McGRATH BEACH PEAKER
LANDSCAPING PLAN

LANDSCAPING GOAL

The goal of the site landscaping plan is to create a visual barrier to screen the peaker development from motorists traveling on Harbor Boulevard east of the project site and from residents in the Northshore housing development. This will be achieved through the use of California native plant species that are compatible with and presently occur in local plant communities. The proposed landscape plan is included as Attachment A. It has been reviewed by the biologist that conducted the restoration activities for the adjacent Mandalay Beach property to ensure its compatibility. The landscape plan calls for removing the existing chain link fence along the site perimeter and replacing it with a shorter decorative fence to prevent public access. A new chain link fence will be installed behind the landscaped area.

The planting plan includes ground covers and shrubs of various sizes, but does not include trees. A six foot high berm will be constructed and densely planted with a variety of California native plant species that will provide maximum screening of the project site without providing nesting or roosting habitat for bird species that might prey on locally occurring nesting colonies of rare birds, such as California least tern and western snowy plover. Both of these species nest on the coastal strand on the west side of the dune field that parallels the coast, to the west of the project site. There is concern that planting trees would provide additional habitat for corvids (ravens and crows) and raptors (i.e., hawks, falcons, etc.) resulting in a negative impact on the nesting success of the species of concern. This plan was developed to address this concern.

In addition to the landscaped area, in areas where construction disturbance has occurred, a non-irrigated native hydroseed mix shall be developed and applied to re-establish native vegetation and decrease the spread on non-native exotics.

IRRIGATION SYSTEM

The irrigation system will be designed to minimize water use while encouraging the establishment of the selected California native species. The best irrigation system for native plants is an overhead sprinkler system that can deliver water droplets that simulates rainfall to the plant root zone and the surrounding soil area to encourage root development. This method also provides the best strategy for keeping the plants leaf surface clean to allow healthy plant respiration and transpiration as well as establishing seeded grasses and small shrubs.

The landscape plan will incorporate a zoned overhead sprinkler system with an ET ("Evapotranspiration") controller to minimize water use until the plants have been established. The ET controller will ensure climate based irrigation scheduling, so that watering only occurs when needed. It is anticipated that only a small amount of supplemental watering will occur during the dry season to keep the young native shrubs and seedlings alive until they can develop a mature root system capable of retrieving moisture directly from the soil profile. The zoned system will ensure that the proper amount of water is delivered to each species without over

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watering. The system will deliver more water to the larger root balls of the shrubs and less to the smaller seedlings.

The system will remain in place for 3 to 4 years with the frequency of operation decreasing every year until it can be abandoned. The exact length of installation will depend on the speed at which the plants establish themselves based on the natural precipitation levels.

FERTILIZERS, PESTICIDES AND HERBICIDES

The use of fertilizers, pesticides, and herbicides shall be minimized. Soil test shall be conducted prior to planting to determine the existing soil properties. Organic soil amendment and mulch shall be used in the initial planting procedure to supplement the existing soil to enhance the success of the planting. Mulch shall be guaranteed to be weed-free and shall not contain growth-inhibiting substances. Until the plants are established it may be necessary to apply low rates of natural organic fertilizer. Fertilizer will only be used when authorized by the Landscape Architect based on actual plant condition and soil tests. Only organic fertilizer will be used. Once the native plants have been well established, it is expected that the use of fertilizer will be discontinued.

A broadcast spray of Rodeo or other herbicide(s) suitable for use near wetlands may be used on the proposed landscape area as part of an initial "grow and kill" treatment to control invasive weeds contained in the imported soil. Existing habitats shall be protected against herbicide spray. Non-target plants shall be protected against contamination by spray drift. No herbicide applications shall be allowed when wind speed exceeds 5 MPH.

After the initial planting, herbicides will be used only as needed to eradicate weeds and non-natives if alternate methods are not effective. Herbicides will be applied only as spot treatments, and only directly on the areas where needed. Pesticides will not be used.

REMOVAL OF INVASIVE SPECIES

The existing plantings on the southern edge of the SCE site consist of invasive exotic species that will be eradicated to prevent their spread into natural habitats within the adjacent Mandalay State Beach property. Current plantings include approximately 5,200 square feet (40 ft. by 130 ft.) of Hottentot fig (*Carpobrotus edulis*), myoporum (*Myoporum laetum*) and blue gum trees (Eucalyptus species) on the southeast corner of the property, which continues to the west along the southern property line.

The areas disturbed by pipeline and transmission line activities will be treated to remove existing invasive species and prevent their reestablishment. Areas dominated by weed species that have been graded or trenched will have the vegetation removed and properly disposed of to eliminate seeds, roots, and stems present in the soil. If the plants to be removed are in seed, care will be taken to prevent the seeds from being distributed.

PERFORMANCE MONITORING

Monitoring Method: Quantitative monitoring of the landscaped area will be conducted using the line-intersept method to determine relative cover. Permanent transects will be established once construction is complete and all landscaping and irrigation has been installed. Monitoring will focus on the success of installed plants as well as general qualitative conditions, such as proper functioning of irrigation systems, herbivore, insect or disease problems, plant mortality and reduced vigor, vandalism, erosion, etc. Observations will be made to identify significant factors affecting plant survival and success of weed control. Photographs will be taken from at least one end of each transect to document changes during the monitoring period.

This method will document and quantify the relative abundance and dominance of:

- Planted native species;
- Natural recruitment of other native species; and,
- Weed growth.

Monitoring Schedule: Monitoring will commence following completion of planting. Four monitoring visits will be conducted during the first year after planting, with additional field checks after any large storm events. For years 2 through 5, two visits per year will be conducted, one each in spring and fall. This monitoring frequency provides sufficient oversight to correct minor problems before they become large problems, such as issues with individual plants (insects, herbivores, irrigation, etc), spot erosion, and weed infestations.

PERFORMANCE CRITERIA

The goal of the landscape plan is to create native vegetative cover as described in Table 1 below. Corrective actions may include replanting, weed control, and similar actions.

Table 1 – Landscape Performance Criteria

Monitoring Measure	Year 1	Year 2	Year 3	Years 4-5
Relative Native Cover (including natural recruits)	50%	60%	70%	80%
<10% non-native cover	<10%	<10%	<10%	<10%

The goal of the invasive plant removal program along the disturbed areas of the pipeline and transmission line corridors is to remove the existing non-native vegetation and discourage its re-establishment as described in Table 2.

Table 2 – Pipeline/Transmission Corridor Performance Criteria

Monitoring Measure	Year 1	Year 2	Year 3	Years 4-5
<10% non-native cover	<10%	<10%	<10%	<10%

MAINTENANCE

Landscape Area Maintenance: The landscaped area will be maintained to assure proper care of the installed plants, including irrigation and on-going removal of invasive non-native plants. Exotic non-native plant species will be controlled for five years. Weeds will be removed by hand to minimize disturbance to the establishing vegetation. Herbicides and mechanical removal will be used only as needed, with spot treatment of herbicides only. The use of chemicals shall be minimized. Weed removal will occur as needed each year, generally most intensively in the early and late spring to eradicate small weed plants before they set seed and develop large roots.

If invasive species have not been reduced to a less than 10 percent cover after the first six to twelve months of exotic plant removal, the frequency and/or intensity of the eradication effort will be increased.

Pipeline and Transmission Line Construction Area Maintenance: The reintroduction of exotic non-native plant species into the areas disturbed by pipeline and transmission line construction activities will be controlled for five years.

If invasive species have not been reduced to a less than 10 percent cover after the first six to twelve months of exotic plant removal, the frequency and/or intensity of the eradication effort will be increased.

REPORTING

As-builts: An "as-built" of the completed work, including photographs, will be submitted to the Executive Director within 30-days of completion of the initial landscaping work.

Annual Reporting: Annual reports will be submitted to the Executive Director beginning the first year after construction of the permitted project. The reports will include an overview of project status, copies of field monitoring forms and photographs, and a Performance Evaluation that compares the status of the landscaping to the performance criteria. Reports will describe any corrective actions recommended by the monitor and conducted by the applicant. If appropriate (e.g., a "one-time" repair), the reports will describe the corrective action taken by the applicant otherwise (e.g., in the case of an on-going modification or repair best undertaken at a different season) the report will present a schedule for taking corrective action.

The first annual report will be submitted within one year of completion of planting at the site. Subsequent annual reports will be submitted by the end of December each year.

Final Report: A final report will be submitted by the end of December of the final monitoring year.

PLANT LEGEND

LARGE SHRUBS
PLANT AT 8FT. O.C. TYPICAL.

