

Decision No. 45861**ORIGINAL**

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA.

In the Matter of the Application of)
 PACIFIC GAS AND ELECTRIC COMPANY)
 for an order of the Public Utilities)
 Commission of the State of California)
 issuing to applicant a certificate of)
 public convenience and necessity for)
 the construction and installation of)
 the within described steam electric)
 generating plants, or units, together)
 with the related electric trans-)
 mission lines and facilities.)

Application No. 29522
 1st Supplemental

O P I N I O N

By Decision No. 42282 (48 Cal. P.U.C. 323), dated November 30, 1948, Pacific Gas and Electric Company was granted a certificate that public convenience and necessity required the construction and operation of electric production and transmission facilities at Kern Steam Plant near Bakersfield, Moss Landing Steam Plant on Monterey Bay, and Antioch (now called Contra Costa) Steam Plant near the mouth of the San Joaquin River. Pacific was authorized to install in each of the latter two plants three turbo electric generating units having nominal ratings of 100,000 kw each, a total of 600,000 kw. Provision was made at each plant for three additional units.

Pacific in this first supplemental application seeks authority to install two of the final units in each of the plants.

Public hearing of the application was held before Commissioner Huls and Examiner O'Brien on April 9, 1951, in San Francisco.

Construction Schedule

The record shows that the main units have been placed in service or are anticipated to be available as follows:

<u>Unit No.</u>	<u>Moss Landing</u>	<u>Contra Costa</u>
1	April 20, 1950	May 7, 1951
2	December 20, 1950	June 18, 1951
3	February 19, 1951	July 22, 1951
4	June, 1952	February, 1953
5	October, 1952	May, 1953
6	Not scheduled	Not scheduled

Load Growth

Pacific estimates that demands and energy requirements in the area will continue to expand at a substantial rate. The relationships between requirements and resources presently available or scheduled for completion within the period of the estimate are shown in the following table. Demands are shown for both summer and winter peaks, and energy estimates are on an annual basis.

AVAILABLE CAPACITY VS. DEMANDS

	: 1951 Present:				
	: Outlook :	1952		1953	
Item	: August: Dec. :	August: Dec. :	August: Dec. :	August: Dec. :	
<u>Average Hydro Production Year (Based on 1935 Stream Flow)</u>					

Estimated ResourcesCapacity, Megawatts

Hydro	1,203	1,163	1,203	1,163	1,228	1,195
Steam	1,496	1,596	1,646	1,746	1,996	1,996
From Others	510	501	478	443	474	441
Total	3,209	3,260	3,327	3,352	3,698	3,632

Estimated Loads

Peak Demand, Megawatts	2,801	2,801	3,049	3,029	3,276	3,257
Annual Increase, Megawatts			248	228	227	228

Estimated Margin

Capacity, Megawatts	408	459	278	323	422	375
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Dry Hydro Production Year (Based on 1931 Stream Flow)Estimated ResourcesCapacity, Megawatts

Hydro	(1951	1,112	1,134	1,140	1,163
Steam	(not	1,646	1,746	1,996	1,996
From Others	(a	412	212	409	212
Total	(dry	3,170	3,092	3,545	3,371
	(year				

Estimated Loads

Peak Demand, Megawatts	(on	3,107	3,055	3,334	3,285
Annual Increase, Megawatts	(this	306*	254*	285*	256*
	(system				

Estimated Margin

Capacity, Megawatts	63	37	211	86
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* Increase over the preceding year on an avg. hydro production basis.

AVAILABLE ENERGY VS. ENERGY REQUIREMENTS

	1951 Present Outlook	1952	1953
<u>Average Hydro Production Year (Based on 1935 Stream Flow)</u>			
<u>Estimated Resources</u>			
Energy, Million Kwhr			
Hydro	8,010	6,949	7,092
Steam	10,181	12,135	14,154
From Others	2,840	2,045	2,047
Total	21,031	21,129	23,293
Less Overhaul	1,027	1,074	1,147
Total Available	20,004	20,055	22,146
<u>Estimated Loads</u>			
Energy, Million Kwhr	15,604	17,120	18,361
Annual Increase, Million Kwhr		1,516	1,241
<u>Estimated Margin, Million Kwhr</u>	4,400	2,935	3,785

Dry Hydro Production Year (Based on 1931 Stream Flow)

<u>Estimated Resources</u>			
Energy, Million Kwhr	(1951		
Hydro	(not	5,123	5,192
Steam	{a	12,135	14,154
From Others	(dry	1,753	1,759
Total	(year	19,011	21,105
Less Overhaul	(on	969	1,042
Total Available	(this	18,042	20,063
	(system		
<u>Estimated Loads</u>			
Energy, Million Kwhr		17,623	18,864
Annual Increase, Million Kwhr		2,019*	1,744*
<u>Estimated Margin, Million Kwhr</u>		419	1,199

* Increase over the preceding year on an avg. hydro production basis.

