

**ORIGINAL**Decision No. 60644

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

In the Matter of the Application of )  
 SOUTHERN CALIFORNIA EDISON COMPANY )  
 for a certificate that present and )  
 future public convenience and )  
 necessity require or will require )  
 the construction and operation by )  
 applicant of a new steam electric )  
 generating unit, to be known as )  
 Unit No. 4, at its ALAMITOS STEAM )  
 STATION, together with other appur- )  
 tenances to be used in connection )  
 with said station. )

Application No. 42164

OPINION AND ORDERApplicant's Request

Southern California Edison Company, a corporation, by the above-entitled application filed April 20, 1960, seeks a certificate of public convenience and necessity to construct and operate one additional steam electric generating unit at its Alamitos steam station to be known as Unit No. 4 which will be located on applicant's present site consisting of approximately 234 acres located easterly of the City of Long Beach between the San Gabriel River and the Los Cerritos drainage channel northerly of the adjacent Seal Beach oil field. Unit No. 4 will be located adjacent to Unit No. 3 as shown on the plot plan drawing designated as Exhibit B attached to the application.

Prior Authorization

Applicant refers to the fact that this Commission, on August 9, 1955, by Decision No. 51798, found that public convenience and necessity required the construction and operation of Alamitos steam station consisting of two 156,250 kilowatt units, the proposed substation structure and related transmission facilities and

appurtenances. Unit No. 1 was placed in operation in September 1956 and Unit No. 2 was placed in operation in February 1957.

Applicant further refers to the fact that this Commission on February 29, 1960, by Decision No. 59724, found that public convenience and necessity required the construction, operation and maintenance of Unit No. 3 at the Alamitos steam station, together with certain transmission lines and other appurtenances. Unit No. 3, with a nameplate capacity of 300,000 kilowatts (which subsequently has been uprated 10,000 kilowatts) is scheduled to be placed in operation in January 1962.

#### Supplemental Information

To provide supplemental information necessary for a thorough evaluation of this instant application the Southern California Edison Company forwarded three verified data pamphlets which are designated Exhibit No. 1, "Load Resource Data," Exhibit No. 2, "Pacific Southwest Power Area," and Exhibit No. 3, "Estimated Capital and Operating Costs." These exhibits are similar in content and follow the format of exhibits received in evidence at the public hearings on Application No. 41620 for a certificate of public convenience and necessity to construct and operate Unit No. 3 of the Alamitos steam station.

#### Proposed Plant Construction

In the instant application applicant proposes to install a steam turbine electric generator and related structures and equipment facilities with a nameplate rating of 310,000 kilowatts, resulting in a total station rated capacity of 932,500 kilowatts.

It is expected, in connection with the operation of Unit No. 4, that steam will be produced in a single steam generator having an operating capacity of 2,305,000 pounds of steam per hour for

delivery to the turbine throttle at 2400 pounds per square inch pressure and 1050° F. temperature and built to reheat the steam leaving the high-pressure turbine to 1000° F. for return to the reheat section of the turbine. The estimated heat rate for Unit No. 4 at net rated output, assuming gas fuel, is 9,325 Btu/Kwhr and, assuming oil fuel, the net rated output heat rate is estimated to be 8,802 Btu/Kwhr.

The turbine generator for Unit No. 4 will be a cross compound unit with a high-pressure turbine and an intermediate pressure turbine on one shaft rotating at 3600 rpm and coupled to one generator and low-pressure turbine on a second shaft rotating at 1800 rpm and coupled to another generator. There will be no auxiliary generator as an auxiliary power for the unit will be obtained from the main generator bus through a transformer.

Sea water obtained from Alamitos Bay and the Los Cerritos drainage channel through a canal leading to a screen well structure will be used for cooling purposes.

Natural gas will be burned for fuel with provision for alternate burning of fuel oils including high viscosity fuel oil.

The proposed new unit will be designed as an outdoor type station with centralized control facilities.

