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Decision No. 83948

ORIGINAL

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

In the Matter of the Application of SAN DIEGO GAS & ELECTRIC COMPANY for a Certificate that Present and Future Public Convenience and Necessity require or will require the construction and operation by Applicant of three new gas turbine electric generating peaking units to be known as GT-2, GT-3, and GT-4, at its South Bay Power Plant Site, together with other appurtenances to be used in connection with said units.	Application No. 53656 (Filed October 20, 1972)

Chickering & Gregory, by C. Hayden Ames, Edward P. Nelsen, Allan J. Thompson; Gordon Pearce, and Guenter S. Cohn, Attorneys at Law, for applicant.
Ms. Kathryn S. Moore and Alan Schneider, for themselves, interested parties.
Walter H. Kessenick, Attorney at Law, and Kenneth Kindblad, for the Commission staff.

O P I N I O N

San Diego Gas & Electric Company (SDG&E) seeks a certificate of public convenience and necessity to construct and operate three new gas turbine electric generating peaking units to be known as GT-2, GT-3, and GT-4, at its South Bay power plant site together with the appurtenances. The application was prepared to meet the requirements of the Commission's General Order No. 131.

The scope of the data provided by SDG&E to comply with Section 4 of General Order No. 131 parallels the information required in an environmental data statement filed pursuant to the California Environmental Quality Act of 1970 (CEQA) and the Guidelines for implementation of the California Environmental Quality Act promulgated by the Office of the Secretary for Resources (Guidelines). SDG&E filed the notices required in Section 6 of General Order No. 131. SDG&E's environmental (data) statement was circulated and reviewed by the Resources Agency of California (Resources) and by the Commission staff.

After notice, public hearings were held before Examiner Levander in the city of Chula Vista on March 26 and 27, 1973 and in the city of San Diego on April 9 and June 4, 1973 on public convenience and necessity for the project and to evaluate the environmental impact of the project.

During the pendency of this proceeding the Commission issued Decision No. 81237 which added Rule 17.1 to the Commission's Rules of Practice and Procedure. This rule established methods of compliance with the California Environmental Quality Act of 1970 for environmental issues requiring Commission action. The staff prepared a Draft EIR and a Notice of Completion and circulated its Draft EIR in accordance with the requirements of Rule 17.1. After further notice, the staff presented testimony on the Draft EIR at the June 4, 1973 hearing.

The proceeding was initially submitted on June 4, 1973 subject to reopening for further hearing, if necessary, to put additional material into evidence to evaluate the environmental

impact of the proposed construction and/or further staff testimony. (At the time the matter was initially submitted additional comments on the Draft EIR were expected and certain late-filed exhibits were to be filed subject to further evaluation.) Decision No. 81542 dated June 26, 1973 reopened the proceeding for these purposes. Further hearings were held on July 30 and 31, 1973 in San Diego. The matter was submitted on the latter date subject to receipt of a late-filed exhibit and of proposed findings and conclusions, which have been received.

A Final EIR was prepared by Examiner Levander and filed with the Commission on March 20, 1974. A letter of transmittal accompanying the Final EIR provided for the filing of exceptions by April 22, 1974 and for the filing of replies to the exceptions fifteen days thereafter (May 7, 1974).

On April 22, 1974 SDG&E filed a comment about the Final EIR requesting reconsideration of the examiner's recommendation that the certificate of public convenience and necessity be conditioned upon: "SDG&E submitting a test program to the Commission for operating the units with water and steam injection and without injection during combustion over a variety of operating loads." SDG&E requested that in its place the following condition be adopted: "SDG&E will report to this Commission, within 90 days after commercial operation of the proposed units, on the NO_x, SO_x, and particulate emissions from the unit with a water injection system." SDG&E requested this change because after submission the company and its gas turbine vendor determined that water injection was required for these units in order to meet the air pollution control district regulations on plant emissions.

The staff's exceptions pointed out errors in the Final EIR as to the listing of parties who received copies of the Draft EIR and of the Final EIR. The Draft EIR was distributed to the parties listed in witness Kindblad's testimony (transcript pages 312 and 313). The Final EIR distribution complied with Rule 17.1, Section (g). Copies were also furnished to the Resources' witnesses who testified in this proceeding. The examiner issued a ruling on April 26, 1974 directing the production of further evidence to clarify the need for making the modification proposed by SDG&E because applicant's comment indicates changed conditions relating to emissions to be expected from operation of the gas turbines.

The staff stated that a response to the Examiner's ruling filed by SDG&E's counsel was not an exhibit but a pleading alleging evidentiary facts and that the responses to all of the questions posed include decisions of an engineering nature which should be made by qualified and responsible persons. The staff also sought clarification as to whether the capital cost of the additional facility required to provide a water injection system is already included in SDG&E's presentation or, if not, whether any of this cost will be borne by SDG&E, and clarification as to the vendor's obligation on maintenance, operating cost, and testing expenses which might affect the ecomomic feasibility of the project.

