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Decision No._____

Decision No. 5214

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 War.) Case No. 1176.

Chas. P. Cutten and W. G. Vincent for Pacific Gas and Electric Company.
Warren Gregory and H. F. Jackson for Sierra and San Francisco Power Company and Coast Valleys Gas and Electric Company.
Chaffee Hall and Guy C. Earl for Great Western Power Company and City Electric Company.
Warren Gregory and Samuel Kahn for Western States Gas and Electric Company, and San Diego Consolidated Gas and Electric Company.
R. H. Ballard and A. N. Kemp for Southern California Edison Company.
E. C. Voorheis for Amador Electric Light and Power Company.
A. G. Wishon, A. E. Wishon and W. G. Kerckhoff for San Joaquin Light and Power Corporation and Midland Counties Public Service Corporation.
W. F. Detert for Northern California Power Company.
J. R. Dixon for Southern Sierras Power Company.
R. B. Young for Grizzly Electric Company.
C. A. Luckenbach for Los Angeles Gas and Electric Corporation.
H. J. Coffill for Tuolumne County Electric Power and Light Company.
F. W. Mielenz for Napa Valley Electric Company.
W. M. Sheppard, H. C. Stoddard and J. D. McKee for California-Oregon Power Company.
A. K. Harford and J. T. Whittlsey for Universal Electric Company.
Frank Bell for Bell Electric Company.
F. H. Fowler for United States Forestry Service.
W. B. Mathews and E. F. Scattergood for City of Los Angeles,

DEVLIN, Commissioner.

O P I N I O N .

This proceeding was instituted by the Railroad Commission of the State of California on its own motion, having for its object an investigation of 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.

Hearings in the matter were held on December 10, 1917, and on January 14 and 31, 1918, appearances being made by all the larger electric utilities of the State and by certain Federal authorities.

The first hearing, held December 10, 1917, consisted largely of general discussion and in outlining the procedure to be pursued, and resulted in plans being arranged for co-operation between the Electric Division of the Commission and representatives of the electric utilities and Federal authorities in order to expedite the investigation.

Thereafter, pursuant to such plans, many informal conferences were held between representatives of the Commission's Electric Division and representatives of the utilities, such informal conferences being carried on under the direction of Mr. F. Emerson Hoar, Gas and Electrical Engineer of the Commission, and later, after Mr. Hoar had been called into military service as Captain in the Engineering Corps, such direction was under

Acting Gas and Electrical Engineer L. S. Ready with the co-operation of several advisory committees of the electric utilities of both the northern and southern portions of the State.

The first matter to be taken up at these conferences was the conservation of oil by electric utilities.

At the subsequent hearings, reports were submitted on the general condition of hydro-electric and steam development and the various means by which oil consumption could be reduced through the complete co-ordination of the operation of hydro-electric plants and existing transmission systems, and general reports were submitted regarding the growth of business and the prospect of development of plants of the various utilities in the immediate or near future.

Conferences were also held between the Electric Division of the Commission and representatives of the electric utilities and of the Federal Government having in view a thorough investigation of the entire situation in question. The Electric Division has carried on such investigation subsequent to the last formal hearing.

On January 31, 1918, the last formal hearing was had, and at the conclusion of such formal hearing it was announced by the presiding Commissioner that the Commission would consider the situation on the evidence and reports then before it, as developed up to date, and would issue such order or form of recommendations as it believed proper and appropriate from the information already adduced.

The matter was not finally submitted on said last named date, and I would recommend that the case be kept open as a general investigation affording opportunity from time to time to take up other emergency matters pertaining to the oper-

ation of electric utilities of the State and making such orders and recommendations from time to time as conditions demand. It is not unlikely that it will be found advisable to keep this case open in this manner during the war emergency.

From the evidence presented at the hearings and investigation made, as previously mentioned, it appears clear that although considerable economy in the use of oil would result from more complete interconnection and co-operation of hydro-electric plants, yet it is absolutely necessary that the electric utilities take immediate steps to construct additional hydro-electric plants to meet the constantly growing need for power service made by the normal growth to which is added the special needs created by war industries which are rapidly developing throughout the State.