#### Proposed Transmission Line Construction

The power output of the proposed new unit will be transmitted to applicant's interconnected system partly through existing transmission lines and partly through a new 220-kv transmission line scheduled for construction in 1961. This transmission line will extend from the Alamitos steam station to Del Amo substation a distance of 5.6 miles and will consist of double circuit bundled conductor line of sufficient capacity to transmit the power output

of both Units Nos. 3 and 4. Such proposed construction reflects a change in applicant's original plans which contemplated a separate transmission line for each unit.

#### Load Growth

Applicant's records and studies indicate that its net system power demand has increased from 1,997,100 kilowatts in 1954 to 3,181,000 kilowatts in 1959 and is estimated to increase to 4,090,000 kilowatts in 1962. During the same period net system energy requirements have increased from 10.9 billion kilowatt-hours in 1954 to 17.6 billion kilowatt-hours in 1959 and are estimated to increase to 22.55 billion kilowatt-hours in 1962. The annual data recorded for the years 1954 through 1959 and as presently estimated through 1962 are summarized in the application as follows:

Year	Kilowatts (Thousands)	Increase Over Prior Year		Kwhr (Millions)	Increase Over Prior Year	
		Kilowatts (Thousands)	Per Cent		Kwhr (Millions)	Per Cent
1954 (Rec.)	1,997.1	144.3	7.8	10,919.8	677.3	6.6
1955 (Rec.)	2,234.9	237.8	14.4	12,348.2	1,428.4	13.1
1956 (Rec.)	2,504.0	219.1	9.6	13,763.1	1,414.9	11.5
1957 (Rec.)	2,632.8	128.8	5.2	14,943.0	1,179.9	8.6
1958 (Rec.)	2,962.0	329.2	12.5	15,804.1	861.1	5.8
1959 (Rec.)	3,181.0	219.0	7.4	17,575.5	1,771.4	11.2
1960 (Est.)	3,480.0	299.0	9.4	19,250.0	1,674.5	9.5
1961 (Est.)	3,780.0	300.0	8.6	20,850.0	1,600.0	8.3
1962 (Est.)	4,090.0	310.0	8.2	22,550.0	1,700.0	8.2

Applicant's load estimate as stated above does not include certain capacity and energy to be furnished by applicant to the City of Los Angeles pursuant to "City-Edison 1961-1962 Service Agreement" during the period October 1, 1961 through September 30, 1962, in the capacity of 100,000 kilowatts each month and in the quantity of 600 million kilowatt-hours during the 12 months under an assumed load factor of 68.5 per cent.

Additional System Capacity Requirements

Load resource data, set forth in Exhibit No. 1, including the capacity and energy to be furnished the City of Los Angeles, indicate that after allowing for normal maintenance applicant will experience deficits in its operating gross margins during the years 1960, 1961 and 1962. The data reflect operating dates for new units as follow:

Huntington Beach Unit No. 3	December 1960
Huntington Beach Unit No. 4	May 1961
Alamitos Unit No. 3	January 1962
Alamitos Unit No. 4	August 1962

The margins as developed do not reflect spinning reserve requirements nor the capacity available from the following plants operated on a cold reserve basis:

Available on 24 hours' notice, Long Beach #3, Units 10-11	212,000 kw
Available on 48 hours' notice, Long Beach #2, Units 8R-9	148,000 kw
Available on 30 days' notice, Long Beach #1 Units 4-5-6	20,000 kw
Available on 30 days' notice Long Beach #2 Units 7R	20,000 kw
On call Vernon Diesel	20,000 kw
Total .....	420,000 kw

The data indicate that under adverse hydro conditions, to meet the capacity deficits and provide spinning reserve equal to the largest unit on the system, applicant will have to draw on its cold reserves and/or on nonfirm purchase or mutual standby connections at the time of the December peak in each year to the extent of 368,000 kw in 1961 and 134,000 kw in 1962. If Alamitos Unit No. 4 were to be delayed until after the peak in 1962 the deficiency would increase to 444,000 kw.