Late-filed Exhibit 26, which was responsive to the examiner's ruling and the staff comments, was received on July 1, 1974.

Necessity for Proposed Gas Turbines

Section 451 of the Public Utilities Code states in part: "Every public utility shall furnish and maintain such adequate, efficient, just, and reasonable service, instrumentalities,

equipment, and facilities as are necessary to promote the safety, health, comfort, and convenience of its patrons, employees, and the public."

SDG&E requires adequate generating capability and contracted for power to meet anticipated demands on its system and to provide for the shutdown of generating equipment for routine inspection, equipment modification or repair, routine maintenance, and unscheduled outages.

SDG&E has made projections of its total generation and peak electric load requirements based upon past and anticipated growth patterns, generating capacity, and contracted for purchased power. These projections show that public convenience and necessity require construction and operation of 160 megawatts (MW) of additional gas turbine generating capacity to meet its peaking requirements. The staff concurs in San Diego's determination of the need for this additional peaking capacity in 1974.

SDG&E's testimony in this proceeding indicated a potential derating of its existing generating capacity of 266 MW to meet 1974 air quality standards. We take official notice of reference Item Q and of SDG&E's testimony in Southern California Gas Company's Application No. 53797 which show that with existing plant and operational modifications there has been a 167 MW derating (a reduction of seven percent of SDG&E's estimated 1974 total installed and purchased capacity) and that with further modification the derating might be limited to 63 MW.

The evidence shows that SDG&E cannot construct any generating facilities other than gas turbines without delays which would seriously reduce the availability of the necessary capacity margins it requires to meet its public utility obligations without service interruptions.

Service interruptions could adversely affect public health and safety (e.g., disconnected traffic lights, health problems associated with disconnected elevators), could have adverse effects on the economy, and could inconvenience customers.

The Final EIR noted the decline in fuel availability, including fuel available for generation of electricity by SDG&E which was being considered in Cases Nos. 9581 and 9642. The mandated reductions in energy generation have been eased because of improvements in the fuel supply situation and because of voluntary conservation efforts. The effect of energy curtailments are being evaluated in Phase II of SDG&E's general rate increase Application No. 53945 and related applications. At this time we do not have any information as to the extent of the decline on peaking demand on SDG&E's system resulting from the energy shortage. SDG&E plans to stretch out its construction schedule for the gas turbines if demand levels drop and accelerate the construction schedule if demand increases.

Even though conservation efforts are effective customer growth on SDG&E's system is resulting in increasing energy and increasing peaking demands on the generating capacity of the system. Curtailment of total energy demand is not necessarily translatable into curtailment of peak demand (e.g., resetting air conditioning thermostats to come on at higher temperatures will cut down on total demand under given conditions but during a heat wave most air conditioners will be operative and contributing to the system peak demand).

Based upon these considerations we conclude that a certificate of public convenience and necessity should be issued to SDG&E to enable it to meet its public utility obligations.

Location of the Proposed Facilities

Photos, plat maps, and illustrations of the site and of the type of equipment proposed to be installed are contained in SDG&E's environmental impact analysis which have been incorporated in the Draft EIR and the Final EIR, on modified Exhibit 1 and Exhibit 17. The project is generally described in Chapter 15, Section 15141 (c) of the Final EIR.

The Final EIR notes that the drawings entitled Asthetic Enhancement Concept of the Sites should realistically show all of the existing facilities around the proposed construction including storage tanks and transmission facilities and that idealized sketches are not appropriate for an EIR review. We concur.

SDG&E proposes to install the gas turbines at its South Bay power plant site in the city of Chula Vista in San Diego County, California. They will be located near the west property line in close proximity to an existing gas turbine unit, and in the vicinity of the SDG&E's switching station. Distillate oil storage tanks for the turbines will be located north of the turbines within SDG&E's South Bay property.

Site Evaluation

The examiner concluded that SDG&E's environmental impact analysis (EIA) generally followed reasonable procedures for evaluating the environmental impacts of the project at six sites owned by it. SDG&E submitted evidence on why other properties owned by it were not suitable sites for the gas turbines. SDG&E's evidence also showed other potential turbine sites located in industrial areas in San Diego County would not offer any advantage compared to the site chosen and would unduly delay completion of the project. The evidence shows that the potential gas turbines sites at Miramar and at South Bay are the most desirable ones from an environmental standpoint.