- SAMBUCUS MEXICANA — MMEXICAN ELDERBERRY
- HETEROMELES ARBUTIFOLIA — TOYON
- MALOSMA LAURINA — LAUREL SUMAC
- RHUS INTEGRIFOLIA — LEMONADEBERRY

MID-SIZED SHRUBS
PLANT AT 3FT. O.C., MIX OF THE FOLLOWING SPECIES
PLANT IN GROUPINGS OF 8-12 EA. SPECIES

- ARTEMISIA CALIFORNICA — CALIFORNIA SAGEBRUSH
- ENCELIA CALIFORNICA — CALIFORNIA SUNFLOWER
- SALVIA LEUCOPHYLLA — PURPLE SAGE
- ERICAMERIA ERICOIDES — MOCK HEATHER

SMALL SHRUBS
PLANT AT 3FT. O.C., MIX OF THE FOLLOWING SPECIES
PLANT IN GROUPINGS OF 10-12 PLANTS EA. SPECIES

- LOTUS SCOPARIUS — DEER WEED
- ISOCOMA MENZIESII — COAST GOLDENBUSH
- ERIOGONUM PARVIFOLIUM — WILD BUCKWHEAT
- CAMISSONIA CHEIRANTHIFOLIA — BEACH EVENING PRIMROSE
- AMBROSIA CHAMISSONIS — BEACH BUR

BIOSWALE PLANT MIX

NATIVE PLANTS FOR BIOSWALE / BIOFILTER:

DISTICLIS SPICATA - SALT GRASS
LEYMUS CONDENSATUS - GIANT RYE
LEYMUS TRITICOIDES - ALKAKI RYE
NASSELLA LEPIDA - FOOTHILL NEEDLEGRASS
CAREX PRAEGRICILIS - MEDOW SEDGE
CAREX PANSA - DUNE SEDGE
FRANKENIA SALINA - ALKALI HEATH
ANEMOSIS CALIFORNICA - YERBA MANSA

MANDALAY SITE

JUNE 19, 2008

L1
PRELIMINARY LANDSCAPE PLAN

SOUTHERN CALIFORNIA EDISON COMPANY
300 N. LONE HILL AVE.
SAN DIMAS, CA. 91773
TEL: (909)-394-8903

SOUTHERN CALIFORNIA EDISON COMPANY
251 N. HARBOR BLVD., OXNARD, CALIFORNIA

Bowland & Associates
Biological & Restoration Consulting
1700 E. Thompson Blvd., Sutie F
Ventura CA 93001

JORDAN, GILBERT & BAIN
LANDSCAPE ARCHITECTS INC.
3350 LOMA VIST ROAD
VENTURA, CA. 93003

RESOLUTION NO. 2007-19

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF OXNARD DENYING COASTAL DEVELOPMENT PERMIT (PZ 07-400-5) FOR A 45-MW ELECTRICAL GENERATING FACILITY LOCATED AT 251 NORTH HARBOR BOULEVARD, WITHIN THE COASTAL ZONE. FILED BY SOUTHERN CALIFORNIA EDISON, 2244 WALNUT GROVE AVENUE, ROSEMEAD, CA, 91770.

WHEREAS, the Planning Commission of the City of Oxnard considered the above-described application for a Southern California Edison 45-MW electrical power-generating facility and related equipment ("the project"); and

WHEREAS, the California Coastal Act defines a "Coastal-dependent development or use" as "...any development or use which requires a site on, or adjacent to, the sea to be able to function at all" (PRC §30101), and

WHEREAS, the project location is located in the Coastal Zone of the City Of Oxnard and subject to the Oxnard Coastal Land Use Plan and Chapter 17 (Coastal Zoning Ordinance) of the City Code; and

WHEREAS, the purpose of the Coastal Zoning Ordinance is stated in Section 17-2(2), "To assure priority for coastal-dependent and coastal-related development over other development on the coast"; and

WHEREAS, the coastal zone designation for the project site is Coastal Energy Facility Sub-Zone (EC); and

WHEREAS, Coastal Zoning Ordinance Section 17-20(B)(2) includes "Electrical power generating plant and accessory uses normally associated with said power generating facility" as a conditionally allowed use in the EC zone, requiring a coastal development permit; and

WHEREAS, there are no uses allowed in the EC zone other than by coastal development permit and the electrical power generating plant and accessory uses normally associated with said power generating facility use should be considered in the context of coastal-dependent; and

WHEREAS, a non-coastal dependent energy-generating facility would not be allowable based on Section 17-5(I) of the City Code which states, "If a proposed use is not listed as permitted or conditionally permitted, such use shall be assumed to be prohibited unless the city council determines, following recommendations from the commission and a public hearing, that the proposed use is substantially the same as a listed use."; and

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WHEREAS, the project was characterized by the applicant in letters dated April 19, 2007 and June 15, 2007 as "non-coastal dependent" and four identical projects are being developed in non-coastal locations.

NOW, THEREFORE, BE IT RESOLVED that the Planning Commission of the City of Oxnard finds that the proposed project is not an allowed use in the EC zone and denies the application for coastal development permit No. PZ 07-400-5.

PASSED AND ADOPTED by the Planning Commission of the City of Oxnard on the 28th day of June, 2007, by the following vote:

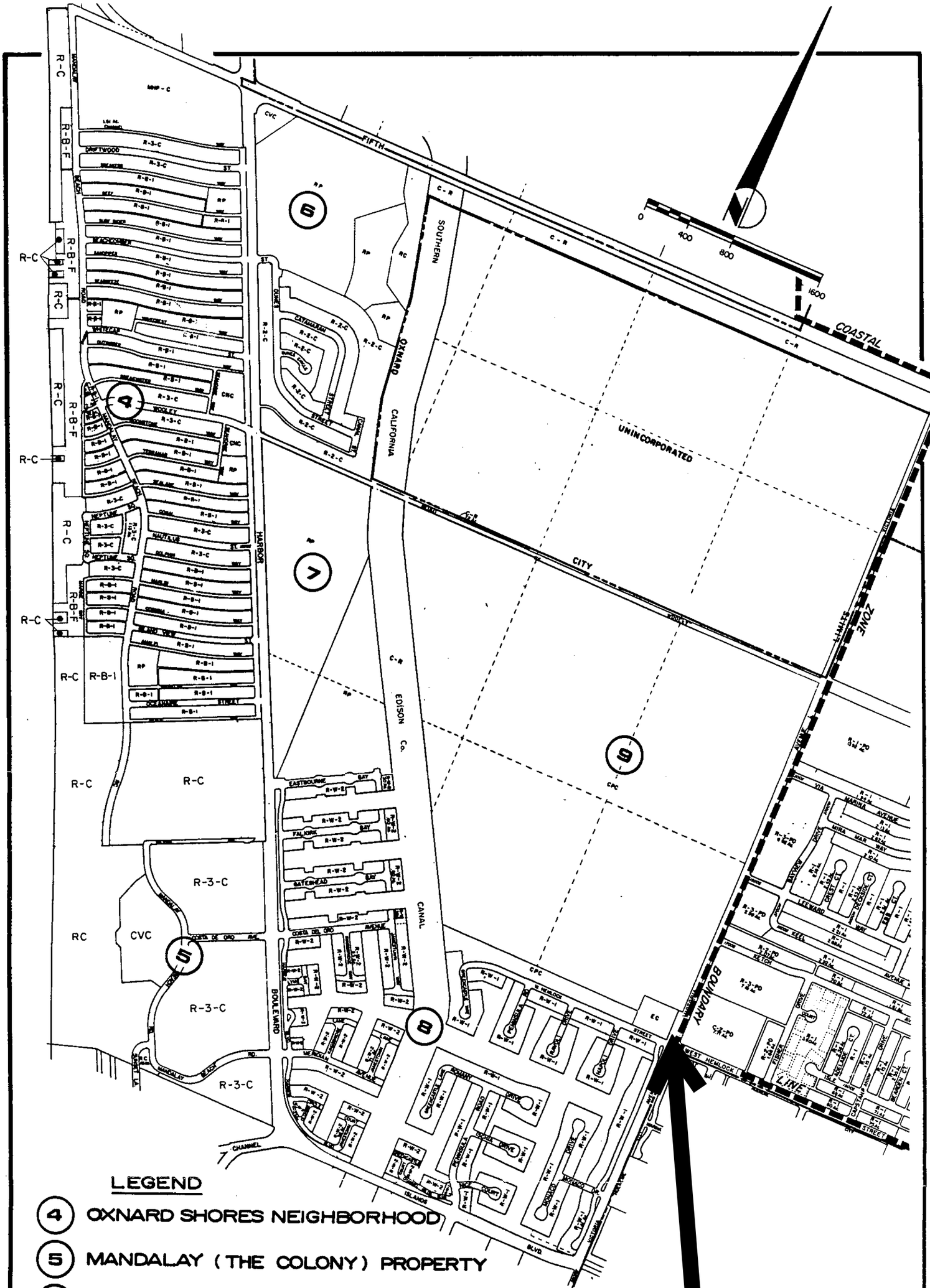
AYES: Commissioners: Medina, Sanchez, Elliott, Frank, Okada

NOES: Commissioners: Dean, Pinkard

ABSENT: Commissioners: None

_____
Dr. Sonny Okada, Chairperson

ATTEST: _____
Susan L. Martin, Secretary



LEGEND

4. OXNARD SHORES NEIGHBORHOOD
5. MANDALAY (THE COLONY) PROPERTY
6. NORTHERN DUNES AREA
7. SOUTHERN DUNES AREA
8. INLAND WATERWAY NEIGHBORHOOD
9. MANDALAY BAY PHASE IV SPECIFIC PLAN

