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Decision No. 5375

Decision No. ______

BEFORE THE RAILROAD COMMISSION
OF THE STATE OF CALIFORNIA

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In the Matter of the Construction and Operation of Electric Utilities during the emergency created by the war.	CASE NO. 1176

C. P. Cutten for Pacific Gas & Electric Company.
W. I. Brobeck for California-Oregon Power Company.
Allan P. Matthew for Northern California Power Company, Cons.

DEVLIN, Commissioner.

OPINION

This proceeding was instituted by the Railroad Commission of the State of California on its own motion, having for its object an investigation into the construction and operation of electric utilities so as to enable it to determine the special needs of these utilities during the war emergency and in order to enable the Commission to render prompt assistance to the government, the utilities and the public, to the end that there would be no shortage in service on the part of the utilities or interruption of service to industries.

The investigation so far made has been directed principally to the matter of the conservation of fuel oil and the further development of hydro electric power on the part of electric utilities with a view to preventing any shortage of power in California during the war emergency.

Investigations were carried on by the Electric Division of the Commission and by Advisory Committees of the public utilities on this general matter and hearings were held relative to the interconnection of electric utilities of the State and the needs for further development.

Under date of March 18th the Commission issued a recommendatory order with reference to the Southern Division of the State, in which it recommended that certain interconnections be made and that the companies take steps to meet the growing requirements for power.

In this opinion and order consideration will be given to the question of the transmission and sale of power from California-Oregon Power Company and Northern California Power Company to Pacific Gas and Electric Company for reasons which will be set forth in the opinion herein.

The five larger companies serving in what may be considered as Central and Northern California are: Pacific Gas and Electric Company, Great Western

Power Company, Sierra and San Francisco Power Company, Western States Gas and Electric Company and Northern California Power Company. These five companies generate practically all of the hydro electric power at present produced and sold in this part of the State.

The investigation made and evidence presented in this case shows that there is a shortage of hydro-electric power in the Central part of the State; that none of the electric utilities have in progress of construction hydro-electric plants to meet the demand for power which is increasing at an annual rate of approximately 25,000 K.W. of demand and 150,000,000 K.W.H. per year; that during the coming season less hydro-electric power will be produced than normally due to the shortage in precipitation, and that all practicable means should be taken to conserve fuel oil and meet the necessary demands for power and thus not hamper the industries during the war.

Considering the continually decreasing oil storage in California and the threatened shortage which may occur, it behooves the electric utilities to do all that they reasonably can to keep their consumption down to a minimum, and assistance should be given to them in so far as practicable to increase the utilization of existing hydro-electric facilities and the further development of plants as soon as possible.

The Pacific Gas and Electric Company is the largest distributing company of the five serving the central part of California. It purchases, in addition to the output of its own hydro-electric and steam plants, power from the Great Western Power Company, Northern California Power Company and Snow Mountain Power and Electric Company. During 1917 there was transmitted over its lines for distribution and resale over 60% of all of the energy produced by the five companies and it appears that the greatest need for additional power will be upon its system.

Investigations in connection with this case show that California-Oregon Power Company has completed a hydro-electric plant known as Copco, near the California-Oregon line, with a capacity of 10,000 K.W., which is not at present needed for the local requirements of that company and further, that the Northern California Power Company has a surplus capacity of approximately 4,000 K.W. during the seven months of the year from October to April, inclusive. Provided the companies can finance the required transmission facilities to deliver this power to Pacific Gas and Electric Company, this additional power, representing approximately 60,000,000 K.W.H. a year, delivered to Pacific Gas and Electric Company could be made useful in meeting the growing requirements for power in the Bay Districts and reduce the oil requirements approximately 240,000 barrels per year.