Applicant's consultant evaluated Miramar as a superior site to South Bay from an environmental viewpoint because of the effect on air quality in areas to which exhaust admissions are likely to be transported. The analysis in the EIA indicates that air patterns and interpolated levels of air contaminants favored Miramar over South Bay.

The examiner favored South Bay as a better site for the turbines than Miramar from an environmental standpoint because:

(a) The EIA evaluation of Miramar did not give consideration to the need to obtain approximately 1.9 miles of new rights-of-way and to construct approximately 3.8 miles of new transmission lines to convey power from the Miramar site to the system;

(b) The relative visual impact of the turbines and storage tanks would be greater at Miramar, where they would be the most massive structures, as contrasted to locating the units at South Bay where they would be bracketed by larger facilities;

(c) There would be a greater relative increase in ambiant sound (at the nearest off site building adjacent to Miramar), which might be perceptible, as contrasted to the sound impact adjacent to South Bay where the smaller increase in ambiant sound would only be perceptible under unusual atmospheric conditions;

(d) The State Air Resources Board evaluates the emission problems relating to these turbines in the context of total emissions contributed to the air basin; and

(e) That photosynthetic reactions involving the combustion byproducts of the turbines would be small or negligible during the anticipated early evening operating hours of the peaking units.

Description of Proposed Facilities

Two of the proposed gas turbine peaking units will each consist of two Turbo Power and Marine Model TP4-2 (C-1) simple cycle, dual shaft, gas turbines coupled to a single 12.5 kv electric generator. The maximum capability of each gas turbine unit is 64,400 kw at 50° F at sea level. The third unit will consist of a single Turbo Power and Marine Model FT4C-1LF simple, cycle, dual shaft, gas turbine coupled to a 12.5 kv electric generator. The maximum capability of the unit is 31,950 kw at 50° F at sea level.

The three units will be capable of burning either natural gas or distillate (No. 2 diesel) fuel oil. The electric generators may also be operated as synchronous condensers to improve the power factor on SDG&E's system.

The proposed peaking units will be designed for remote or local control, including a fully automatic starting sequence for each unit. SDG&E states that the proposed design is consistent with safety standards generally established by pressure vessels codes, piping codes, construction standards, building codes, electrical codes, fire codes, environmental regulations, and with the requirements of OSHA. Safety devices within the units provide for automatic shutdown should adverse operating conditions occur.

The auxiliary electric system for each of the gas turbine-generator units will normally be supplied with power from SDG&E's electrical system. Emergency power will be supplied by 125 volt DC batteries. The units will be equipped with a compressed air starting system which will provide startup power for normal and emergency starts.

SDG&E will construct these units to facilitate modifications which will permit utilization of other liquid fuels.

Reason for Choice of Gas Turbines

SDG&E proposes to utilize gas turbines rather than other types of generation for the following reasons:

(a) Gas turbines complement SDG&E's present high efficiency steam units. The gas turbines would be operated during the short duration peak periods experienced on SDG&E's system. SDG&E can take advantage of the gas turbines relatively low unit installation costs compared to unit installation costs for reheat steam generating units.

(b) The generating units are being constructed to meet a limited expected loading, less than two percent of maximum expected capability on an annual basis. The units would generally be operated approximately three hours per day, Monday through Friday, during SDG&E's daily system peak which occurs during early evening hours. Therefore, it would be advantageous to SDG&E to minimize construction costs even though the generating units fuel costs per kwh are higher than those of reheat steam units.

(c) The quick start, quick load pickup features of the gas turbines would increase SDG&E's system flexibility and reliability.

(d) The heat rates of the proposed gas turbines are better than the heat rates of some of SDG&E's older units. Use of the gas turbines would permit a reduction in the use of some of those older units thereby reducing overall operational and maintenance costs.

Steam plants would have to be on line for a longer period of time than turbines to meet short-term peaking requirements.

Cost of Facilities & Operating Expenses

Construction of the plant at South Bay would cost approximately $16,230,000 exclusive of the foundation, erection, and installation costs for a water treatment plant, a water storage tank, water injection equipment, necessary utility connections, and accessories, which will be borne by SDG&E's equipment vendor, Turbo Power and Marine Systems, Inc. (Turbo), (except for indirect construction costs of $15,000 and initial testing costs of $4,000 to be paid for by SDG&E). Turbo's contract with SDG&E provides that if the turbine equipment is installed and tested and does not meet the requirements of the San Diego Air Pollution Control District, Turbo must provide and pay for whatever is required to correct the equipment. If the plant were to be constructed at Miramar instead of at South Bay, there would be additional costs of $1,407,000 to construct the transmission lines and a saving of $62,000 in foundation costs resulting in a net increase of $1,345,000. If the Miramar plant were installed and the new transmission lines were laid underground there would be a further additional cost of $1,780,000.