Non-Coastal
EC Sub-zone

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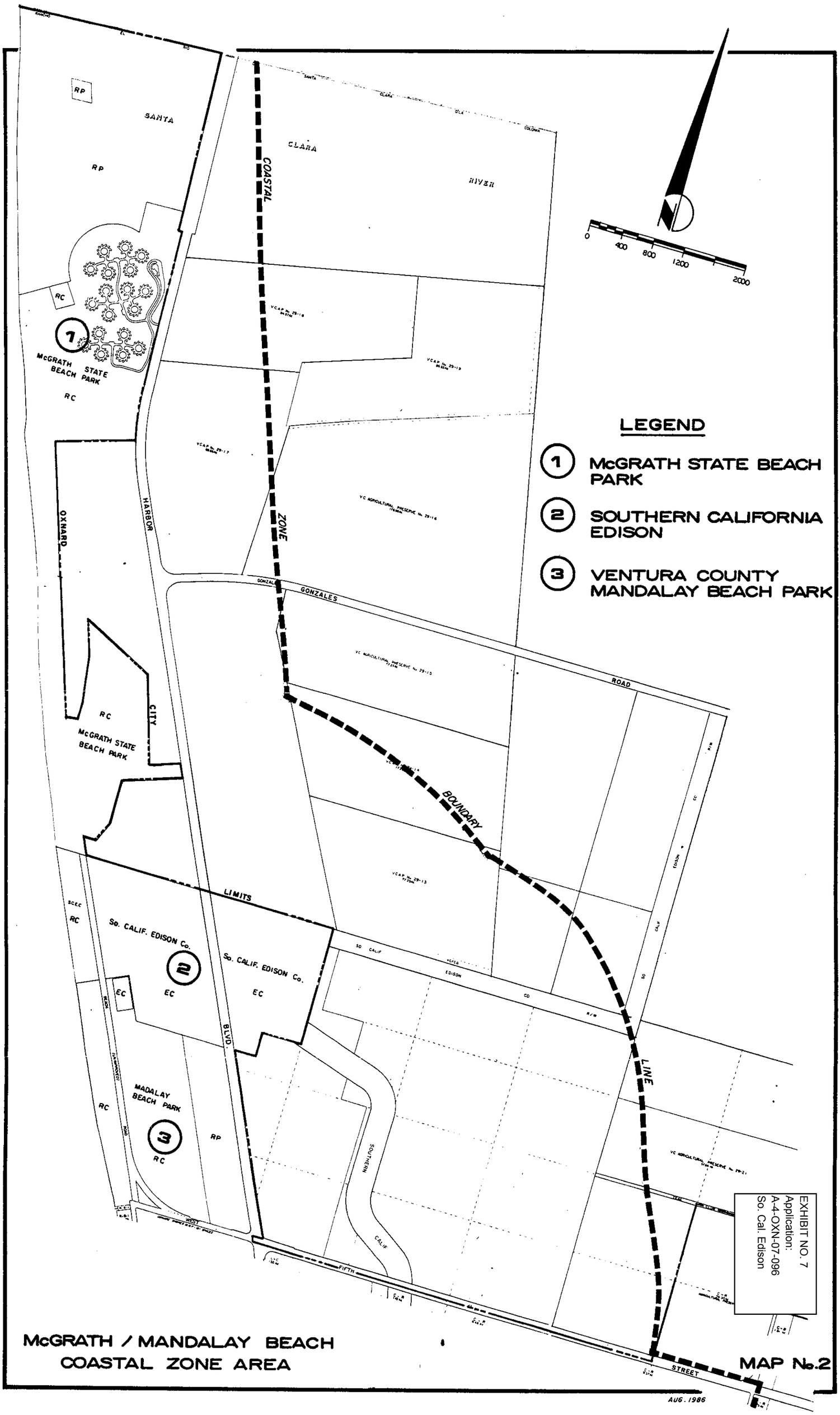
OXNARD SHORES
COASTAL ZONE AREA

MAP No. 3

MAY 1990



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PLANNING DIVISION
305 WEST THIRD STREET
OXNARD, CALIFORNIA 93030

MITIGATED NEGATIVE DECLARATION NO. 07-02

On the basis of an initial study, and in accordance with Section 15070 of the California Code of Regulations, the Planning Division has determined that there is no substantial evidence that the proposed project may have a significant effect on the environment:

> Coastal Development Permit PZ 06-400-5, a request to develop a 45-Megawatt (MW) "peaker" generator located at 251 N. Harbor Boulevard, Oxnard, California. The project facilities will include one natural gas-fired General Electric (GE) LM6000 gas turbine generator, pollution control equipment including a selective catalytic reduction (SCR) system and an oxidation catalyst, an 80-foot tall exhaust stack, a 10,500-gallon 19-percent aqueous ammonia storage tank, fuel gas supply line, fuel gas compressor, water supply line, water demineralizer, two water storage tanks, transformers, 66 kilovolt (kV) transmission tap line, a natural gas-fired "black-start" generator that can be independently started, a power control module, a 65- by 75-foot customer substation, and a 40- by 75-foot gas metering station. Filed by Southern California Edison, 2244 Walnut Grove Avenue, Rosemead, CA 91770

Attached is a copy of the initial study documenting the reasons to support the finding of no significant effect on the environment. Mitigation measures are included in the initial study to reduce the identified potential effects to a less than significant level:

• Aesthetics • Air Quality • Biological Resources • Cultural Resources • Geology and Soils • Hazards and Hazardous Materials • Hydrology and Water Quality	• Land Use and Planning • Mineral Resources • Noise • Population/housing • Recreation • Transportation/Traffic • Utilities/Service Systems

Mitigations are summarized on the following pages.

Attachments: Initial Study/MND 07-02
Appendices A to G

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SUMMARY OF MITIGATION MEASURES INCORPORATED INTO THE PROJECT

Topic Area	Mitigation Measures	
Aesthetics		None
Agricultural Resources		None
Air Quality	**AQ-1**	The area disturbed by clearing, grading, earth moving, or excavation operations shall be minimized to prevent excessive amounts of dust.
	AQ-2	Pre-grading/excavation activities shall include watering the area to be graded or excavated before commencement of grading or excavation operations. Application of water (preferably reclaimed, if available) should penetrate sufficiently to minimize fugitive dust during grading activities.
	AQ-3	Fugitive dust produced during grading, excavation, and construction activities shall be controlled by the following activities: a) If soil is hauled off site, all haul trucks shall be required to cover their loads as required by California Vehicle Code §23114. b) All graded and excavated material, exposed soil areas, and active portions of the construction site, including unpaved on-site roadways, shall be treated to prevent fugitive dust. Treatment shall include, but not necessarily be limited to, periodic watering, application of environmentally-safe soil stabilization materials, and/or roll-compaction as appropriate. Watering shall be done as often as necessary and reclaimed water shall be used whenever possible.
	AQ-4	Graded and/or excavated inactive areas of the construction site shall be monitored by SCE's construction contractor at least weekly for dust stabilization. Soil stabilization methods, such as water and roll-compaction, and environmentally-safe dust control materials, shall be periodically applied to portions of the construction site that are inactive for over four days. If no further grading or excavation operations are planned for the area, the area should be seeded and watered until grass growth is evident, or periodically treated with environmentally-safe dust suppressants, to prevent excessive fugitive dust.
	AQ-5	Signs shall be posted on-site limiting traffic to 15 miles per hour or less.

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SUMMARY OF MITIGATION MEASURES INCORPORATED INTO THE PROJECT

Topic Area	Mitigation Measures	
	AQ-6	During periods of high winds (i.e., wind speed sufficient to cause fugitive dust to impact adjacent properties), all clearing, grading, earth moving, and excavation operations shall be curtailed to the degree necessary to prevent fugitive dust created by on-site activities and operations from being a nuisance or hazard, either off-site or on-site. The site superintendent/supervisor shall use his/her discretion in conjunction with the APCD in determining when winds are excessive.
	AQ-7	Adjacent streets and roads shall be swept at least once per day, preferably at the end of the day, if visible soil material is carried over to adjacent streets and roads.
	AQ-8	Personnel involved in grading operations, including contractors and subcontractors, should be advised to wear respiratory protection in accordance with California Division of Occupational Safety and Health regulations.
	AQ-9	Equipment idling time shall be minimized.
	AQ-10	Equipment engines shall be maintained in good condition and in proper tune as per manufacturers' specifications.
	AQ-11	Alternatively fueled construction equipment, such as compressed natural gas (CNG), liquefied natural gas (LNG), electric, or equipment meeting Tier 2 standards, shall be used if feasible.
Biological Resources	- Not Applicable -	

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SUMMARY OF MITIGATION MEASURES INCORPORATED INTO THE PROJECT

Topic Area	Mitigation Measures	
	- Not Applicable -	
	BIO-3	A qualified biologist will conduct a pre-construction survey of each construction area to identify occupied nests of native birds prior to grubbing or grading activity. If occupied nests of native birds are observed within the construction zone, a minimum buffer of 100 feet will be established between the nest and limits of construction. Additionally, the construction crew will avoid activities within the buffer zone until the bird nest(s) is/are no longer occupied, per a subsequent survey by the qualified biologist. If work within the established 100 foot buffer cannot be avoided, consultation with the U.S. Fish and Wildlife Service and California Department of Fish and Game will be conducted to determine if there are appropriate measures that may be taken to continue work in these areas.
Cultural Resources	**CUL - 1**	Developer shall contract with a Native American monitor to be present during all subsurface grading, trenching or construction activities on the project site. The monitor shall provide a final report to the Planning Division summarizing the activities during the reporting period. A copy of the contract for these services shall be submitted to the Planning Division Manager for review and approval prior to issuance of any grading permits. The monitoring report(s) shall be provided to the Planning Division prior to approval of final building permit signature.
Geology and Soils		None
Hazards & Hazardous Materials	**HM - 1**	During construction, hazardous materials stored on-site will be limited to small quantities of paint, coatings and adhesive materials, and emergency refueling containers. These materials will be stored in their original containers inside a flammable materials cabinet. Fuels, lubricants, and various other liquids needed for operation of construction equipment will be transported to the construction [illegible] an as-needed basis by equipment service trucks.

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SUMMARY OF MITIGATION MEASURES INCORPORATED INTO THE PROJECT

Topic Area	Mitigation Measures	
Hydrology/Water Quality	None	
Land Use/Planning	- Not Applicable -	
Mineral Resources	None	
Noise		
Population/Housing	None	
Public Services	None	
Recreation	None	
Transportation/Traffic	**TT-1**	Should a temporary road and/or lane closure be necessary during construction the contractor will provide traffic control activities and personnel, as necessary, to minimize traffic impacts. This may include scheduling deliveries for off-peak hours and providing escorts for oversized loads, detour signage, cones, construction area signage, flagmen and other measures, as required, for safe traffic handling in the construction zone.