Exhibit No. 2 presents load and resource data for the entire Pacific Southwest Power Area. These data indicate decreasing margins for the years 1962 and 1963. Such data are not conclusive, however, as the plant construction programs for some agencies are not fully reflected therein.

Estimated Plant Cost

Exhibit No. 3 sets forth the estimated capital and operating costs of Unit No. 4 and of the total Alamitos steam station. The estimated capital costs for Unit No. 4, which are based on present price levels and assume that such levels will not be materially altered during the construction period, are as follow:

<u>Item</u>	<u>Unit No. 4</u>	<u>Allocation of Joint Facilities</u>	<u>Total Unit No.4</u>
Land and Land Rights	\$ -	\$ 175,000	\$ 175,000
Structures and Improvements	1,110,000	365,000	1,475,000
Boiler Plant Equipment	17,238,000	298,000	17,536,000
Turbine Generator Units	15,023,000	361,000	15,384,000
Accessory Electrical Equipment	3,496,000	169,000	3,665,000
Other Equipment	1,833,000	349,000	2,182,000
Total .....	38,700,000	1,717,000	40,417,000
Dollars per Kilowatt	\$124.84	-	\$130.38

The total cost of the Alamitos steam station, including all four units, is estimated to be \$118,741,000, which is about \$127 per kilowatt. This compares with a cost of \$117 per kilowatt for Units Nos. 1 and 2 at Mandalay steam station and \$130 per kilowatt for Units Nos. 1 and 2 at Huntington Beach steam station.

The cost of the 5.6 mile transmission line connecting Units Nos. 3 and 4 to the Del Amo substation, including the terminal facilities at the Del Amo substation, is estimated to be \$1,465,000. Such cost is not included in the above figures.

Applicant proposes to finance the construction of said steam electric generating unit from available funds or from funds to be obtained through the sale of securities, applications for the issuance of which will be filed with the Commission.

Annual Operating Costs

Applicant's estimated annual costs of operation for Unit No. 4 of the Alamitos steam station, excluding common facilities, are:

<u>Annual Expense Item</u>	<u>Amount</u>
Fuel, Present Price Levels* .....	\$4,877,000
Other Operation and Maintenance .....	232,000
Depreciation, Straight-line 40-year Life .....	968,000
Ad Valorem Taxes, \$6.3441 per \$100 Assessed Value .....	982,000
Income Taxes, Composite Rate of 54.6% .....	956,000
Return, 6.25% on Average Depreciated Capital ...	1,238,000
Total Annual Expense .....	9,253,000

\* Assumes operation at 62.8% capacity factor using gas fuel at \$0.328 per million Btu 60% of the time and oil fuel at \$0.2925 per million Btu 40% of the time.

Based on the foregoing assumptions which reflect fuel at present price levels, the estimated cost of energy from Unit No. 4 at the steam station is 5.43 mills per kilowatt-hour. If a fuel cost of \$0.50 per million Btu's is assumed, the estimated cost becomes 7.13 mills per kilowatt-hour.

The exhibit contains additional data which shows that the estimated unit cost of energy from Unit No. 4, with fuel at present price levels, will vary with capacity factor from 8.4 mills per kilowatt-hour at 33-1/3 per cent capacity factor to 4.7 mills at 100 per cent capacity factor when using gas fuel, and from 7.9 mills per kilowatt-hour at 33-1/3 per cent capacity factor to 4.2 mills per kilowatt-hour at 100 per cent capacity factor when using oil fuel.

Permits, Franchises and Competition

In connection with the construction of Units Nos. 1 and 2 applicant obtained certain permits and franchises. Applicant has obtained authorization to construct Alamitos steam station Units Nos. 3 and 4 from the Air Pollution Control District Hearing Board

by findings and decision dated February 25, 1960. Applicant proposes to obtain any additional necessary permission or authorization which is required from public authorities, as well as any additional franchises which may be needed, for the construction and operation of the new generating unit and other appurtenances.