Investigations were carried on by the Commission's Electric Division together with Advisory Committees of the companies in connection with the first hearings in this matter with a view to determining a method by which this power could be made available in the central portion of California. In its original report the sub committee made certain recommendations as to a plan for transmitting this power to Pacific Gas and Electric Company. Difficulties arose, however, in connection with the plan suggested owing to the fact that the Northern California Power Company was not able to finance that portion of the cost of the extension which would be allotted to it and thereafter further investigations were carried on by the Commission's engineers and the companies with a view to determining some alternative plan by which this power could be made available.

Later a plan was proposed whereby California-Oregon Power Company would assist Northern California Power Company in financing a portion of the cost and by which there could be delivered at a point near Colusa to Pacific Gas and Electric Company a minimum of 8,000 K.W. throughout the year and 4,000 additional K.W. during at least 7 months. This plan was discussed in conference first, between the engineers of the utilities and the Commission, and later, conferences were held with the Commission in view to making arrangements for this work. Difficulties arose, however, especially as regards the rate to be paid for the power, as the various parties were not able to agree between themselves and it was suggested that that be left to the Commission. Recommendations were made by Acting Gas and Electrical Engineer L. S. Ready as to a rate.

In order that the matter might be formally settled additional hearings were held upon the entire matter and evidence introduced as to the construction of the line and the rates to be paid for such supply.

California-Oregon Power Company has a transmission line operating at 30,000 volts from Copco to Castella, the latter point being approximately 35 miles from the lines of Northern California Power Company at Kennet.

Northern California Power Company has two transmission lines running south from its hydroelectric plants to Chico and thence as far south as Maxwell.

Pacific Gas and Electric Company has a 60,000 volt line from Marysville to Colusa and its 100,000 volt line approximately 30 miles further south.

The proposed plan to transmit this developed power contemplates the utilization of the existing transmission line with certain reinforcements and the construction of 60,000 volt pole lines to interconnect the existing lines. It is proposed that:

(1) California-Oregon Power Company reinforce and reconstruct its present transmission line from Copco to Castella and construct a 70,000 volt line from Castella to Kennet of sufficient capacity to transmit to Northern California Power Company at Kennet 8500 kilowatts.

Estimated Cost $330,000

(2) California-Oregon Power Company finance Northern California Power Company to the extent required to reinforce that company's lines from Coleman to near Hamilton by the addition of 1/0 copper conductor to the west line so that there can be delivered throughout the year to Pacific Gas and Electric Company at Colusa 8000 kilowatts.

Estimated Cost $110,000

(3) Pacific Gas and Electric Company construct a 60,000 volt transmission line of sufficient capacity from Colusa Corners, near Colusa, to the Drum-Cordelia

(Brought Forward) Estimated Cost ... $440,000

100,000 volt line and install a substation of 12,000 kilowatts capacity from 60,000 to 100,000 volts, to deliver the power into that line.
Estimated Cost ... $200,000

TOTAL ESTIMATED COST ... $640,000

Pacific Gas and Electric Company will be required to re-route the power from certain of its existing plants over its Wise Stockton-Mission San Jose line to the Southern District. This line is under construction at the present time and will be completed by the time power can be delivered at Colusa.

At the conference held in connection with this matter general agreements were reached as to the amount of power to be delivered and purchased but no agreement was reached as to the rate to be paid. The general understanding reached as a result of these conferences was:

(1) California-Oregon Power Company to guarantee to deliver at Kennet to Northern California Power Company, and the latter company to agree to take for transmission south -
8500 K.W. at 70% load factor.

(2) California-Oregon Power Company and Northern California Power Company to agree to deliver to Pacific Gas and Electric Company at Colusa Corners - 8000 K.W. at 70% load factor throughout the year.

(3) Northern California Power Company to agree to deliver to Pacific Gas and Electric Company during the months of October to April inclusive, 4000 K.W. at 50% seasonal load factor.

(4) Pacific Gas and Electric Company to agree to purchase and take from the Northern Companies a minimum of 8000 K.W. at 70% load factor for 12 months and 4000 K.W. at 50% seasonal load factor for the 7 months.