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SUMMARY OF MITIGATION MEASURES INCORPORATED INTO THE PROJECT

Topic Area	Mitigation Measures
	TT-2 Traffic Control Plan. A traffic control plan for the natural gas pipeline construction will be prepared by a registered traffic control engineer. The details of the traffic control plan will be prepared and approved by the affected jurisdictions. The Traffic Control Plan will generally follow the standard set forth by Caltrans. The Traffic Control Plan shall be submitted to the City for approval and will contain the following elements: • Designate required traffic patterns or temporary road closures for construction; • Provide construction work zone signs; • Provide safety measures to separate motorists from the construction workers and the work zone; In addition to the traffic control plan, the construction methodology along the roadways will: • Ensure access for emergency vehicles at all times; • Open lanes as soon as possible to restore normal traffic patterns; • Notify the public during construction, using methods such as large electronic notification and arrow signs, notification to impacted residents, appropriate detour signs, and notifications to schools and emergency providers; • Provide a designated traffic control coordinator to ensure compliance with the Traffic Control Plan; • During construction, cover open trenches within 15 feet of the edge of the pavement with metal plates at the end of the work day; and • After construction, restore the road to its pre-construction condition.
Utilities/Service Systems	None

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SECTION 2 BURROWING OWL MITIGATION GUIDELINES

The objective of these mitigation guidelines is to minimize impacts to burrowing owls and the resources that support viable owl populations. These guidelines are intended to provide a decision-making process that should be implemented wherever there is potential for an action or project to adversely affect burrowing owls or their resources. The process begins with a four-step survey protocol (see *Burrowing Owl Survey Protocol)* to document the presence of burrowing owl habitat, and evaluate burrowing owl use of the project site and a surrounding buffer zone. When surveys confirm occupied habitat, the mitigation measures described below are followed to minimize impacts to burrowing owls, their burrows and foraging habitat on the site. These guidelines emphasize maintaining burrowing owls and their resources in place rather than minimizing impacts through displacement of owls to an alternate site.

Mitigation actions should be carried out prior to the burrowing owl breeding season, generally from February 1 through August 31 (Thomsen 1971, Zarn 1974). The timing of nesting activity may vary with latitude and climatic conditions. Project sites and buffer zones with suitable habitat should be resurveyed to ensure no burrowing owls have occupied them in the interim period between the initial surveys and ground disturbing activity. Repeat surveys should be conducted not more than 30 days prior to initial ground disturbing activity.

DEFINITION OF IMPACTS

1. Disturbance or harassment within 50 meters (approx. 160 ft.) of occupied burrows.

2. Destruction of burrows and burrow entrances. Burrows include structures such as culverts, concrete slabs and debris piles that provide shelter to burrowing owls.

3. Degradation of foraging habitat adjacent to occupied burrows.

GENERAL CONSIDERATIONS

1. Occupied burrows should not be disturbed during the nesting season, from February 1 through August 31, unless the Department of Fish and Game verifies that the birds have not begun egg-laying and incubation or that the juveniles from those burrows are foraging independently and capable of independent survival at an earlier date.

2. A minimum of 6.5 acres of foraging habitat, calculated on a 100-m (approx. 300 ft.) foraging radius around the natal burrow, should be maintained per pair (or unpaired resident single bird) contiguous with burrows occupied within the last three years (Rich 1984, Feeney 1992). Ideally, foraging habitat should be retained in a long-term conservation easement.

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3. When destruction of occupied burrows is unavoidable, burrows should be enhanced (enlarged or cleared of debris) or created (by installing artificial burrows) in a ratio of 1:1 in adjacent suitable habitat that is contiguous with the foraging habitat of the affected owls.

4. If owls must be moved away from the disturbance area, passive relocation (see below) is preferable to trapping. A time period of at least one week is recommended to allow the owls to move and acclimate to alternate burrows.

5. The mitigation committee recommends monitoring the success of mitigation programs as required in Assembly Bill 3180. A monitoring plan should include mitigation success criteria and an annual report should be submitted to the California Department of Fish and Game.

AVOIDANCE

Avoid Occupied Burrows

No disturbance should occur within 50 m (approx. 160 ft.) of occupied burrows during the non-breeding Season of September 1 through January 31 or within 75 m (approx. 250 ft.) during the breeding Season of February 1 through August 31. Avoidance also requires that a minimum of 6.5 acres of foraging habitat be preserved contiguous with occupied burrow sites for each pair of breeding burrowing owls (with or without dependent young) or single unpaired resident bird (Figure 2).

MITIGATION FOR UNAVOIDABLE IMPACTS

On-site Mitigation

On-site passive relocation should be implemented if the above avoidance requirements cannot be met. Passive relocation is defined as encouraging owls to move from occupied burrows to alternate natural or artificial burrows that are beyond 50 m from the impact zone and that are within or contiguous to a minimum of 6.5 acres of foraging habitat for each pair of relocated owls (Figure 3). Relocation of owls should only be implemented during the non-breeding season. On-site habitat should be preserved in a conservation easement and managed to promote burrowing owl use of the site.

Owls should be excluded from burrows in the immediate impact zone and within a 50 m (approx. 160 ft.) buffer zone by installing one-way doors in burrow entrances: One-way doors should be left in place 48 hours to insure owls have left the burrow before excavation. One alternate natural or artificial burrow should be provided for each burrow that will be excavated in the project impact zone. The project area should be monitored daily for one week to confirm owl use of alternate burrows before excavating burrows in the immediate impact zone. Whenever possible, burrows should be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe or burlap bags should be inserted into the tunnels

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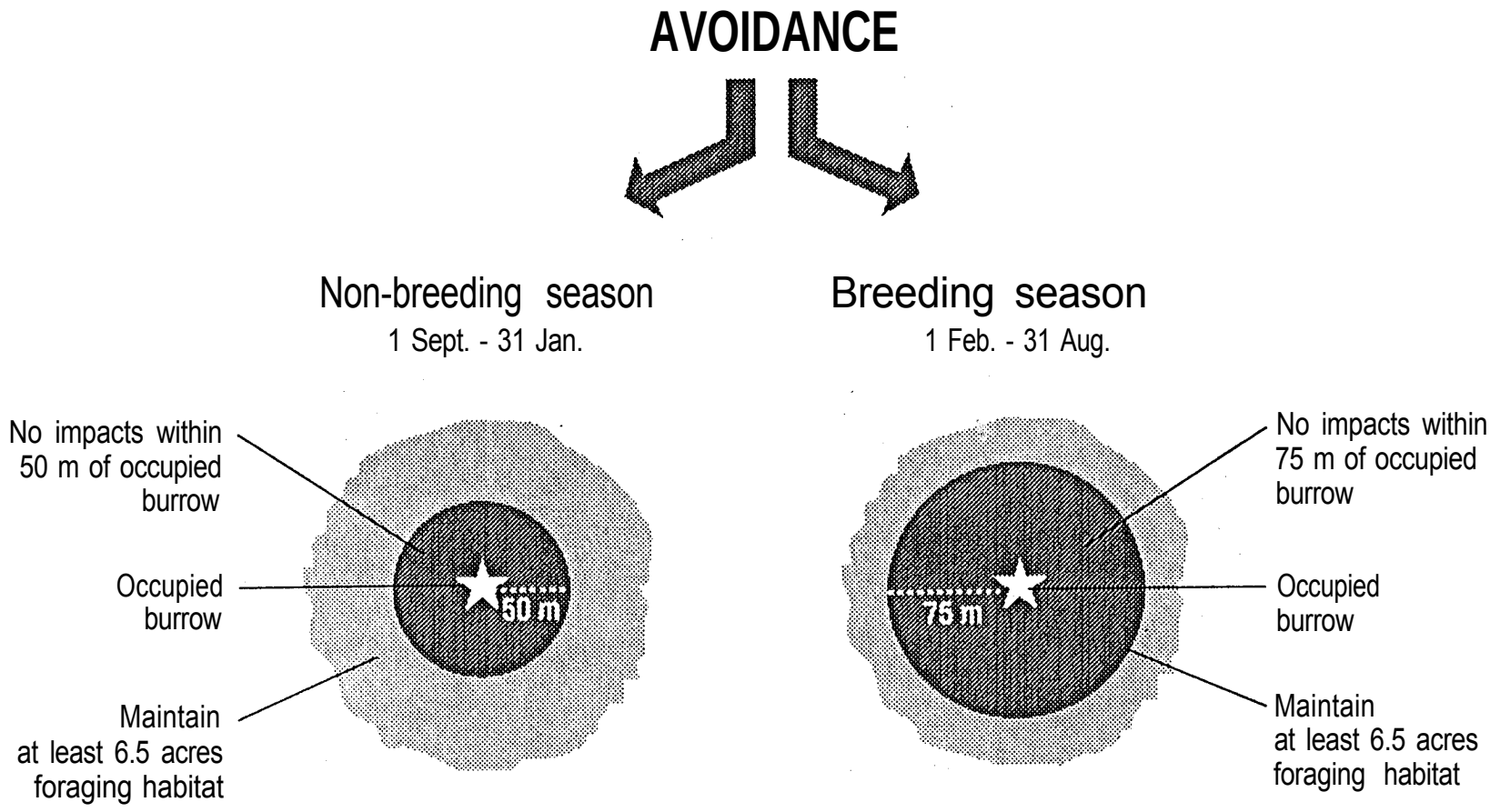

Figure 2. Burrowing owl mitigation guidelines.