An analysis of the power situation shows that the State is naturally divided into two separate districts at this time with regard to the interconnection of power companies, and such districts will hereafter in this opinion for convenience be designated Northern District and Southern District.

The Northern District comprises that portion of the State served by the Pacific Gas and Electric Company, Great Western Power Company, Sierra and San Francisco Power Company, Northern California Power Company, California-Oregon Power Company and Western States Gas and Electric Company and certain smaller utilities and subsidiary electric companies. This district extends south in the San Joaquin Valley to about Merced.

The Southern District which, to a large extent, is a unit by itself, covers Southern California and all of the San Joaquin Valley south of Merced. The principal electric transmission facilities in this portion of the state are operated by

the Southern California Edison Company, Southern Sierras Power Company and its allied corporations, San Diego Consolidated Gas and Electric Corporation, Los Angeles Gas and Electric Corporation, City of Los Angeles serving territory south and east of the Tehachapi Mountains; San Joaquin Light and Power Corporation, and Mt. Whitney Power and Electric Company in the San Joaquin Valley; and the Midland Counties Public Service Corporation in San Luis Obispo and Santa Barbara Counties.

Owing to this natural division of the utilities into two groups and further to the fact that special problems have presented themselves in connection with the Southern District, I have considered it advisable that the Commission make its formal recommendations at this time that certain of the companies in the Southern District take immediate steps toward the further development of hydro-electric power. In the following discussion, therefore, I will limit the consideration to the power supply and needs in the Southern District.

The reports of the Southern Committee together with information submitted to the Commission in connection with this case and Annual Reports of the companies show that in 1915 there was produced by these utilities approximately 930,000,000 K.W.H.; in 1916, 1,010,000,000; and in 1917, 1,146,000,000 K.W.H. Of this amount, in 1917, 911,000,000 K.W.H. were produced by hydro-electric plants, 235,000,000 by steam plants, requiring a total oil consumption of 1,056,000 barrels and an oil equivalent of natural gas used of approximately 260,000 barrels additional. The growth of business between 1915 and 1916 was approximately 75,000,000 K.W.H. and between 1916 and 1917, 140,000,000 K.W.H., while the simultaneous peak demand for these combined systems increased 25,000 K.W. in 1917 over the demand in 1916.

The Southern District Committee submitted in their report to the Commission their estimate of the probable growth in requirements of electric power on the southern systems during the years 1917 to 1921, from which it appears that unless further hydro-electric developments are immediately started and carried on to completion the amount of oil which will be required to supply the power will be increased by 1921 to approximately 2,700,000 barrels as against the consumption in 1917 of 1,310,000 barrels.

The following table sets forth a summary of the estimated requirements for power for the years 1918 to 1921 with the actual for 1916 and 1917 together with the estimates of energy available from hydro-electric plants under normal water conditions with existing operation of systems, what can be expected with complete interconnection of existing facilities without further hydro-electric development, and the combined amount of oil and oil equivalent of gas which will be required in case no further hydro-electric developments are made.

TABLE NO. I.

	Millions of K.W.H.					Bbls.	
		Available Water		Steam Production		Oil Equiv. Required	
Year	Total	Present Operation	Complete Inter-Connect.	Present Operation	Complete Inter-Connect.	Present Operation	Complete Inter-Connect.
1916	1,010	875		135	135	900,000	900,000
1917	1,146	911		235	235	1,310,000	1,310,000
1918	1,270	1,087	1,150	183	120	928,000	600,000
1919	1,210	1,110	1,170	300	240	1,520,000	1,200,000
1920	1,565	1,110	1,170	455	395	2,295,000	1,997,000
1921	1,715	1,110	1,170	605	545	3,040,000	2,725,000

By the utilization of the existing hydro-electric plants with the additions made during 1917 to full capacity by

co-operative operation and complete utilization of the existing and contemplated interconnections, the oil consumption for 1918 should, under normal conditions of precipitation, be reduced 700,000 barrels below 1917 operations.

The subnormal rainfall conditions as they existed on the date of the last hearing of this matter indicated a very material increase in oil consumption this year; but a decided improvement in this respect has taken place since January 31, but it is by no means certain that even with such improved water conditions that normality will be attained in this regard this year.