SDG&E's estimated full year operating costs are as follows:

Item	Amount
Fixed Costs	
Operation and Maintenance	$ 98,000
Capital Recovery	1,688,000
Income Taxes	274,000
Ad valorem Taxes	423,000
Subtotal annual fixed costs	$2,483,000
Variable Costs	
Fuel	544,000
Additional Costs Relating to Water Injection	
Operation and Maintenance	7,000
Capital Recovery	1,000
Ad valorem Taxes	1,000
Water Purification	2,700
Additional Fuel	15,300
Subtotal water injection costs	27,000
Total annual operating costs	$3,054,000

Under a full year's anticipated operating conditions the generation from these units is anticipated to amount to 33,000,000 kilowatt hours. At the costs tabulated above the average production costs would be 9.25¢ per kilowatt hour. The additional costs for water injection represents less than one percent of the average unit production costs for these units. Turbo advised SDG&E that its "tests show, that on a weight basis, steam injection will achieve the same level of NO_x reduction as water injection; i.e., a pound of steam will reduce NO_x the same amount as a pound of water." Turbo indicated that the choice of whether to use water or steam injection is an economic decision related to the availability of either water or steam at a particular gas turbine site. Exhibit 26 shows that sufficient steam is not now available from the adjacent existing steam power plant in quantities sufficient to supply the turbines and that a boiler would have to be purchased and erected specifically to meet the steam injection requirements to utilize steam injection. SDG&E has caused the gas turbines to be designed to reach full electrical output in 3.25 minutes. A steam boiler would not be able to start up fast enough and produce steam to match the turbines quick-start capability. Since a steam injection system could reduce the capability for quick start ups of the turbines and the steam injection would not offer any advantage as to the reduction of NO_x emissions SDG&E correctly concentrated its efforts towards obtaining a water injection system for control of NO_x emissions.

We conclude that SDG&E should program the water injection for these turbines to achieve optimum reduction in NO_x and other pollutants under various equipment loadings, within the safe operating limits of the equipment. This optimum reduction of pollutants should be achieved at a small incremental cost.

Action of San Diego Coast Regional Commission

A certificate of approval to install the three new gas turbine electric generating units, including fuel support equipment, and electrical connections to the existing switchyard, at the South Bay power plant, between "J" and "L" Streets, Chula Vista, California, was granted under control No. FO 283 dated August 3, 1973, subject to the usual provisions for compliance established by the Regional Commission. The Regional Commission "finds the proposed development will not have any substantial adverse environmental or ecological effect and is consistent with the findings and declarations set forth in Section 27001 and objections set forth in Public Resource Code Section 275 and is consistent with each provision and policy of the California Coastal Zone Conservation Act of 1972...."

Evaluation

SDG&E should be authorized to construct the gas turbines for the reasons set forth above. The record supports our adoption as findings herein of the examiner's evaluation (see Chapter 15 of Final EIR) of:

(1) The environmental impact of the project;
(2) Unavoidable environmental effects which cannot be avoided if the proposal is implemented;
(3) Mitigation measures to minimize the impact;
(4) Alternatives to the proposed action;
(5) The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity;
(6) Any irreversible environmental changes which would be involved in the proposed action should it be implemented; and
(7) The growth-inducing impact of the action;

modified to give consideration to changed conditions requiring water injection as opposed to steam injection to reduce NO_x and other pollutant levels, to the reduction of levels of energy usage per our conservation orders in Case No. 9581.[1/]

This project would be completed with the construction of the three turbines.[2/]

The record shows that increased localized emissions of pollutants from the gas turbines would be more than offset by reductions in generation from other more polluting generating units. Operation of the turbines would result in a lower level of total emmissions to the San Diego Air Basin as compared to not operating the turbines.

Findings

1. SDG&E seeks authorization to construct and operate three turbine-powered generators, designated as GT-2, GT-3 and GT-4, at its South Bay plant property in the city of Chula Vista, in San Diego County.

2. GT-2 and GT-3 will have an expected net capability of 64.4 megawatts each and GT-4 will be 32 megawatts at ambient conditions of 50° F, sea level and 60% relative humidity.

3. The units will be operated approximately three hours per day, Monday through Friday, during a daily peak which occurs in the early evening hours.

4. SDG&E and the Commission staff projected a need for 160 MW of additional generating capacity to meet the 1974 peaking electric requirements on SDG&E's system and to provide an adequate margin of excess capacity. Subsequently, energy conservation efforts per our conservation orders in Case No. 9581 have resulted

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1/ See Exhibits Nos. 90 and DDD in Southern California Gas Company's Application No. 53797 for 1974 conservation levels achieved.

