

Decision No. 73169

ORIGINAL

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 four new gas turbine electric
 generating peaking units, to be known as
 Unit No. 5 at its ETIWANDA GENERATING
 STATION, Unit No. 5 at its HUNTINGTON
 BEACH GENERATING STATION, Unit No. 7
 at its ALAMITOS GENERATING STATION and
 Unit No. 3 at its MANDALAY GENERATING
 STATION, respectively, together with
 other appurtenances to be used in
 connection with said units and stations.

Application No. 49614
 (Filed August 16, 1967)

OPINION AND ORDER

Southern California Edison Company (applicant) requests a certificate of public convenience and necessity for the construction and operation of additional generating units consisting of four gas turbine powered electric generators with related structures, equipment, facilities and other appurtenances.

Applicant proposes in this application to construct one new gas turbine electric generating peaking unit at each of its Etiwanda, Huntington Beach, Alamitos and Mandalay generating stations to be known as Units No. 5, No. 5, No. 7 and No. 3, respectively. Such new generating units will be located on applicant's present station sites as shown in Exhibits A and B attached to the application.

Each proposed new unit will consist of eight gas generators coupled with four expander turbines driving a single-three-phase, 60-cycle, 0.85 power factor hydrogen-cooled 162,500 KVA generator. Because these units are the first of this kind on the Edison system,

applicant has initially assigned an effective operating capacity of 121,000 KW to each of these units.

Based on recently experienced system peak demand and energy requirements and projections for the future, applicant alleges that it requires the use of said Unit No. 5 at Etiwanda Station by January 1, 1969, Unit No. 5 at Huntington Beach Station by April 1, 1969, Unit No. 7 at Alamitos Station by July 1, 1969, and Unit No. 3 at Mandalay Station by March 1, 1970. To meet scheduled operating dates, it is estimated that construction must be commenced by October 1, 1967.

Applicant's records and studies submitted with the application indicate that the net system peak demand has increased from 4,442,000 kilowatts in 1962 to 6,173,000 kilowatts in 1966. It is estimated that its net system peak demand will further increase to 9,160,000 kilowatts by 1970. During the same period, applicant's net system energy requirements have increased from approximately 24.6 billion kilowatt-hours for the year 1962 to 36.1 billion kilowatt-hours for the year 1966. It is estimated that the net energy requirements will further increase to approximately 50.75 billion kilowatt-hours for the year 1970.

Additional data consisting of estimates of loads and resources for the entire Pacific Southwest Power Area, including data furnished to applicant by others, is attached to the application marked Exhibit II.

It will be noted by reference to the charts contained in Exhibit I that the addition of the three gas peaking units in 1969 and the fourth in 1970 will result in system reserve margins somewhat in excess of those normally planned for applicant's system. Applicant believes the installation in 1969 and 1970 of this additional

generating capacity, located close to the load, and with the quick-start, quick-load pickup feature not available with conventional thermal generation, is essential.

In the past, system peaking needs were adequately met by lower capacity factor hydro units and older nonreheat steam turbine units. Continued growth of the peaking portion of the load in the future requires the addition of capacity economically and operationally suited particularly for peaking service.

In 1966, an investigation was made to determine the savings that could be realized by the installation of approximately 450 megawatts of gas turbine peaking capacity in 1969 instead of a 450 megawatt gas and oil fired base load unit. It was found that significant savings could be made by installing the quick-starting, lower efficiency gas turbine driven peaking units.

An economic comparison was then made between four gas turbine units, two low-efficiency steam peaking units and a conventional steam generating unit of substantially equal capacity. This analysis indicated that savings in capital, fuel and start-up costs and operation and maintenance costs could be realized with the gas turbine units. A tabulation showing the results of these economic comparisons is attached to the application marked Exhibit D.

The proposed peaking units will be designed to automatically perform the operating functions of startup, synchronizing, and load pickup. In the event of a local power interruption, these units will be designed to start without any outside source of electric power.

The base fuel for the peaking units will be natural gas. Each unit will be provided with a 900,000-gallon storage tank to hold distillate fuel for use when gas fuel is curtailed or interrupted. This back-up fuel will be commercial jet aviation fuel which is readily obtainable from local refineries on short notice.

Normally, the units are not expected to be operated more than four hours per day in peaking service. Under these conditions, if the supply of gas fuel is interrupted, the units can operate indefinitely with an anticipated distillate fuel delivery rate capability of 96,000 gallons per day per unit. The distillate fuel consumption per unit is estimated to be 13,600 gallons per hour at 121,000 KW.

Applicant proposes sound attenuation for each unit will be achieved by the installation of the new units in properly designed buildings complete with inlet and exhaust silencers which will permit additional sound attenuation in the future as and when environmental conditions change.

It is contemplated that the gas generators will be overhauled at an off-site facility. This will eliminate prolonged down time because a spare engine can be installed and the generating unit restored to service while the gas generator is being overhauled at such off-site facility.