The existing interconnections and those which it appears urgent that utilities make at this time are as follows:

The Southern California Edison Company and Southern Sierras Power Company have had already installed a 6,250 K.V.A. frequency changer at Colton, making possible the transfer of 5,000 K.W. either from one company or the other and arrangements have been made for the unified operation of the plants of the two companies whereby the greatest utilization of water will result.

The City of Los Angeles and the Southern California Edison Company have interconnected their systems since the early part of 1917 and the Edison Company is absorbing all excess or surplus power developed by that City's existing plants. In addition, the City of Los Angeles is supplying the municipal plant of Pasadena.

Construction work is in progress for the interconnection between the Southern California Edison Company and San Diego Consolidated Gas and Electric Corporation whereby the San Diego Company will be supplied with the larger portion of the power which it now is required to produce by steam. In addition, Southern California Edison Company has practically completed construction of a transmission line to Santa Barbara, thus making possible the shutting down of that steam plant and

the greator utilization of hydro-electric energy produced on the Edison Company's system.

At the present time interconnection is being made between the Southern California Edison Company and the San Joaquin Light and Power Corporation near Bakersfield, whereby the San Joaquin Company and the Mt. Whitney Company, through the connection at Strathmore, may be supplied from one of the Edison Company's plants or supply power to the Edison system, and thus make use of a greater amount of hydro-electric power on the San Joaquin Corporation's and Mt. Whitney Company's systems and also allow for the operation of the more efficient steam plants of the Southern California Edison Company in place of those of the San Joaquin and Mt. Whitney companies.

It has been informally recommended by this Commission to Southern Sierras Power Company that it construct a transmission line from Rush Creek power plant, in Mono County, to Bishop, in Inyo County, by which line existing plant capacity amounting to 4,500 K.W. will be made available and 15,000,000 K.W.H. will be utilized by that company which has not been possible of use before.

By the above arrangements, Los Angeles Gas and Electric Company is the only large producer of power in the Southern part of the State not interconnected with hydro-electric systems.

With all the interconnections and the complete cooperation of the various utilities in the operation of existing hydro-electric facilities, it will not be possible for the companies to meet the continually growing demand for power without taking immediate steps for further plant development, and it is absolutely essential that these companies be given every encouragement possible and assistance to meet the growing requirements on their systems. To keep the oil consumption

down to approximately where it was in 1917, will require an annual increase in hydro-electric facilities in the Southern District of at least 20,000 K.W. of useful capacity and an increase in energy output of 140,000,000 K.W.H. under normal rainfall conditions.

Considerable evidence was introduced at the hearings in this application as to the question of future developments and special attention was given to the plants which could be most quickly developed and which would give the most relief at the least capital expenditure. [redacted]

A survey of the proposed power projects reported as available for development shows that the City of Los Angeles controls three which might be readily developed. The City has at present in its aqueduct development two hydro-electric plants known as San Francisquito Plant No. 1 of 29,000 K.W. peak capacity, and the Los Angeles River Plant of 2,500 K.W. peak capacity capable of delivering, with the expected water development for 1918 which the City's engineers at the time of the hearing believed could be made, approximately 140,000,000 K.W.H. per year. It appears from the evidence that the City has three additional power developments along the aqueduct within a radius of approximately 40 miles of Los Angeles. The proposed plants are known as San Francisquito Plant No. 2, San Fernando Plant and Franklin Canyon Plant. By the construction of these three plants to the economical capacity comparable with the water supply to be utilized by the City in the immediate future and by the addition of another unit to the San Francisquito Plant No. 1, the City could develop approximately 36,000 K.W. of peak capacity during the year in

addition to its present plants and make available an additional 115,000,000 K.W.H. for use in the City of Los Angeles and vicinity.

This development, it is estimated, could be made with an expenditure between $2,500,000 and $3,000,000 and if prompt action was taken the larger part of the development could be constructed within a 12 months' period provided Priority Orders were obtained for equipment. This power, due to its proximity to the main center of load and the fact that the plants could be operated at a load factor which would be most efficient in the conservation of oil, would make possible a reduction in the use of oil for production of electricity in the Southern District of approximately 600,000 barrels of oil per annum, and the production of power in the existing plants during the ensuing years in excess of that produced in 1917 would increase the saving in oil an additional 150,000 barrels per year.