Consolidation for Accounting Purposes

Applicant alleges that if Units Nos. 3 and 4 of Alamitos steam station are consolidated for accounting purposes, as were Units Nos. 3 and 4 at Huntington Beach steam station, a saving of between \$40,000 and \$50,000 may be realized. It is further alleged that an additional saving may be realized if applicant is not required to file a completion report sooner than one year after the last unit is placed in operation.

Findings and Conclusions

From a review of the information submitted by applicant in connection with this instant application, it is evident that applicant will need Alamitos Unit No. 4 to provide adequate capacity to meet the future public demands for electric energy. It is found as a fact and concluded that public convenience and necessity require that the instant application be granted and the order hereinafter will so provide.

Depending upon the extent to which the estimated loads develop, installation of the new facility in August 1962 could result in applicant having cold reserves greater than necessary to provide adequate system reliability. Applicant should continually review the status of its cold reserves and retire such older plant from service when it is found to be not essential for reliable operation.



The certificate of public convenience and necessity issued herein is subject to the following provision of law:

That the Commission shall have no power to authorize the capitalization of this certificate of public convenience and necessity or the right to own, operate or enjoy such certificate of public convenience and necessity for any amount of money in excess of the amount (exclusive of any tax or annual charge) actually paid to the State as consideration for the issuance of such certificate of public convenience and necessity or right.

The Commission having considered the request of applicant and being of the opinion that a public hearing is not necessary, therefore,

IT IS HEREBY ORDERED as follows:

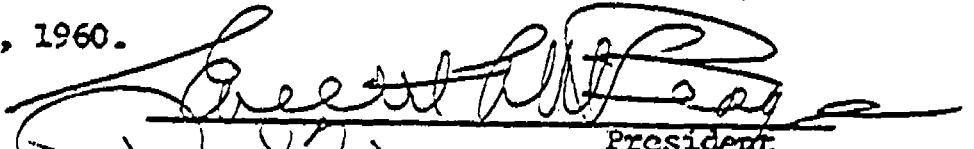
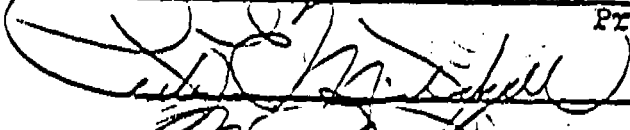
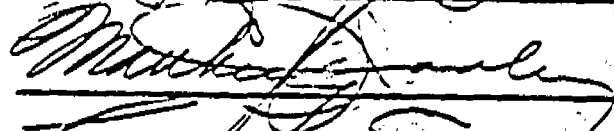

1. That Southern California Edison Company be and it is hereby granted a certificate that present and future public convenience and necessity require, or will require, the construction, operation, maintenance and use of the proposed Unit No. 4, rated at 310,000 kilowatts and generally described in the instant application, at Alamitos steam station, together with related structures, equipment and facilities and a new transmission line to and including terminal facilities at its Del Amo substation, all as set forth in the application.
2. That applicant may account for Units Nos. 3 and 4 as one project and need not report separate costs for each unit.
3. That applicant shall file with this Commission a detailed statement of capital costs of Units Nos. 3 and 4 one year following the date Unit No. 4 is placed in commercial operation.
4. That applicant shall file with this Commission a detailed statement of the capital cost of its proposed transmission line and station improvements to feed the capacity and energy developed by proposed Units Nos. 3 and 4 into its interconnected system within six months after completion thereof.

5. That Decision No. 59724 dated February 29, 1960, is amended to permit the consolidated accounting and reporting as ordered in paragraphs 2, 3 and 4 above.

6. That the authorization herein granted shall expire if not exercised within three years from the date hereof.

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

Dated at San Francisco, California, this 30<sup>th</sup> day of August, 1960.

  
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President  
  
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Commissioners