2/ The increase in sound levels which would be caused by the addition of even more turbines at South Bay was discussed in this proceeding.

in lesser energy demands on SDG&E's system. These reductions in energy consumption cannot be directly translated into reductions of peak demands. The projections of energy requirements contained in the Final EIR show continuing future energy growth projections on SDG&E's system.

5. SDG&E has had to derate its existing generating equipment by approximately 167 MW, representing seven percent of its anticipated 1974 generating capacity and contracted for power, to meet new air quality standards. This derating, which was not considered in the projections showing the need for the gas turbines, cuts into SDG&E's necessary margin of excess capacity over anticipated peak demands. This margin is needed to provide for scheduled and unscheduled equipment outages without interruption of electric service to SDG&E's customers.

6. SDG&E requires additional generating capacity in the near-term to meet increasing demands on its system. The gas turbines are the only feasible near-term alternative for constructing sufficient generating capacity to meet the short-term peaking requirements on its system and to have sufficient generating capacity available to provide its customers with present and future reliable economic electric service.

7. SDG&E's electrical load requirements can best be met by construction of gas turbines because:

(a) Gas turbines complement SDG&E's present high efficiency steam units. The gas turbines would be operated during the short duration peak periods experienced on SDG&E's system. SDG&E can take advantage of the gas turbines relatively low unit installation costs compared to unit installation costs for reheat steam generating units.

(b) The generating units are being constructed to meet a limited expected loading, less than two percent of maximum expected capability on an annual basis. The units would generally be operated approximately three hours per day, Monday through Friday, during SDG&E's daily system peak which occurs during early evening hours. Therefore, it would be advantageous for SDG&E to minimize construction costs even though the generating units fuel costs per kwh are higher than those of reheat steam units.

(c) The quick start, quick load pickup features of the gas turbines would increase SDG&E's system flexibility and reliability.

(d) The heat rates of the proposed gas turbines are better than the heat rates of some of SDG&E's older units. Use of the gas turbines would permit a reduction in the use of some of those older units thereby reducing overall operational and maintenance costs.

8. The turbines to be installed will burn natural gas but can be operated on a liquid fuel of a distillate type when natural gas is not available.

9. Applicant has obtained construction permits for these units from the San Diego County Air Pollution Control District.

10. Applicant's estimated construction costs for the gas turbine units is $16,245,000, including $15,000 of indirect costs associated with plant required for water injection. SDG&E's equipment vendor, Turbo Power and Marine Systems, Inc. would pay the remaining construction costs required to provide for water injection to meet the requirements of the San Diego Air Pollution Control District.

11. The annual operating costs for a full year of operation of the gas turbines is approximately $3,054,000. The average annual production costs from these turbines would be 9.25¢ per kwh. Additional costs for water injection represent less than one percent of the average unit production cost for these turbines.

12. The environmental impacts of SDG&E constructing and operating the gas turbines pursuant to our authorization are as follows:

(a) The project would not cause a significant visual or aesthetic impact. The facilities would be seen from a few apartments which are located behind a dip in the freeway about 2,000 ft. from the turbines, by drivers on the freeway or Bay Boulevard, or from the railraad. The turbines would be located between larger generating and transmission facilities and storage tanks. The turbine fuel storage tanks would be partially or totally shielded behind larger fuel oil tanks. The facilities would be painted to blend with the bay behind it. The view of the project from the bay would be compatible with the surrounding structures.

(b)1 The sound impact would not adversely affect birds or wildlife on or near the site, or persons using the Marina boat launching facilities.

(b)2 The location with respect to the nearest residential area is such that the additional sound would be perceivable only under certain unusual atmospheric conditions. Generally the freeway noise impact would be the dominant sound at the nearest residential area. The turbines would not normally be operating in the late evening when freeway noise drops significantly. The increase in ambient sound caused by the turbines would not be perceivable on Bay Boulevard, the railroad, or the freeway.

(c) The project is not in conflict with community goals or environmental plans.

(d) Operation of the turbines would not contaminate the public water supply or adversely affect local ground waters. Brines produced in the water treatment process (needed for water injection) would be discharged in a sewer.

(e) Conventional drainage facilities are proposed so that the project would not cause any flood, erosion, or siltation problems.

(f) The effect of a severe earthquake would put the turbines and/or associated facilities out of operation or would cause structural damage to all or a portion of the installation if the design and construction was not sufficient to resist the effects of the earthquake. The possible failure of the units due to earthquake damage would not have any environmental impact on the general public except as to the loss of power, but it could result in an industrial accident.
The turbine and tank foundations are being designed for a seismic induced acceleration of 0.2 g. to withstand forces which could be expected to reoccur at 50-year or 60-year intervals.

(g) The project would not have any effect on population distribution, population concentration, or recreational use of the land within the site boundaries.