(5) The agreements were to be incorporated in a contract to run for 10 years, with the right to apply for change of rate in 5 years. It was further understood that Northern California Power Company's delivery of power to Pacific Gas and Electric Company at Chico, under contract relations, should in no way be affected by this contract.

The result of the above agreement, if carried out, will be the purchase by Pacific Gas and Electric Company of a minimum of 59,000,000 K.W.H. per year. This will represent an oil conservation of approximately 240,000 bbls. per year.

Based upon estimated costs to the Northern Companies of transmitting the power, including interest upon the investment, Mr. L. S. Ready, Acting Gas & Electrical Engineer of the Commission, submitted to the various parties a suggestion as to the rate to be charged for the power. The rate proposed is, in general, as follows:

(1) <u>California-Oregon Power Company - Delivery to Northern California Pr. Co. at Kennet</u>

8500 K.W. at 70% weekly load factor..	$24 per kilowatt year.
Excess energy above 70% load factor..	$.002 per K.W.H.

(2) <u>California-Oregon Power Company and Northern California Power Company - Delivery to Pacific Gas and Electric Co. at Colusa</u>

8000 K.W. at 70% weekly load factor..	$30 per kilowatt year.
Energy in excess of 70% load factor..	$.0025 per K.W.H.
Energy in excess of 8000 K.W. - 7 months delivery of 4000 K.W. at 50% seasonal load factor ..	$.004 per K.W.H.

The above rates would result in a gross revenue to California-Oregon Power Company at Kennet of a minimum of $204,000 annually, and to Northern California Power Company a revenue to cover cost of transmission of power received from California-Oregon Power Company and return for power delivered from its own plants of $76,000.

Pacific Gas and Electric Company considered the price above referred to was higher than their own costs and submitted evidence at the hearings relative to the cost and value of service to them.

The rate suggested by Mr. Ready as applicable to delivery at Colusa, represents an average rate per kilowatt hour, at 70% load factor, of 4.9 mills, and at 100% load factor at 4.15 mills per kilowatt hour. This compares favorably with the rate paid by Pacific Gas and Electric Company to the Northern California Power Company for the second block of power delivered at Chico, some 40 miles further north, which rate is 4.13 mills per kilowatt hour at 100% load factor.

Based upon a further analysis of exhibits and estimates presented, it would appear that California-Oregon Power Company will probably be required to deliver approximately 8,600 kilowatts at Kennet to supply 8,000 kilowatts to Colusa, and from a recomputation of the various costs chargeable to this service it would appear that a rate of $23.00 per kilowatt per year at 70 per cent load factor for the 8,500 kilowatts would be a reasonable rate.

The Northern California Power Company's system used in delivering the power is primarily transmission lines, and it appears that the capacity of its existing lines for service to its own consumers will be limited materially by the transfer of the 8,000 kilowatts continuously to Pacific Gas and Electric Company, although such lines are reinforced. The estimated cost determined by Mr. Ready for the power delivered at Colusa was approximately $31.15 per kilowatt year. Based upon the cost to the northern company I do not see any reason for changing the rate from $30.00 suggested by Mr. Ready.

Pacific Gas and Electric Company submitted comparative costs of development of power from its own plants, based upon the findings in Decision No. 2947, Opinions and Orders of the Railroad Commission, State of California, Vol. 8, Page No. 566.

In this computation Pacific Gas and Electric Company computed the cost upon the basis of the sum of its separate hydroelectric plant peaks, and further included in the cost taxes at 5.6 per cent. Applicant does not pay the tax on production cost but on the revenue received from sale of this energy, which tax is applicable both to the purchased and produced power and therefore should not have been included. I believe the method of determining the comparative peak supply from the plants is not the proper one. The power to be purchased from the northern companies is on a basis of 8,000 kilowatts at 70% load factor throughout the year.