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ON-SITE MITIGATION
IF AVOIDANCE NOT MET

(More than 6.5 acres suitable habitat available)

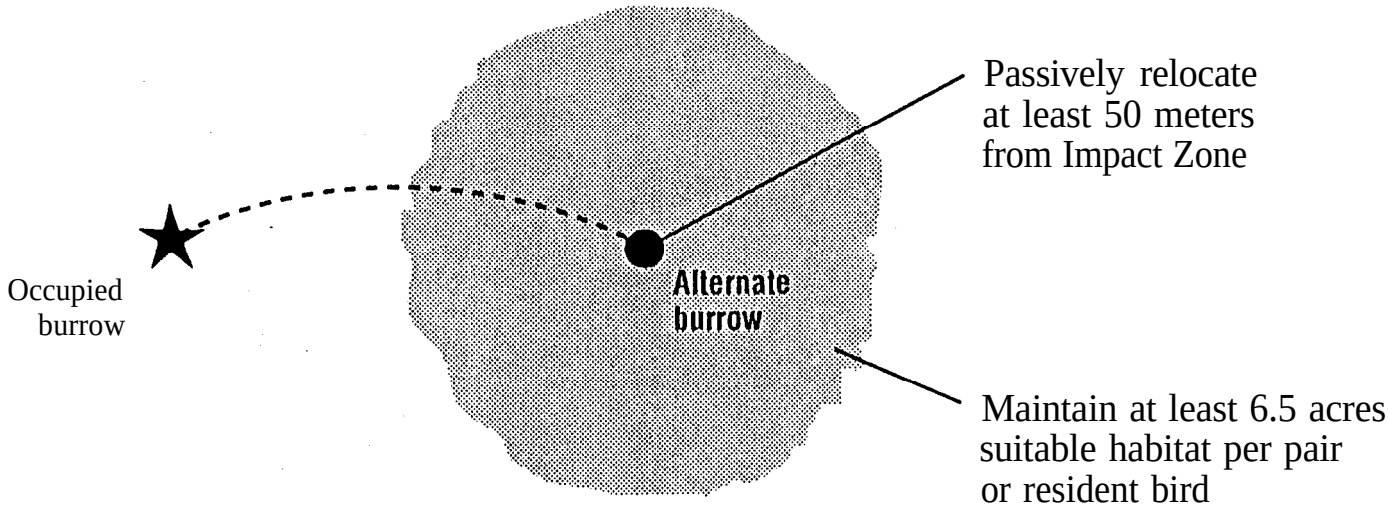

Figure 3. Burrowing owl mitigation guidelines.

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during excavation to maintain an escape route for any animals inside the burrow.

Off-site Mitigation

If the project will reduce suitable habitat on-site below the threshold level of 6.5 acres per relocated pair or single bird, the habitat should be replaced off-site. Off-site habitat must be suitable burrowing owl habitat, as defined in the *Burrowing Owl Survey Protocol*, and the site approved by CDFG. Land should be purchased and/or placed in a conservation easement in perpetuity and managed to maintain suitable habitat. Off-site mitigation should use one of the following ratios:

1. Replacement of occupied habitat with occupied habitat: 1.5 times 6.5 (9.75) acres per pair or single bird.

2. Replacement of occupied habitat with habitat contiguous to currently occupied habitat: 2 times 6.5 (13.0) acres per pair or single bird.

3. Replacement of occupied habitat with suitable unoccupied habitat: 3 times 6.5 (19.5) acres per pair or single bird.

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McGrath Beach Peaker Project
Greenhouse Gas Emission Discussion

During the environmental review of the McGrath Beach peaker project, members of the public requested additional information on how the project might impact global climate change and what steps Southern California Edison (SCE) intended to take to mitigate those impacts. This white paper discusses the McGrath Beach peaker's greenhouse gas (GHG) emissions in the context of the overall regulatory structure governing SCE's GHG emissions and their planned reduction to meet California's GHG emission targets.

1. Scientific Background

SCE considers global warming to be an important issue and is committed to ensuring that the potential GHG emission impacts from its generation portfolio, including existing generation, new utility generation, new third-party generation built to satisfy SCE power procurement solicitations, and purchased generation from long- and short-term power contracts, are adequately addressed.

Global warming is particularly important to the coastal zone because California possesses significant habitat, marine life, and development assets within this zone that would be adversely affected if temperatures were to increase significantly or sea levels were to rise. The proposed McGrath Beach project is itself located at 10 feet above sea level and could be adversely impacted if global warming were to result in a rise in sea level.

Scientific research attributes global warming primarily to GHG emissions that remain in the atmosphere for many decades and trap heat, thereby resulting in warming of the global atmosphere. GHG emissions that contribute to global warming include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (NO), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (SF_6).

In 2004, total worldwide GHG emissions were estimated to be 20,135 Million Metric Tonnes[1] of Carbon Dioxide Equivalents[2] ($MMTCO_2E$).[3] For comparison, in 2004, U.S. GHG emissions were 7,074 $MMTCO_2E$,[4] of which California produced 492 $MMTCO_2E$, making it the state with the second largest GHG emissions contribution in that year.[5] If

[1] 1 million metric tonnes (MMT) = 1 teragram (Tg) = 1.102 million U.S. ("short") tons
[2] When quantifying GHG emissions, the different global warming potentials (GWP) of the various greenhouse gases are usually taken into account by normalizing their rates into an equivalent CO2 emission rate. Carbon dioxide equivalent emissions (CO_2 Eq, CO_2E *or* CO_2e) represents the amount of CO2 emissions that it would take to create a climate impact equivalent to the emissions of the specific gas or source of interest. This standardization is useful for comparison purposes, since the emissions impact of different source types and gases can then be directly compared.
[3] Association of Environmental Professionals. Final - June 29, 2007. M. Hendrix et. al. Alternative Approaches to Analyzing Greenhouse Gas Emissions and Global Climate Change in CEQA Documents. This estimate excludes emissions/removals from land use, land use change, & forestry.
[4] Ibid
[5] Ibid

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California were an independent nation, it would have ranked between 12th and 16th in total GHG emissions worldwide in 2004.[6,7]

California's largest source of GHG emissions is from transportation, which contributes 41% of the State's total GHG emissions. Electricity generation (including energy imports) is the second largest source, contributing 22%. Industry is the third largest source, contributing 20%.[8]

Out-of-state electricity generation has a significantly higher GHG emission rate than in-state generation, due to the higher percentage of coal-fired generation that is included in out-of-state imports. Although imported electricity comprises less than one-third of total retail sales, it produces approximately half of total GHG emissions. Since 1990, imported fossil fuel generation produced between 544 and 735 Metric Tonnes of CO_2E per gigawatt-hour (GWh) of electricity use, while in-state electricity generation (including zero emission sources) resulted in less than 280 metric tons of CO_2 per GWh , or only 35-40% of the CO_2 emissions for the same amount of energy production.[9]

Although California's total GHG emissions are large, the State's carbon intensity is comparatively low. In 2001, California ranked the fourth lowest among the 50 states and the District of Columbia in CO_2 emissions from fossil fuel combustion per capita, and fifth lowest in CO_2 emissions from fossil fuel combustion per unit of gross state product. This low intensity is attributable to a variety of factors, including the heavy dependence on natural gas as a generation fuel, the effectiveness of California's energy efficiency measures and the state's mandatory Renewable Portfolio Standards in reducing state greenhouse gas emissions.[10]

2. Regulatory Background

As a regulated utility, SCE has the obligation to provide electric service to all customers within its service territory. This means that SCE must supply a sufficient quantity of electricity each year to meet its customers' demands. This electricity can be provided either from utility-owned generation or from power purchase agreements with third party suppliers. The quantity of GHG emissions that are produced to serve customer demand is directly related to: 1) the number of megawatt hours (MWh) of electricity that SCE must provide; 2) the energy source used to generate the electricity; and 3) the efficiency of the generation unit.

Different types of energy sources emit different amounts of GHG per MWh of electricity generated. Nuclear, hydroelectric, and renewable resources such as wind or solar energy

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[6] California Energy Commission. December 2006. Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004. Staff Final Report. CEC-600-2006-013-SF.
[7] Since 2004, emissions from the expanding economies of the world (e.g., China and India) have outpaced emissions in the U.S. and the developed countries, substantially changing the proportional shares of global GHG emissions.
[8] Ibid
[9] Ibid
[10] Ibid

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produce no direct GHG emissions. Among fossil fuel energy sources, natural gas is the cleanest source, followed by fuel oil, with coal producing the most GHG emissions per MWh of generation. Within each of the three major fossil fuel categories, more efficient sources with lower heat rates (mmbtu/MWh) emit fewer greenhouse gasses than less efficient sources with higher heat rates. A lower heat rate means that less fuel (mmbtu) is combusted to produce the same amount of electricity (MWh). Because GHG emissions are directly proportional to the amount of fuel combusted, a more efficient source will produce less GHG per MWh than a less efficient source.

Consequently, in order to reduce GHG emissions from the electric industry, the near term focus is on influencing the above three variables: energy demand (MWh), energy source, and generation efficiency. Energy efficiency and demand response initiatives are used to reduce energy demand (MWh). Increasing the amount of energy being supplied from renewable and natural gas energy sources reduces the amount of energy that must be supplied from higher GHG emitting energy sources such as coal. Replacing aging, less efficient generating units with newer, more efficient units; siting generation closer to customers; and utilizing efficient combined heat and power resources (CHP) improves generation efficiency.

This focus is clearly reflected in the California Climate Action Team's March 2006 Report to the Governor and California Legislature which suggested that the following initiatives be implemented by the California Public Utilities Commission to reduce GHG emissions from the electric industry.

Public Utilities Commission GHG Emission Reduction Strategies[11]

Strategy	$MMTCO_2E$	
	2010	2020
• Accelerated Renewable Portfolio Std to 33% by 2020 (includes load-serving entities)	5	11
• California Solar Initiative	0.4	3
• Investor-Owned Utility (IOU) Energy Efficiency Programs (including LSEs)	4	8.8
• IOU Additional Energy Efficiency Programs/Demand Response	NA	6.3
• IOU Combined Heat and Power Initiative	1.1	4.4
• IOU Electricity Sector Carbon Policy	1.6	2.7
Total:	12.1	36.2

In addition, the California Energy Commission has been directed to increase building and consumer product efficiency standards that apply to SCE's customers, which will lead to further reductions in energy demand.