(h) The South Bay site is now used principally for electric generation and fuel storage including liquified natural gas installations. The site would be more intensively developed if the turbines

are put in service. The project would require construction workers and equipment in the short-term to construct and install the turbines. Personnel and equipment would be required to inspect, monitor, operate, test, maintain, and repair the turbines and associated facilities on a continuous basis. There would be resources consumed, including fuel, by workers getting to work and carrying out their duties.

(i) Operation of the turbines would result in discharge of combustion contaminants into the air.

(j) A State Air Resource Board witness testified that the most important air pollutant emitted by the gas turbines will be oxides of nitrogen (NO_x); that in 1971 the State standard for NO_x was exceeded on eight days at San Diego and on nine days at Mission Valley. NO_x reacts with organic gasses in the presence of sunlight to form oxidant, a major pollutant in the San Diego area. The federal oxidant standard was exceeded on 37 to 91 days at different locations in the air basin in 1972. The anticipated operating mode of the turbines should not result in a significant contribution to the oxidant level. Approximately 0.144 tons per day of NO_x would be produced by the turbines operating at two percent of capacity using distillate fuel, the fuel normally to be used.

(k) There would be no significant ecological impact on the site resulting from the construction or operation of the turbines.

(1) It appears unlikely that there would be any items of archeological or historical interest found at the site. The site is located on fill material which has been in place for several years.

13. The adverse environmental effects which cannot be avoided if the proposal is implemented are:

(a) The new turbine units and tanks would be visible but would not cause a significant visual or aesthetic impact.

(b) Operation of the turbines would cause an increase in the ambient sound level with the muffling package proposed. When the turbines were operating at full load this increase would increase the nearest residential sound level by approximately .6 db at lower frequencies, by less than 1 db at the J Street Marsh, by approximately 1 db at the SDG&E railroad, and by a lesser amount at Bay Boulevard and at the freeway. Additional muffling would reduce the increase in ambient sound at a cost penalty of approximately $250,000 for each increment to the silencing package. A 3 db sound intensity change is normally at the lower end of the human perception range. Further silencing is not necessary.

(c) The resources consumed by workers and their equipment, incidental to construction and operation of the plant would create a minor secondary effect on the environment.

(d) The operation of the turbines would result in discharge of combustion contaminants into the air. The cumulative effects of air pollution include possible injury to people, animals, and vegetation, deterioration of surface materials, and restricted visibility.

(e) Brines produced in connection with water treatment and injection in the combustion process would have to be discharged into the on-site sewer system.

14. The mitigation measures proposed to minimize the impacts are:

(a) Water injection during combustion should be designed to minimize discharge of pollutants at various operating levels and to protect the integrity of the equipment.

(b) Painting the facilities to blend with the adjacent bay would result in a minimal visual impact.

(c) The sound suppressing package proposed would reduce the increase in ambient sound as it affects the public to an imperceptible level, in the absence of certain unusual atmosphere conditions.

(d) The proposed drainage facilities would avoid flood, erosion, or siltation problems. The South Bay site contains berms for containing oil spills. The plant site design should be planned to avoid the entrapment of birds or wildlife in impounded oil or oil and water resulting from leaks, spills, rainfall, or drainage problems.

(e) SDG&E is having its design consultant design structural foundations to resist seismic accelerations of 0.2 g. SDG&E should consult with and follow the recommendations of its soil and seismic consultant as to types of foundations and criteria for the foundations at the actual site locations utilized to minimize possible damage or failure of the facilities due to seismic or other forces.

(f) During excavation SDG&E should be on the lookout for items of historical or archeological significance. If any such items are encountered appropriate authorities should be promptly contacted to arrange for their preservation.

(g) SDG&E should file annual reports describing new controls or equipment modifications which might further reduce emissions from gas turbine units GT-2, GT-3, and GT-4 together with its proposals for equipment or control modifications.

(h) SDG&E should file annual reports on steps being taken to reduce production of contaminants, for which control strategies have been formulated, from all of SDG&E's generation units located in the San Diego Air Basin.

15. The actual production of air contamination by these units is the only potentially significant impact which would require consideration of alternate facilities or of no project. The alternatives to the project include combined cycle generating plants, pumped storage hydroelectric plants, conventional steam plants, nuclear generating plants, coal fired generating plants, geothermal generating units, conversion of solar energy into power, purchasing of power from other utilities, and no project.

None of these alternatives could be developed on a timely basis to meet SDG&E's near-term generating requirements.