Cooling water for the new units will be obtained from the existing circulating water intake structures at Huntington Beach, Mandalay, and Alamitos Generating Stations and from the existing reservoir at Etiwanda Generating Station.

The following table summarizes the present estimate of the cost, including general overheads, of the proposed new units:

<u>Unit</u>	<u>Cost</u>
Etiwanda Unit No. 5	\$13,374,000
Huntington Beach Unit No. 5	14,348,000
Alamitos Unit No. 7	13,986,000
Mandalay Unit No. 3	<u>13,975,000</u>
Total for four Units	55,683,000
Cost of new Units per kw (based on 121,000 KW rating)	\$115.05

The above costs are stated to include interest during construction and all other Edison overhead expenses chargeable to plant costs based on present price levels.

The presently estimated annual cost, exclusive of fuel costs, of operating and maintaining each of the gas peaking units is typified by the proposed Mandalay Unit No. 3 for which such annual costs are estimated at \$144,200. The annual cost of depreciation, taxes and return, assuming a 6.75% return on a typical unit (Mandalay Unit No. 3) half depreciated to represent the average condition over the life span, is approximately \$1,681,000.

Each of said units is expected to have a heat rate of 15,020 BTU/KWH on gas fuel and a heat rate of 14,340 BTU/KWH on distillate fuel at 121,000 KW output. Based upon an average cost of gas fuel of 29.45 cents per million BTU's and of distillate fuel of 99.00 cents per million BTU's at present price levels, the estimated fuel cost of generation for a typical unit (Mandalay Unit No. 3) is 4.4 mills per KWH on gas fuel and 14.2 mills per KWH on distillate fuel at 121,000 KW load.

The present estimates of annual expenses for a typical unit (Mandalay Unit No. 3) by principal categories, assuming an estimated lifetime capacity factor of 1.1% on 121,000 kw capacity and a weighted average net heat rate based on assumed operation of 85% of the time on gas fuel and 15% of the time on distillate fuel, are summarized as follows:

<u>Expenses</u>	
Fuel (Present price levels)	\$ 69,000
Other operation and maintenance	144,200
Depreciation (Straight line)	466,000
Income taxes	286,000
Ad Valorem taxes	442,000
Return (average)	487,000
Total	<u>1,894,200</u>

Estimated "Capital and Operating Costs" is attached to the application marked Exhibit III.

Applicant proposes to obtain all necessary permits and/or authorizations which are required from public authorities and which may be needed for the construction and operation of the new generating units, and other equipment and facilities.

Applicant alleges that the proposed new construction is not likely to compete with any other public utility, corporation, person or entity, public or private, but will provide an additional supply of electric capacity and energy to applicant's electric system.

Applicant states that a saving in time and accounting costs may be realized if it is allowed to file individual cost reports for all of said units one year after the last of the four new units is placed in commercial operation.

Based upon the record, the Commission finds that with the continuing growth in demand and energy requirements that applicant is experiencing, the generating capacity proposed herein will be needed to provide adequate and reasonable electric service to the public within the area it serves; that applicant will provide adequate sound control in the design of buildings and silencers at each location, initially and for the future as environmental changes may require; and that a substantial saving in time and accounting costs may be realized by applicant if it is allowed to file individual cost reports for all of said units and related equipment and facilities one year after the last of the four new peaking units is placed in commercial operation. The Commission further finds that public convenience and necessity require the construction and operation of the four new generating units as described in this application.

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

The Commission shall have no power to authorize the capitalization of the certificate of public convenience and necessity or the right to own, operate or enjoy such

certificate of public convenience and necessity in excess of the amount (exclusive of any tax or annual charge) actually paid to the State as a consideration for the issuance of such certificate of public convenience and necessity or right.

The action taken herein is for the issuance of a certificate of public convenience and necessity only and is not to be considered as indicative of amounts to be included in proceedings for the purpose of determining just and reasonable rates.

The Commission having considered the above-entitled application concludes that the application should be granted, and that a public hearing thereon is not necessary.

IT IS ORDERED that:

1. A certificate of public convenience and necessity is granted to Southern California Edison Company to construct and operate four new gas turbine electric generating peaking units, to be known as Unit No. 5 at its Etiwanda Generating Station, Unit No. 5 at its Huntington Beach Generating Station, Unit No. 7 at its Alamitos Generating Station and Unit No. 3 at its Mandalay Generating Station, together with related equipment, facilities and appurtenances.

2. Southern California Edison Company shall file with this Commission a detailed statement of the capital costs of each of the four new units and related equipment, facilities and appurtenances thereto, within one year following the date on which the last of the said four units is placed in commercial operation.

3. The authorization herein granted will expire if not exercised within five years from the effective date hereof.

The effective date of this order shall be the date hereof.

Dated at Los Angeles, California, this 3rd day of OCTOBER, 1967.

[Signature]
President

[Signature]

William Bennett

[Signature]
Commissioners.

Commissioner William M. Bennett, being necessarily absent, did not participate in the disposition of this proceeding.