The Pacific Gas and Electric Company's plants during the year 1915, which was the year used in comparison, supplied a simultaneous peak during the low water period of approximately 65,000 kilowatts, as compared with the sum of the individual peaks of 83,575 kilowatts used by the company. It would appear more reasonable to use in comparison the 65,000 kilowatt basis as this supply will not reduce during the low water period.

Pacific Gas and Electric Company included in its comparative cost $98,000 State taxes. This apparently should not have been included in this comparison. On the revised bases, the cost of the power from the company's system, on the basis of 70% guaranteed load factor, would be approximately $27.00 per kilowatt year as compared with the company's computation of $24.27. It is well to note that in Case No. 550, the decision in which was used the computations above referred to, Pacific Gas and Electric Company contended for a cost of hydro-electric power which, on the above basis, would, with the necessary additions, represent a cost of from $29.00 to $30.00 per year per kilowatt of simultaneous peak. Under present conditions the cost of the construction and operation of plants exceed previous costs materially, and though it does not follow that rates for existing plants should necessarily be based upon existing costs, still I believe that the proposed rate is favorably comparable.

Considerable difference of opinion exists between the Northern California Power Company and the Pacific Gas and Electric Company as regards the rate for the surplus power of 4,000 kilowatts for seven months in the year. The Northern California Power Company urge that the rate of 4 mills per kilowatt hour, suggested by Mr. Ready, was too low, and compared this rate with the rate received for the second block of 4,000 kilowatts delivered to the Pacific Gas and Electric Company at Chico, for which a rate of 4.1316 mills per kilowatt hour was received for power at a guaranteed purchase of 100% load factor. It was urged that the power delivery at Colusa Corners was closer to the purchasing company's center of load than Chico, and that the Pacific Gas and Electric Company was guaranteeing only 50% load factor as against 100% load factor at Chico.

The Pacific Gas and Electric Company, on the contrary, apparently takes the position that this energy is comparable with energy produced from storage, which it urges will cost it approximately 2 mills per kilowatt hour to produce on its system, and also urges a lower rate because the power is surplus to the Northern California Power Company and would be wasted unless purchased by the Pacific Gas and Electric Company.

The Pacific Gas and Electric Company fails to submit any supporting evidence, however, to the effect that any additional power, directly comparable with this purchase, could be developed on its own system within a reasonable period at a cost of 2 mills per K.W.H.

In this emergency time, it would appear that the rate for the excess power should be such as to encourage the greatest utilization of surplus energy in the conservation of fuel oil. The Pacific Gas and Electric Company should be encouraged to use as much of the surplus energy as can be taken on its system in order to reduce the oil consumption, and the rate should be such as would make it possible to economically take the surplus power at as high a load factor as can be delivered.

It appears that the losses on the surplus energy purchased will be greater than those on the first block owing to the extra loading of the company's system. Due to these losses, the Pacific Gas and Electric Company probably cannot take the excess power at a rate comparable with the rate for the primary delivery.

On the other hand, the costs to the Northern California Power Company of delivering the surplus power ~~[illegible]~~ vary but slightly with the amount delivered, as long as no binding guarantee of delivery exists. I believe that, under the circumstances, providing the Pacific Gas and Electric Company will guarantee to take 60,000,000 kilowatt hours per year, representing 11,000,000 in excess of the 70% load factor guarantee on the primary power delivery, a fair rate for this surplus power would be, under the emergency conditions existing at this time, 3-1/2 mills per kilowatt hour.

It should be understood in this determination that the surplus rate herein suggested should not be considered as a basis, or precedent, for future determination of rates for power delivered.

The following rates for power delivered at Kennet and Colusa Corners are considered fair and reasonable under the conditions existing in this case:

ELECTRIC POWER RATE

(a) California-Oregon Power Company - Delivery to Northern California Pr. Co. at Kennet

Guaranteed delivery and purchase - 8500 kilowatts at 70% load factor, equivalent to 52,122,000 K.W.H. per year.