[11] State of California, Environmental Protection Agency, Climate Action Team. March 2006. Climate Action Team Report to Governor Schwarzenegger and the California Legislature.

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This focus is also reflected in the key climate change mitigation strategies that have been identified by the Intergovernmental Panel on Climate Change (IPCC) for the electricity industry. Key mitigation strategies for energy supply include the following:[12]

- **Mitigation technologies and practices currently commercially available:** Improved supply and distribution efficiency; fuel switching from coal to gas; nuclear power; renewable heat and power (hydropower, solar, wind, geothermal and bioenergy); combined heat and power; early applications of Carbon Dioxide Capture and Storage (CCS) (e.g. storage of removed CO_2 from natural gas).

- **Mitigation technologies and practices projected to be commercialized before 2030:** Carbon capture and storage for gas, biomass and coal-fired electricity generating facilities; advanced nuclear power; advanced renewable energy, including tidal and wave energy, concentrating solar, and solar photovoltaics.

The State of California and the California Public Utility Commission (CPUC) have adopted numerous GHG laws, regulations and policies that apply to the proposed project and to SCE's overall GHG emissions profile, power generation, and power procurement activities in order to address GHG emissions from electricity generation sources. The key requirements affecting SCE are as follows:

Governor's Executive Order S-3-05 – Establishes state GHG emission targets that call for a reduction of GHG emissions to 2000 levels by 2010; to 1990 levels by 2020; and to 80% below 1990 levels by 2050.

AB32 (The California Global Warming Solutions Act of 2006) – Requires the California Air Resources Board (CARB) to promulgate regulations to reach the 2020 goal of reducing total GHG emissions to 1990 levels.

Governor's Executive Order S-20-06 – Directs CARB to develop a program for reducing greenhouse gas emissions through emissions trading.

Western Climate Change Action Initiative – Commits CA, WA, OR, AZ & NM to develop a regional market-based program to reduce GHG emissions.

CPUC R.04-4-003 – Requires SCE to consider the implications of various GHG scenarios in its long term procurement plans (LTPPs) to ensure that state GHG goals are met.

CPUC D.04-12-048 – Requires SCE to employ a GHG adder when evaluating energy bids for contracts over five years in duration in order to ensure a preference for renewable and low GHG energy sources.

[12] Intergovernmental Panel on Climate Change. 2007. Lenny Bernstein, et. al. Fourth Assessment Report Climate Change 2007: Synthesis Report, Summary for Policymakers.

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CPUC R.06-02-013 – Extends the use of the GHG adder to include all contracts of 1 year or longer and requires any PUC Application for new fossil-fired generation to demonstrate how the resource fits into SCE's overall GHG reduction strategy.

SB 1368 – Prevents long term power purchase agreements with or investments in baseload power plants with GHG emissions in excess of those produced by a combined-cycle natural gas power plant. The CPUC has established this emission performance standard (EPS) as 1,100 lbs CO_2E/net MWh.

SB 1078 (CA Renewable Portfolio Standard (RPS) Program) – Requires 20% of all power used by Investor Owned Utility customers in California to be generated from renewable resources by 2010.

CEC Energy Action Plan II (2005) – Establishes a 33% renewable RPS target for 2020. The CPUC requires SCE to report on progress towards meeting the 33% goal.

CPUC D.06-12-033 – Implements the California Solar Initiative with the goal of installing 3,000 MW of new solar photovoltaic systems by 2017. SCE will administer this program within its service territory, with a goal of 805 MW to be installed.

CPUC D.03-06-032 – Requires SCE to pursue the goal of satisfying 5% of it peak load through price responsive demand response programs by 2007 and to expeditiously implement time-of-day pricing for all customers.

CPUC D.04-09-060 – Requires SCE to pursue the goal of achieving cumulative energy savings of 10,608 GWh[13] and 2,228 MW between 2004-2013.

CPUC D.07-10-032 – Reaffirms the energy efficiency goals established in D.04-09-060 and establishes a process to develop goals extending to 2020.

CPUC D.08-03-018 – Recommends that CARB establish a GHG cap-and-trade system for all entities supplying power to the California electricity grid, with at least some portion of the GHG emission allowances being auctioned.

The above requirements have been adopted to ensure that the power generated to meet SCE's customer load is:

- Produced with the lowest GHG emissions rate possible;
- Consistent with the Governor's GHG policy; and
- Supports the state's GHG emission reduction targets.

[13] 1 GWh = 1,000 MWh

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Meeting SCE's load under all circumstances, in particular as customer demand continues to increase over time, requires a mixture of different energy resources in different locations to ensure that the electric system functions smoothly and reliably. SCE's resource portfolio must be constructed carefully to ensure that SCE complies with the above regulations to minimize and continue to reduce its GHG emissions while still efficiently meeting customer energy requirements.

As one example, in order to increase the use of intermittent[14] renewable resources such as wind or solar in its portfolio, SCE must also increase its natural gas fired peaking resources so it is able to backstop and smooth the changing electrical output from these intermittent sources in order to ensure grid stability. Similarly, a certain number of fossil fuel fired "black start" generators of high reliability must be sited in key locations to ensure grid reliability in the event of system upsets. Larger fossil fuel generators must be located at strategic locations to provide grid voltage support and system inertia.

The State has given the California Air Resources Board (CARB) the lead role in implementing California's GHG emission reduction program with regards to CO_2 air emission limits.

> "It is the intent of the Legislature that the State Air Resources Board consult with the Public Utilities Commission in the development of emissions reduction measures, including limits on emissions of greenhouse gases applied to electricity and natural gas providers regulated by the Public Utilities Commission in order to ensure that electricity and natural gas providers are not required to meet duplicative or inconsistent regulatory requirements." *(Cal. Health & Safety Code §38501(g)*)

In order to achieve AB32's stated goal of reducing GHG emissions to 1990 levels by 2020, CARB is in the process of developing regulations for all major contributing source categories, including the electricity industry. The first step in this process, finalizing the 1990 statewide CO_2 emission inventory, was completed in December 2007. CARB will now use this inventory, the 2008 statewide CO_2 emission inventory, and CO_2 emission reports from individual major sources to determine the quantity of emission reductions that will be allocated to each contributing emission segment (transportation, electricity, manufacturing, etc.) and individual emission company or source, as well as setting forth the regulatory mechanisms by which these reductions will be implemented.

SCE has calculated and reported its systemwide CO_2 emissions, including emissions from both generated and purchased power, to the California Climate Action Registry every year since 2002.[15] The AB32 program that CARB is developing for the electricity sector will reduce CO_2 emissions on a systemwide basis in order to ensure that all emissions created to serve California's load are captured and that all generating sources, regardless

[14] Intermittent resources are those whose power output can fluctuate from moment to moment, for example by a change in wind speed or a cloud passing over the sun.
[15] Starting in 2009, CO2 emissions will be reported to CARB.

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of ownership or location, are being treated uniformly and equitably.[16] If generation sources are not treated uniformly, regulating CO_2 emissions in one location, for example natural gas plants located in California, can have the adverse effect of increasing CO_2 emissions from the system as a whole by making it more economic to import out-of-state electricity from higher emitting generation sources.

CARB is in the process of creating a Scoping Plan that contains specific policy scenarios for regulating the different source categories. In a recent decision (D.08-03-018), the CPUC provided input to CARB recommending that a cap-and-trade system be utilized to reduce greenhouse gases from the electricity sector, with sources being required to purchase at least a certain portion of credits. AB32 requires CARB to adopt implementing regulations by January 2012.

The net effect of the above regulations is that the GHG emissions from SCE's generation portfolio will be capped and will be required to be reduced as directed by CARB to meet the State's greenhouse gas reduction goals.

3. Project Emissions

Operational Emissions

Power Plant Emissions

The McGrath Beach peaker will emit greenhouse gases from the combustion of natural gas in its turbine and the emergency ("black start") generator. The principal greenhouse gases emitted from fossil fuel combustion are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (NO). The Ventura County Air Pollution Control District (VCAPCD) air permit for the project will limit combustion turbine operation to 2,121 hours per year, 1,881 operating hours plus 240 hours of start up and shut down periods. The emergency generator will only operate during routine testing and maintenance activities and if there is a system blackout on the local electric grid. Reliability testing activities will require a maximum of 50 operating hours per year. Therefore, the maximum potential to emit from the proposed project is **51,032.7 Metric Tonnes CO_2E** per year. If a 30-year project life is assumed, then the maximum potential to emit over the life of the project is 1,530,981 Metric Tonnes CO2e.

[16] Although the program that is being developed will address generation emissions on a systemwide basis, the responsibility for unit-specific emissions are expected to be assigned to the individual generators and power aggregators ("first sellers") that have direct control over the emissions output from each generation source.