16. Combined cycle plants have the capability of producing power with lower levels of contaminants per kwh generated than gas turbine generation. The bay cannot be utilized for waste heat disposal from a combined cycle plant at South Bay under the terms of the State Thermal Plan. Cooling towers would be needed for operation of a combined cycle plant at South Bay. Such an installation would preclude future planned expansion of generating facilities at the South Bay site. Generally a combined cycle unit is intended to be operational at a much greater percentage of design capacity than a gas turbine unit. The limited usage of gas turbine units results in high unit costs for generation. If a combined cycle plant were used for the same purposes as these turbines generating costs would escalate upward.

17. There is no source of water for pumped storage hydroelectric plants. Unless additional purchased power or power from nuclear plants were available to pump water it would be necessary to utilize fossil fuel generation to operate the pumps. Due to losses a greater amount of fossil fuel would have to be burned in the air basin to obtain hydroelectric peaking power than could be obtained by direct generation.

18. SDG&E is developing a geothermal power source and is contributing to industry research on solar generation. Large scale generation of electricity from geothermal or solar sources would not be available for meeting SDG&E's short-term requirements.

19. The environmental impact of no project in the area of air pollution would be to increase emissions of NO_x from the SDG&E system from 34.7 tons per day with the gas turbines having been installed to 36.0 tons per day without their installation. Steam plants would have to be on line for a longer period of time than turbines to meet short-term peaking requirements.

SDG&E anticipates that some energy generation would be transferred to generating equipment burning sulfur residual fuel oils. The concentration of bound nitrogen in the turbines' oil fuel supply will be lower than that contained in residual fuel oil used in steam plants. Turbine combustion of diesel oil will produce less NO_x per kwh than a conventional steam plant unit burning fuel oil.

20. There should be increases in SO_x and particulate emissions if the gas turbines are not installed. The low sulfur residual fuel oil used in SDG&E's steam plants has a higher sulfur content than the distillate fuel used by gas turbines. The other impacts of no project would be to eliminate the above mentioned environmental impacts of the project, reduce the margin needed for reliable system operation, and create problems caused by outages.

21. Under planned operations there would be localized production of air contaminants from the turbine operation but the overall production of such contaminants in the San Diego Air Basin would be less with the turbines operational than without them.

22. The South Bay site is the most desirable one for the location of the gas turbines from an environmental standpoint. There would be a net increase in construction costs of $1,345,000 if the turbines were constructed at Miramar rather than at South Bay if the new transmission lines connecting the Miramar plant to the system were overhead construction. There would be a further additional cost of $1,780,000 if the new transmission lines from the Miramar plant location were installed underground.

23. The amount of time needed to acquire industrial properties not owned by SDG&E for possible use as gas turbine sites would preclude SDG&E's meeting its anticipated near-term peaking requirements. SDG&E's general environmental review of potential alternate industrial gas turbine sites, which would have to be acquired, does not favor any of them over the South Bay plant site.

24. There are relationships between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity resulting from the turbine project. The previously discussed environmental impacts of the proposed action and the adverse environmental effects which cannot be avoided if the proposal is implemented are continuing impacts. The need for the gas turbine peaking power is to enable SDG&E to meet its public utility obligations and to avoid adverse effects on public health and safety, on the economy, and of the inconvenience to the public if electric service is not available. These considerations justify our authorization of the project with the mitigating measures proposed by SDG&E and additional measures ordered herein.

25. The irreversible environmental changes which would be involved in the proposed action should it be implemented are that resources would be utilized in manufacturing the material used to construct the plant, in fabricating, and in installing the facilities, and there would be a continuing use of fuel resources to generate the power.

26. The South Bay site is already committed for generation and fuel storage uses. There is no foreseeable other future public use for this site. The new units are compatible with their setting. The need for peaking power from these units justifies the commitment of non-renewable resources.

27. The growth inducing impact of the proposed action is the secondary effect of enabling SDG&E to provide electrical services to new customers. This in turn might result in increased automobile usage and increased air pollution in the San Diego Air Basin. Local governmental entities have increasing obligations caused by population growth. SDG&E would pay increased property taxes if the gas turbines are built.

28. This Commission should not prohibit new connections to prevent further customer growth because a local community is unable to meet its needs for other public facilities. Any such growth limitation should be made by the local governmental body having jurisdiction in that field. The need for these new units is responsive to growth in the demand for power. SDG&E has a public utility obligation to meet anticipated demands for energy on its system.

29. The project would not require the dedication of any additional community resources. The fire and police protection that is available for the existing plant should be able to provide any necessary service for the new plants without augmentation.

30. The San Diego Coast Regional Commission "finds the proposed development will not have any substantial adverse environmental or ecological effect and is consistent with the findings and declarations set forth in Section 27001 and objections set forth in Public Resources Code Section 275 and is consistent with each provision and policy of the California Coastal Zone Conservation Act of 1972. . . ."