Rate (3.75 mills per K.W.H.) per year .. $195,500

Energy delivered in excess of 8500 K.W. at 70% load factor - 52,122,000 K.W.H.

Rate 2.75 mills per K.W.H.

(b) California-Oregon Power Company and Northern California Power Company - Delivery to Pacific Gas and Electric Co. at Colusa

Guaranteed delivery and purchase - 8000 kilowatts at 70% load factor, equivalent to 49,056,000 K.W.H. per year.

Rate (4.9 mills per K.W.H.) per year .. $240,000

Guaranteed purchase of maximum of 4000 kilowatts additional on a basis of 50% annual load factor based upon the average peak available supply throughout the year at Colusa in excess of 8000 K.W.

Rate: All additional energy in excess of 70% guaranteed load factor on 8000 K.W. 3.5 mills per K.W.H.

The period during which the guarantee of 70% load factor shall apply shall be by weeks from July 1st to December 1st, and by months from December 1st to July 1st.

Under the above rates it is not contemplated that the Northern California Power Company guarantees definitely to deliver 4000 K.W. for the seven months of October to April, inclusive, but that all energy in excess of 8000 K.W., at 70% load factor, will be considered as surplus, whether said energy is delivered at a higher load factor than 70% at 8000 K.W. or at a higher peak.

A further difficulty between the parties arose over the matter of penalty or strictness of guarantee.

I believe that, as regards the first or primary delivery of 8000 K.W., the Northern California Power Company should guarantee this delivery definitely, and that correction should be made to the bills in case of failure to deliver the supply for any material length of time when such supply is demanded.

I hereby recommend that the Commission make the following recommendations:

RECOMMENDATIONS

The Commission having instituted, on its own motion, an investigation into the transmission of power from California-Oregon Power Company and Northern California Power Company to Pacific Gas and Electric Company, and having advised itself regarding the question of rates for said power, and hearings having been held and the matter, in so far as it refers to the transmission and delivery of power to Northern California Power Company and Pacific Gas and Electric Company, being submitted and now ready for decision,

The Commission hereby finds as a fact that the following rates for power to be delivered, as set forth in the schedule, are just and reasonable.

ELECTRIC POWER RATE

(a) California-Oregon Power Company - Delivery to Northern California Pr. Co. at Kennet

Guaranteed delivery and purchase - 8500 kilowatts at 70% load factor, equivalent to 52,122,000 K.W.H. per year.

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Guaranteed purchase of maximum of 4000 kilowatts additional on a basis of 50% annual load factor based upon the average peak available supply throughout the year at Colusa in excess of 8000 K.W.

Rate: All additional energy in excess of 70% guaranteed load factor on 8000 K.W. 3.5 mills per K.W.H.

IT IS HEREBY RECOMMENDED THAT:

(1) California-Oregon Power Company and Northern California Power Company enter into agreements for the transmission and delivery to Northern California

Power Company of 8500 K.W. at Kennet.

(2) California-Oregon Power Company, Northern California Power Company and Pacific Gas and Electric Company enter into agreements for the transmission and delivery to Pacific Gas and Electric Company at Colusa of 8000 K.W. together with excess power as set forth in this opinion at the rates herein found to be just and reasonable for such delivery.

IT IS HEREBY FURTHER RECOMMENDED that the several companies take immediate steps to conclude such agreements or contracts and to construct the transmission lines and substations required for the delivery and utilization of such power at the earliest time commensurate with economy of construction.

The foregoing opinion and recommendations are hereby approved and ordered filed as the opinion and recommendations of the Railroad Commission of the State of California.

Dated at San Francisco, California,
this 2nd day of ~~April,~~ May 1918.

Max Thelen

Alex Gordon

Edwin O. Edgerton

Frank R. Devlin

Commissioners.