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McGrath Beach Peaker CO_2 Equivalent Emissions

CO2	Annual Usage (hours)	Heat Input (MMBtu/hr)	Emission Factor (kg C / MMBtu)	Oxidation Factor	CO2 Annual Emissions (tonnes/yr)	CO2 Equivalent Annual Emissions (tonnes/yr)	Fuel
Turbine	2121	451.3	14.47	0.995	50532.30	50532.30	Natural Gas
IC Engine	50	6.43	14.47	0.995	16.97	16.97	Natural Gas
CH4	**Annual Usage (hours)**	**Heat Input (MMBtu/hr)**	**Emission Factor (kg / MMBtu)**		**CH4 Annual Emissions (tonnes/yr)**	**CO2 Equivalent Annual Emissions (tonnes/yr)**	**Fuel**
Turbine	2121	451.3	0.003901		3.73	78.42	Natural Gas
IC Engine	50	6.43	0.003901		0.0013	0.026	Natural Gas
N2O	**Annual Usage (hours)**	**Heat Input (MMBtu/hr)**	**Emission Factor (kg / MMBtu)**		**N2O Annual Emissions (tonnes/yr)**	**CO2 Equivalent Annual Emissions (tonnes/yr)**	**Fuel**
Turbine	2121	451.3	0.001361		1.30	403.86	Natural Gas
IC Engine	50	6.43	0.001361		0.00044	0.14	Natural Gas
Total Emissions (Annual CO2 Equivalent Metric Tonnes)						51032.72	

The McGrath Beach peaker plant is expected to operate only during periods of high electricity demand, to stabilize the transmission system when a high voltage transmission line or another source of generation unexpectedly goes off line, or during system emergencies. Consequently, actual emissions are expected to be substantially lower than the maximum potential to emit.

Because the project will require no more than 1-2 employee round trips per day and ammonia deliveries no more than four times per year, other operating emissions from the facility are insignificant.

Transmission Emissions

GHG emissions may also result from the sulfur hexafluoride (SF_6) used to insulate the transmission equipment that will be installed to connect the project to the electric grid. Although small in quantity, SF_6 emissions are important because they have an extremely high global warming potential. One ton of SF_6 emissions is equivalent to approximately

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23,900 tons of CO_2. Fugitive emissions of SF_6 can escape from gas-insulated equipment through the seals or during equipment installation, servicing, and disposal.

The McGrath Beach peaker will require the installation of one new SF_6-insulated circuit breaker at the customer substation that will be constructed just to the south of the generating unit. This circuit breaker will contain 52 pounds of SF_6. The leak rate for this equipment is guaranteed by the manufacturer to not to exceed 1 percent per year. Therefore, the maximum potential to emit of this circuit breaker will be 0.52 pounds of SF_6 per year, which is equivalent to **5.6 Metric Tonnes CO_2E** per year. The calculation spreadsheet is attached.

SCE utilizes industry best practices to manage and minimize its SF_6 emissions. Between 1999 and 2006, SCE reduced sulfur hexafluoride (SF_6) gas emissions from its electrical insulation equipment by 41 percent, while at the same time increasing its overall inventory of SF_6 containing equipment by 27 percent. SCE reports its SF_6 emissions annually to the U.S. Environmental Protection Agency under a voluntary Memorandum of Understanding. SCE also tracks and reports its SF_6 emissions to the State as part of its systemwide CO_2e emission total. These emissions will be addressed as part of CARB's overall AB32 regulatory program.

Construction Emissions

Direct Construction Emissions

GHG emissions from construction activities are primarily due to CO_2 emissions from on-site construction equipment and motor vehicle trips to and from the site. Emissions from construction activities were estimated from the types and operating times of construction equipment that would be used during construction, the number and length of daily on- and off-site motor vehicle truck trips required to deliver materials and supplies to and remove construction debris from the site, and the estimated number and length of worker commute trips. Specific calculation spreadsheets are attached.

Total CO_2 emissions from construction activities were estimated to be **618.0 Metric Tonnes CO_2E**.

CO_2 emissions from construction activities will be minimized to the extent possible by implementing air quality mitigation measures AQ-9 through AQ-12 from the Draft Initial Study prepared as part of the project's California Environmental Quality Act (CEQA) analysis.

Transmission Interconnection Emissions

In order to prepare the local distribution system for the installation of the McGrath Beach peaker, 32 existing circuit breakers were replaced during 2007. These included 28 circuit breakers at the Santa Clara substation, 1 circuit breaker at the Charmin substation, and 3 circuit breakers at the Levy substation. These circuit breakers were oil-insulated models that were scheduled to be replaced as part of SCE's planned transmission and distribu

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system expansion activities in the Oxnard area. However, their replacement was accelerated by one year to occur in 2007, so that the system would be ready to accommodate the additional generation from the Mandalay site.

If these emissions are included in the project total, the proposed project resulted in an additional one-time maximum potential emission increase of **180.4 Metric Tonnes CO_2E**.

4. Systemwide Emissions

Systemwide Power Plant Emissions

There is a basic difference between building a power plant and other types of development. New residential, commercial and industrial developments are also new electric customers that increase the MWh of electricity that must be provided by the electric system in order to meet their additional energy demands. New power plants do not change the demand for electricity; they merely respond to the existing system's demand for power. The same MWh of generation must be generated by power plants at some location to supply the amount of electricity SCE requires to serve its customers regardless of whether or not a specific generation project is constructed.

SCE uses the Ventyx Market Analytics and the Ventyx Planning and Risk models to simulate the operation of its electric system. These models calculate the CO_2 emissions from SCE's system as a whole based on its projected annual load profile and are currently used to comply with CPUC directives to evaluate the net CO_2 emissions from new energy projects and for other reporting requirements.

In order to investigate the emission impact of the proposed project on SCE's generation portfolio, SCE used the Ventyx Planning and Risk model to dispatch SCE's portfolio with and without the proposed McGrath Beach peaker to determine the net change in CO_2 emissions that would occur.

To estimate CO_2 emissions from the proposed project, SCE modeled 3 cases: 1) base case (no project); 2) economic dispatch (how the peaker is expected to run); and 3) maximum dispatch (peaker dispatched at the maximum allowable run time in the VCAPCD air permit). Emissions were calculated for each year between 2008-2020[17] and averaged to determine the average annual net change.

Generation resources are economically dispatched to meet demand based on their marginal cost.[18] This is called the loading order. The marginal cost is highly correlated with unit efficiency, which means that power plants almost always dispatch in the order of the most efficient to the least efficient heat rate (mmbtu/MW-hr) within its fuel category. This is because the marginal cost of generating electricity within each fuel

[17] Model inputs are only available through 2020

[18] Certain higher cost resources such as renewable resources are required to be dispatched first, pursuant to existing regulatory requirements.

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category (coal, natural gas, etc.) is almost always lower for units that burn less fuel per MWh of energy produced. Consequently, the peaker would only be expected to operate when it is the most efficient resource available (lowest heat rate/least cost) to produce the next required MWh of electricity.

Because the marginal cost of natural gas fired peakers is high compared to other resources, they dispatch last in the loading order after all other available resources have been brought on line. Therefore, when the proposed peaker project is dispatched, it will almost always replace a higher emitting natural gas fired unit. Because all natural gas peakers are reasonably efficient, the relative difference in CO_2 emissions between the proposed peaker and the less efficient units would be expected to be small. This means that the net decrease in annual CO_2 emissions would also be expected to be small. This is consistent with the results of the model runs.

The economic dispatch scenario operated the peaker only when it would be cost effective to do so, which is the scenario that most closely estimates the actual operation of the unit. This scenario resulted in an average annual hourly operation of 93 hours and produced a net systemwide emissions decrease of **18 Metric Tonnes CO_2E** per year. This result mean that the direct emission increases from the peaker (which would be approximately 2,496 Metric Tonnes CO2e per year for 93 hours of operation) are completely offset by emission decreases at other power plants on the system, and will in fact produce a slight net emissions decrease.

The maximum dispatch scenario required the peaker to run for the full 2,121 hours (1,881 operating hours and 240 hours of startup/shutdown) allowed each year. This required running the unit when it was not economic to do so and when the peaker was not the most efficient available resource. This scenario produced a net systemwide emissions increase of **23 Metric Tonnes CO_2E**. This result means that the direct emission increases from the peaker (i.e., the 51,038 Metric Tonnes CO2e per year increase calculated above) were almost completely offset by emission decreases at other power plants on the system.

The variation in the two runs is less than +/- 0.05% of the gross project emissions of 51,032.7 Metric Tonnes CO_2E. Therefore, considering the uncertainties inherent in the model, neither of the two scenarios produces results significantly different than zero. This indicates that the emission impact of the proposed project is neutral and the addition of the proposed peaker does not increase CO_2 emissions from the SCE system.

Indirect Line Loss Emissions

In addition to its direct impact on the emissions of other generation sources supplying power to the electric grid, the location of a new generation source will also affect systemwide emissions based on how it impacts the path and distance that power must travel to reach the customer.

When electricity travels across the wires of the transmission system it creates friction. This friction in turn creates waste heat that results in a measurable energy loss. This

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energy loss, called line loss, occurs both due to the distance that power must travel from its source to its destination, and due to differences in the materials that are used in different types of electric conductors across which the power must flow. If the path that the electricity must follow has higher friction, then there will be a greater line loss, which means that more generation will be required to serve the same load. The amount of electricity that must be generated to serve the load is equal to the MWh of customer demand plus the MWh that is required to transport the electricity across the system. Lower line losses mean that less electricity must be generated to deliver the same amount of electricity. In general, the farther that a generation source is from the customer that is being served, the more electricity will be lost to line losses and the more generation will be required to serve an identical load.

When a new generation source is added to the SCE electric system, it changes both the path and the distance that electricity must travel to reach the customer. In order to determine the line loss impact of the proposed project on SCE's generation portfolio, SCE used the GE Positive Sequence Load Flow (PSLF) program to simulate transmission line power flows with and without the proposed McGrath Beach Peaker. An adjusted load forecast for the Santa Clara 66kV sub-transmission system was created for the year 2009 for both the expected dispatch scenario (93 operating hours) and the maximum potential dispatch scenario (1881 operating hours) using the Ventyx model load profile output for the peaker. The GE PSLF program was then run using these two load forecasts and the historic load profile for this system, to generate the average system line losses for each scenario (i.e. 93 hours and 1881 hours respectively).