31. The construction, installation, operation, and maintenance of gas turbine units two, three, and four will not produce an unreasonable burden on natural resources, aesthetics of the area in which the proposed facilities are to be located, public health and safety, air and water quality in the vicinity, or parks, recreation and scenic areas, or historic sites and buildings, or archeological sites.

32. The Notice of Determination for this project, attached as Appendix A to this decision, should be adopted.

33. A certificate of public convenience and necessity should be granted to SDG&E to construct, operate, and maintain gas turbine units Nos. GT-2, GT-3, and GT-4 at its South Bay plant site.

The certificate herein granted is subject to the following provision of law:

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

The action taken herein is not to be considered as indicative of amounts to be included in future proceedings for the purpose of determining just and reasonable rates.

Conclusion

Based on the foregoing findings the Commission concludes that SDG&E should be authorized to construct, operate, and maintain gas turbine units Nos. GT-2, GT-3, and GT-4 at its South Bay plant site and take other actions as prescribed in the following order.

O R D E R

IT IS ORDERED that:

1. A certificate of public convenience and necessity is granted to San Diego Gas & Electric Company to construct, operate, and maintain gas turbine units Nos. GT-2, GT-3, and GT-4 at its South Bay plant site generating station together with appurtenances generally as described by San Diego Gas & Electric Company in this proceeding. These facilities shall include water treatment, water storage, and water injection equipment.

2. Upon completion of the construction of a turbine unit(s) San Diego Gas & Electric Company shall perform tests on a unit(s) utilizing water injection during combustion over a variety of operating loads. The test results shall identify the unit(s), the operating costs (and if appropriate, maintenance costs) per kwh, together with the related concentration and quantities of the various contaminants discharged. The water injection shall be within the safe operating limits of the equipment. San Diego Gas & Electric Company shall formulate a program for water injection to realize maximum reduction of pollutants at various operating loads. Within 30 days after the completion of the tests San Diego Gas & Electric Company shall report to this Commission the amount of water injection it will utilize under various operating conditions.

3. San Diego Gas & Electric Company shall design its plant site to avoid the entrapment of birds or wildlife in impounded oil or oil and water resulting from leaks, spills, rainfall, or drainage problems.

4. San Diego Gas & Electric Company shall consult with and follow the recommendations of its soil and seismic consultant as to types of foundations and criteria for equipment foundations at the actual site locations utilized for the equipment to minimize possible damage or failure of its equipment due to seismic or other structural loading.

5. San Diego Gas & Electric Company shall have its personnel inspect the construction sites to determine if items of historical or archeological significance are encountered. If any such items are encountered, appropriate authorities shall be promptly contacted to arrange for the preservation of those items.

6. San Diego Gas & Electric Company shall file annual reports of new controls or new equipment developed which could reduce the emissions from gas turbines GT-2, GT-3, and GT-4. San Diego Gas & Electric Company shall report the action it is taking to modify existing controls or to install new equipment on those turbines to reduce emissions.

7. San Diego Gas & Electric Company shall annually report the steps it is taking to reduce the amount of contaminants for those pollutants for which control strategies have been formulated, for its plants within the San Diego basin area.

8. We hereby adopt the Notice of Determination attached to this order as Appendix A. The Secretary of the Commission shall file copies of this order together with the attached Notice of Determination with the Secretary for Resources, the San Diego County Comprehensive Planning Commission, the San Diego County Planning Commission, the city of Chula Vista Planning Commission, and the San Diego Coast Regional Commission.

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

Dated at San Francisco, California, this 30th day of DECEMBER, 1974.

President

Commissioners

APPENDIX A

NOTICE OF DETERMINATION

1. The California Public Utilities Commission has granted a certificate of public convenience and necessity to San Diego Gas & Electric Company to construct, operate, and maintain gas turbine units Nos. GT-2, GT-3, and GT-4 at its South Bay plant site subject to the provisions of the ordering paragraphs in the decision to which this notice is appended.

2. The only potentially significant environmental impact of the project would be the discharge of nitrogen oxides, sulphur dioxide, and particulates into the atmosphere by the gas turbines. However, discharges will meet the requirements of the San Diego Air Pollution Control District.

If the project is not authorized there would be greater amounts of these contaminants discharged into the San Diego Air Basin because the energy produced would have to be produced by steam generating units. The differences in contaminants released by steam plant generation versus gas turbine generation depends in part on the characteristics of the fuels burned and of the necessary time to reach a given level of generating output. The gas turbines will have the quick-start capability needed for meeting the early evening peaks on the company's system. The distillate fuel used in the gas turbines produce a lower level of pollutants than fuel oil used in steam plants.

3. An EIR has been prepared pursuant to the provisions of CEQA.