Difficulties, however, have arisen which, on the present record of this case apparently make it impossible at this time to count on the development of these plants. The City of Los Angeles has bonds authorized amounting to approximately $2,000,000 which it contends cannot be utilized for the development of additional production plants but must be used for the construction of distribution systems. It contends, however, that if a satisfactory agreement could be entered into with the Los Angeles Gas and Electric Corporation whereby that Company would lease to the City its entire system, such agreement to contain an option to purchase the same by the City, that the moneys now authorized could be utilized in connection with the construction of additional hydro-electric plants.

The Los Angeles Gas and Electric Corporation declines to consider this plan, which, it contends, constitutes a com-

plete surrender of the possession of its distributing system to what is in fact a business competitor, and also contends that certain provisions of its trust deed make such plan legally impossible.

Considerable time was devoted to this matter at the different hearings, and a special conference was held at Los Angeles by members of the Commission, representatives of the Electric Division of the Commission, representatives of the City of Los Angeles, and representatives of civic organizations and officials of the Los Angeles Gas and Electric Corporation, mainly in an endeavor to effect some solution of the existing differences.

Failure attended such efforts, however, and I am convinced that there is little likelihood that the City of Los Angeles and Los Angeles Gas and Electric Corporation will come to any agreement in this respect.

The Commission has no authority, if it so desired, to order the City of Los Angeles to develop the plants referred to and deliver such power to the Los Angeles Gas and Electric Corporation, neither has it authority, if it so desired, to compel the Los Angeles Gas and Electric Corporation to accede to the proposition of the City of Los Angeles.

The difficulty seems to be one in which each of the parties to the controversy is fearful that its future activities in the electrical field of the City of Los Angeles will be prejudiced.

It is to be seriously regretted that at this crucial period, when conservation of oil is one of the most important of war needs, that the give and take spirit should not be more in evidence, and that all [redacted] interests are not subordinated to actual National war necessity.

The three electric utilities which are at present developing power by hydro-electric plants, are the Southern California Edison Company, San Joaquin Light and Power Corporation and the Southern Sierras Power Company.

The Southern Sierras Power Company reported on request of the Commission that it has two proposed projects, located in Mono and Inyo Counties, one of 10,000 kilowatt capacity on Leevining Creek in Mono County, which is estimated will cost approximately $1,000,000 to construct, and an additional plant on Bishop Creek, Inyo County, of 7,500 kilowatt capacity, which is estimated will cost approximately $1,300,000 to complete.

It appears that the Southern Sierras Power Company and its allied corporations will probably meet their growing demands for the coming year by the additional peak capacity made available to its entire system by the construction of the transmission line from Rush Creek plant to Bishop, which it has now under contemplation and which this Commission has informally recommended be constructed, and such construction is now strongly urged.

Sufficient information is not available at this time to pass upon the other project. Should it later appear advisable that it be constructed, the Commission will give the matter further consideration.

San Joaquin Light and Power Corporation has added one plant to its system during the past year and has increased the capacity of its Kern Canyon Plant and has under way the addition of two other small plants, which, when completed, will increase the annual kilowatt hour output under normal conditions 6,000,000 K.W.H.

Other possible projects are contemplated but not definitely decided upon for the immediate future development.

It would appear advisable that San Joaquin Corporation should seriously consider adding to its plants in such a way as to meet the requirements on its own system, as considerable expense would be incurred in the transmission of power from the smaller plants to the larger centers of distribution.

The Southern California Edison Company has set forth in the exhibits presented to the Commission in connection with this matter and other data requested by the Commission which was to be considered in evidence, certain proposed projects. The hydro-electric projects proposed include what is known as Kern River No. 3, Pittman Creek Diversion, additional installation in the present Big Creek Plant No. 2 and also Big Creek Plant No. 3 and the storage and diversion of waters from additional proposed reservoirs into the Big Creek developments.

