,947,000	\$8,918,000	\$8,485,000
Annual revenue after power payout for partici- pating projects.....	\$6,534,000	\$6,781,000	\$1,884,000	\$2,054,000
Number of years after power payout.....	42	40	37	38
Amount for project by 2049.....	\$274,428,000	\$271,240,000	\$69,708,000	\$78,052,000
Annual wheeling payments:				
During power payout.....			³ \$7,094,000	³ \$6,835,000
After power payout.....			³ \$7,450,000	³ \$6,996,000

¹ Using interpretations of wheeling offers claimed by private utilities, new load data and revised Federal costs based on line under construction, Glen Canyon to Shiprock and other recent cost data.

² Preliminary.

³ Included in annual transmission costs shown above.

(Unit--\$1,000)

1/ Based on a sinking fund earning interest at 2.632 percent for replaceable items of Curecanti unit and Central Utah power features and 2 7/8 percent for other storage units and transmission division.

Revised 7-24-61



AUGUST 4, 1961.

Hon. CLINTON P. ANDERSON,
U.S. Senator, Senate Office Building,
Washington, D.C.

MY DEAR SENATOR ANDERSON: I'm sure you realize how much we appreciate your interest in having meetings such as you arranged on July 7 and 21 with representatives of the Bureau of Reclamation and the utility companies regarding the transmission line controversy of the Colorado River storage project.

As you stated, it is only through a free exchange of information—with all parties present—each given the opportunity to comment and answer—that differences can be satisfactorily resolved.

As you requested, we have documented fully for the record the information requested of the utility companies.

We have also reviewed the information submitted by the Bureau and it is now evident that while we have made definite progress through your efforts, we have not been able to reconcile completely all of the differences. The Bureau has submitted a new set of figures. It has failed to consider many of the major errors and omissions discussed in our meetings. As a result the conclusions presented by the Bureau are erroneous.

With respect to the amount available to the basin fund in the critical year of 2049, the Bureau's analysis shows that the all-Federal system will produce \$899 million, while the combination system will produce \$625 million, a difference of \$274 million, or about 30 percent. We cannot agree with this conclusion.

The Bureau has not included in their analysis the increased cost of substation facilities required by the use of 345-kilovolt lines under the modified system. Decreased line losses have not been taken into consideration. Tabulations submitted for the record, when compared to original estimates, show a decrease in the cost of construction of approximately \$8,000 per mile for 230-kilovolt lines. According to our studies, if all deficiencies of the modified all-Federal system are corrected, the cost would not be \$182 million, but approximately \$221 million, as shown on page 7 of the data submitted by the utilities for the record. However, our studies have been based on a Federal investment of \$187 million, which we discussed during the meeting of July 21.

In the information submitted for the record the Bureau and the utilities have both stated that transmission losses have been determined by electronic computer studies. If each party starts with the same data, the answers should be similar, and we find it hard to believe that two separate groups of qualified engineers could arrive at such different answers. The results of our studies are available to you, other Members of Congress and their staffs, if desired.

While the initial meetings have not completely reconciled the differences between the two systems, the Bureau, on the basis of its own studies, has reduced the difference by approximately \$88 million, and has yet to make corrections for basic assumptions.

It appears the best manner for Congress to get the complete facts for reconciliation of these differences is for the Bureau's engineers and the utility engineers to sit around a table with appropriate congressional committees and agree on the basic assumptions. We are confident that with such further meetings, a determination can be made as to the validity of the claims of both the utilities and the Bureau so that Congress will have a complete reconciliation of all differences.

We earnestly request your continued interest and efforts in this matter and representatives of the utilities will make themselves available to meet with you, other Members of the Congress, and the Bureau at any time.

Respectfully,

G. A. SCHREIBER,
Executive Vice President.