The foregoing estimate indicates that, with average hydro conditions in 1952 and 1953, capacity and energy margins would be satisfactory but that dry year conditions would reduce the margins very materially. Pacific has not fully crystallized its construction plans for 1954. However, it has tentatively scheduled 500,000 kw of additional steam capacity in four units to become operative in each of the first four months of 1954. The site of the new plant as yet has not been finally determined.

Plant Cost

Pacific submitted estimates of the cost of the fourth and fifth units at Moss Landing and Contra Costa. For comparison, the following table summarizes the estimated cost of units 1, 2, and 3 and units 4 and 5, together with the estimated resulting cost of the plants when the present additions shall have been completed.

	<u>Cost</u>	<u>Nominal Rating</u>	<u>Unit Cost</u>
<u>Moss Landing Steam Plant</u>			
Units 1, 2, and 3			
Production Plant	\$46,485,000	300,000 kw	\$155
Substation	5,870,000		
Lines	4,552,000		
Total	56,907,000		189
Units 4 and 5			
Production Plant	26,540,000	200,000 kw	133
Substation	1,760,000		
Lines	585,000		
Total	28,885,000		144
Units 1 to 5			
Production Plant	73,025,000	500,000 kw	147
Substation	7,630,000		
Lines	5,137,000		
Total	85,792,000		171
<u>Contra Costa Steam Plant</u>			
Units 1, 2, and 3			
Production Plant	46,485,000	300,000 kw	155
Substation	5,633,200		
Lines	2,499,700		
Total	54,617,900		182
Units 4 and 5			
Production Plant	26,450,000	200,000 kw	132
Substation	1,900,000		
Lines	306,000		
Total	28,656,000		143
Units 1 to 5			
Production Plant	72,935,000	500,000 kw	146
Substation	7,533,200		
Lines	2,805,700		
Total	83,273,900		166

Fuel Requirements

Pacific submitted an estimate of its fuel requirements needed to produce the estimated fuel plant output shown in the foregoing tabulation of loads and resources. As a base to judge the

growth of fuel needs, the actual fuel used in 1950 is also included in the tabulation.

Year	Fuel in Equivalent Barrels of Oil				
	Oil and		Total		
	Gas	Refinery	By-products	Other	Avg. Hydro: Dry Hydro:
1950 Actual	5,182,000	5,328,000	80,000	10,590,000	
1951 Current					
Outlook	7,830,000			13,321,000	*
1952	9,050,000			16,395,000	22,048,000
1953	9,180,000			18,702,000	24,355,000

* 1951 is not a dry year on Pacific's system.

Present contracts for fuel are adequate to cover the fuel needs of this period. In case of an all out war, some physical difficulties could be anticipated, with the likelihood of resumption of controls similar to World War II restrictions.

Cost of Production

Based upon an assumed load factor of 70% and fuel costs of \$1.75 per barrel, Pacific estimates the cost of energy delivered to the transmission network from all five units to be about 7.3 mills per kwhr. On the first three units, the cost is estimated at 7.7 mills, and at 6.6 mills on the two additional units. Fuel efficiencies are 630 kwhr and 680 kwhr per barrel, respectively.

Certification

It is apparent from the foregoing discussion that Pacific is obliged to increase the capacity of its production plant, under present conditions, at least as rapidly as outlined in the foregoing discussion. The electric load in the area supplied by Pacific has continued to increase at a rapid rate. Decision No. 42282 suggested the desirability of initiating serious consideration of additional hydro resources. Pacific reports that it is constructing the Bear River unit of its Mokelumne River development, but that its application for a Federal Power Commission license to extend its Kings River

development has been blocked by a protest of the Secretary of the Interior. The cost of fuel-electric production, according to Pacific, approximates very closely the cost of comparable production from hydro sources under present circumstances, and the longer construction periods and delays incident to getting federal clearance of hydro projects influence the decision in favor of the fuel plants.

O R D E R

Public hearings having been held, evidence presented, and the matter being submitted for decision, and upon due consideration the Commission finds that the authority requested by Pacific Gas and Electric Company in this application is reasonable and that public convenience and necessity require and will require that such application be granted; therefore,

IT IS HEREBY ORDERED that Pacific Gas and Electric Company be and it is granted a certificate authorizing it to construct, operate, and maintain the electric production and transmission facilities described in detail in this application comprising the following projects:

1. Units 4 and 5, Moss Landing Steam Plant, 100,000 kw nominal capacity each, together with related facilities including transmission equipment and lines.

2. Units 4 and 5, Contra Costa (Antioch) Steam Plant; 100,000 kw nominal capacity each, together with related facilities including transmission equipment and lines.

The effective date of this order shall be twenty (20) days after the date hereof.

Dated at San Francisco, California, this 26th day of June, 1951.

R. Z. Underwood
Justin F. Grauer
Harold A. Hule
Francis H. Potter
John L. McNeill
Commissioners.