Kern River Plant No. 3, as reported, will be capable of developing 180,000,000 kilowatt hours per year under normal rainfall conditions, and will have a plant capacity of 30,000 kilowatts. This plant is estimated will cost approximately $6,500,000 to complete. The Company has already spent, approximately $1,000,000 in preparing for this construction, and has completed a portion of the tunnel work. It is estimated that a part of the plant can be put in operation during 1919, and that the full capacity can be made available by 1920, provided action is taken at the present time for the development of this project.

The Pittman Creek diversion into the Huntington Lake reservoir of the Southern California Edison Company at an expenditure of approximately $500,000 will result in an annual production of 22,000,000 kilowatt hours, and with a further installation of a dam in the Pittman Creek this capacity, at a cost of approximately $300,000, can be increased to 32,000,000 kilowatt hours.

A third development proposed by the Edison Company is the installing of an additional unit in Big Creek Plant No. 2 at a cost of approximately $850,000, which will make available an additional peak of 16,000 kilowatts and 21,000,000 kilowatt hours per year.

From further investigation of the general power projects in the vicinity of Big Creek developments made by the Commission's engineers, it appears that a reservoir site known as Shaver Lake, at present owned by the Fresno Flume and Lumber Company, if developed can be used in connection with the Big Creek developments of the Southern California Edison Company. From the engineer's reports it appears that approximately 50,000,000 kilowatt hours per year can be made available commencing with the middle of the coming summer, providing satisfactory negotiations could be carried out between the Lumber Company and the Southern California Edison Company for the purchase of the necessary reservoir site and the construction of the necessary conduits.

A fourth development considered by the Southern California Edison Company contemplates the construction of a hydroelectric plant known as Big Creek No. 3, below Plant No. 2, which is estimated will cost $5,000,000 for the plant and $200,000 additional for transmission facilities, and will make available approximately 34,000 kilowatts and will produce approximately 150,000,000 kilowatt hours per year.

Of the above projects it is estimated by Southern California Edison Company that Kern River Plant No. 3 can be put in partial operation in the fall of 1919, Pittman Creek diversion can be constructed for operation in the year 1919, and the third unit to be installed in Big Creek Plant No. 2 will be installed in two years, that to construct Big Creek

No. 3 will require three and a half years for completion.

In order to meet the growing demands for power upon the Edison Company's system and the demands on other systems purchasing power from the Southern California Edison Company, it appears that Southern California Edison Company should immediately take steps to increase its hydro-electric capacity and to make available for use sufficient kilowatt hours to reduce the oil consumption in its steam plants to the most economical point considering the question of conservation of fuel oil and cost of operation. To do this will require the financing of approximately $11,000,000 for hydro-electric plants and to serve consumers an additional amount of approximately $4,000,000 for distribution system.

It is clearly advisable for Southern California Edison Company to consider the question of developing at the present time the least expensive plants, in order that it may not overburden its consumers with additional fixed charges resulting from the present high interest rate and the abnormal prices for material and labor.

I therefore recommend that the Commission make the following recommendations:

RECOMMENDATIONS.

1. Southern California Edison Company, Southern Sierras Power Company and San Joaquin Light and Power Corporation proceed, either severally or jointly, through any channels which are available, with an effort to make reasonable financial arrangements, subject to the approval of this Commission, for the development of such additional hydro-electric power and the distribution of same to their

consumers as appears necessary to supply the increased demand upon their systems and to insure a sufficient supply of power for all necessary needs and to reduce the consumption of oil to an economical minimum.

2. Southern Sierras Power Company construct its Rush Creek-Bishop Line.

3. Southern California Edison Company take immediate steps for the carrying out of a comprehensive plan, subject to the approval of this Commission, for the financing of approximately $15,000,000 for the development of further hydro-electric plants sufficient to meet growing requirements of power and the necessary additions to its distribution system.

4. Southern California Edison Company in developing such additional power during the present emergency, proceed with the most economical developments commensurate with the urgency of prompt action.

5. San Joaquin Light and Power Corporation take the necessary steps to insure the construction of additional plants, or the increase of facilities, or by the agreement of purchase, to maintain an adequate supply of power during the present emergency for the

agricultural and industrial purposes, and other necessary requirements for power service.

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 18th day of March, 1918.

Max Thelen

H. S. Rowland

Edwin O. Edgerton

Alex Gordon

Commissioners.