Using 2009 to calculate line loss impact is a conservative approach because line loss benefits increase when more demand is placed on the electric system. Demand on the Santa Clara sub-transmission is growing at the rate of 2-3% per year; therefore the line loss benefits of the proposed peaker will increase every year.

The GE PSLF model calculated that the economic dispatch scenario (93 hours) reduced lines losses in the Santa Clara system by 17.4 MWh per year. The maximum dispatch scenario (1881 hours) reduced line losses by 231.7 MWh per year

To determine the avoided CO_2 emissions from this generation reduction, the following formula is used:

Metric Tonnes CO_2E Reduced = MWh * HR * ER * 4.537E-07 [19]

Where

MWh = Megawatt-hours of avoided generation

HR = Heat rate of the generating unit being displaced in btu/kWh

ER = Emission rate of the generating unit being displaced in lbs CO_2/mmbtu

[19] 4.54 E-07 = 10^3 kW/MW * 10-6 mmbtu/btu ÷ 2204 lbs/metric tonne

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Because the new peaker will displace similar natural gas peakers during the hours that it will operate, a conservative heat rate of 8,500 btu/kW and 119 lbs CO_2/mmbtu emission rate were assumed for the incremental operating unit.

The CO_2 reduction is therefore calculated as follows:

Metric Tonnes of CO_2E Reduced = 17.4 MWh * 8,500 btu/kWh * 119 lbs CO_2/mmbtu * 4.537E-07

= 8.0 Metric Tonnes of CO_2E

Therefore, the economic dispatch scenario reduces systemwide CO_2 emissions by **8.0 Metric Tonnes CO_2E** per year due to the reduction in line losses. Using a similar calculation, the maximum dispatch scenario reduces systemwide CO_2 emissions by **106.3 Metric Tonnes CO_2E** per year. Assuming a project life of 30-years, the total line loss benefit of the peaker is a reduction of 240 Metric Tonnes of CO_2E for the economic dispatch scenario and 3,189 Metric Tonnes of CO_2E for the maximum dispatch scenario.

Additional Systemwide Benefits

One key benefit of the proposed project is its ability to supply power in the event of a system upset that requires "black start" capability. Under a blackout scenario, the peaker would be able to supply 45 MW of emergency power to the local grid almost immediately and would assist the regional electrical grid in coming back on line as quickly as possible, thereby reducing recovery time.

During blackout situations, many sources operate diesel-fired backup emergency generators. These generators have higher CO_2 emission rates than the proposed project. Therefore, the generator emissions that are avoided due to the interim power being supplied by the peaker and the overall faster recovery time of the regional grid will provide additional GHG benefits.

Energy Efficiency Measures Incorporated into Project Design

Energy efficiency measures have been incorporated into the project's design to the extent feasible. The proposed project has been designed to meet California Energy Commission energy efficiency standards for outdoor lighting and incorporates automatic cut off switches and multi level switching as required to allow best practice management of lighting levels. The significant use of California native vegetation in the landscape design also minimizes the amount of water required to irrigate the project, compared to a design consisting primarily of ornamental species. These measures will also reduce the indirect CO_2 emissions from the proposed project.

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5. Net Emissions

To determine the net GHG emissions from the proposed peaker, operational, construction and systemwide emissions impacts (increases and/or decreases) are added together.

Lifetime emissions were calculated assuming a 30-year project life. For the maximum potential generation scenario, the proposed project results in an overall **2,223 Metric Tonnes CO_2E** decrease over the life of the project, primarily due to the line loss benefits created by the project.

McGrath Peaker Net CO_2E Emission Impact
Maximum Potential Dispatch Scenario

Operational Emissions	*Metric Tonnes of CO_2E*
Power Plant	1,530,981
Transmission System	168
Construction Emissions	
Direct Construction	180
Transmission Interconnection	618
Systemwide Emissions	
Power Plant	-1,530,981
Transmission System	-3,189
Total:	**-2,223**

If the project operates for fewer hours, as predicted by the economic dispatch scenario, line loss benefits will be reduced, and the proposed project results in a net increase of **726 Metric Tonnes CO_2E** over the life of the project. Actual dispatch hours and emissions will likely fall somewhere in between the two scenarios.

Either result is less than +/- 0.1% of the proposed project's maximum potential to emit of 1,531,149 Million Metric Tonnes CO_2E and should be considered de minimus for a project of this size.

McGrath Peaker Net CO_2E Emission Impact
Economic Dispatch Scenario

Operational Emissions	*Metric Tonnes of CO_2E*
Power Plant	74,881
Transmission System	168
Construction Emissions	
Direct Construction	180
Transmission Interconnection	618
Systemwide Emissions	
Power Plant	-74,881
Transmission System	-240
Total:	**726**

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6. Summary

SCE's electric system is subject to a significant number of complex requirements that work together to regulate GHG emissions, including AB32 "The California Global Warming Solutions Act of 2006." These regulations are collectively designed to ensure that new sources generate electricity as cleanly as possible and that the SCE system continues to reduce its overall emissions as required to meet California's goal of reducing statewide CO2 emissions to 1990 levels by 2020. It is important that the proposed project is treated consistently with generators in other locations in the way it is required to comply with the above regulations.

The emission analysis for the proposed project shows that the installation of the McGrath Beach peaker will result in a slight net decrease in CO_2E emissions across SCE's generation portfolio due to its operation. Depending on the operating hour assumptions, these emission reductions may or may not fully offset the project's construction emissions. The maximum level of residual construction emissions is calculated to be 726 Metric Tonnes CO_2E which represents less than 0.1% of lifetime project emissions and would typically be considered de minimus.

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CONSTRUCTION EMISSION CALCULATIONS

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Construction Carbon Dioxide Emissions

Carbon dioxide (CO_2) emissions during construction of the Mandalay Peaker Project were estimated. The estimates included CO_2 emissions from construction equipment and from motor vehicles.

CO_2 emissions from construction equipment were calculated by multiplying operating hours for each type of construction equipment by an emission factor, in units of pounds of CO_2 emitted per operating hour. The construction equipment exhaust emission factors used for the calculations are composite horsepower-based off-road emission factors for 2007 developed for the South Coast Air Quality Management District (SCAQMD) by the California Air Resources Board (CARB) from its OFFROAD Model. The composite off-road emission factors were derived based on equipment category (tractor, dozer, scraper, etc.), and average equipment age and horsepower rating within horsepower ranges for the year. Although the proposed project will be constructed in Ventura County, emission factors for construction equipment in the SCAQMD's jurisdiction are expected to be similar to emission factors for equipment in adjacent Ventura County. The CO_2 emission factors developed by CARB for the SCAQMD for 2007 are listed in Table 5 of the attached spreadsheets and can also be downloaded from http://www.aqmd.gov/ceqa/handbook/offroad/offroad.html.

The types of construction equipment and the maximum daily operating time for each type of equipment during each bi-weekly construction period were estimated by SCE's engineering contractor for the proposed projects. Emission factors for CO_2 were prepared for the specified equipment and are provided in Table 4 of the attachment. The anticipated construction equipment usage and emissions by bi-weekly period are listed in Tables 1, 2 and 3 of the attachment. Total CO_2 emissions from construction equipment are estimated to be 571.4 U.S. Tons (518.5 Metric Tonnes).

CO_2 emissions from motor vehicles were calculated by multiplying miles traveled by each type of motor vehicle by an emission factor, in units of pounds of CO_2 emitted per mile traveled. The emission factors were compiled by the SCAQMD by running the California Air Resources Board's EMFAC2007 (version 2.3) Burden Model for the South Coast Air Basin for 2007. A weighted average of vehicle types was used to calculate emission factors for passenger vehicles, and emission factors for heavy heavy-duty diesel trucks were used for delivery trucks. The emission factors account for the emissions from start, running and idling exhaust. Emission factors for motor vehicles in the South Coast Air basin are expected to be similar to emission factors for vehicles in adjacent Ventura County. The motor vehicle exhaust CO_2 emission factors are listed in Table 6 of the attachment and can also be downloaded from http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html.

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SCE's engineering contractor estimated the number and length of daily on-site and off-site motor vehicle trips by trucks to deliver materials and supplies, remove construction debris, etc., by bi-weekly construction period. The anticipated number of construction workers during each bi-weekly construction period was used to calculate the number of construction worker commute trips, assuming each worker would drive separately to and from the site each day. This assumption overestimates the number of trips, since it is likely that some workers will carpool.

The anticipated number of motor vehicles and the resulting CO_2 emissions by bi-weekly period are listed in Tables 1, 2 and 3 of the attachment. Total CO_2 emissions from motor vehicles are estimated to be 109.6 U.S. Tons (99.5 Metric Tonnes).

Total CO_2 emissions during construction are estimated to be 681.0 U.S. Tons (618.0 Metric Tonnes).

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APPENDIX D: POWER PLANT SITE MAPS

CCC DESIGNATED AREA FACTORS

Staff-Recommended Designations of Areas
Unsuitable for Power Plant Construction Under
Section 30413(b) of the California Coastal Act of 1976

Adopted September 5, 1978

Designation Boundary

Coastal Zone Boundary

"Partial" Designation

1 - Publicly Owned Parks

2 - Other Recreation Areas

3 - Wetlands and Estuaries

4 - Marine Life Refuges and Reserves, Ecological Reserves, Areas of Special Biological Significance

5 - Marine Resources (kelp beds, rocky intertidal and subtidal areas, mouths of anadromous fish streams)

6 - Marine Mammal and Seabird Breeding and Resting Areas

7 - Environmentally Sensitive Habitat Areas

7-10 - Wildlife Habitat, Cultivated Agricultural Land

8 - California Natural Areas Coordinating Council Areas

9 - Forestry Special Treatment Areas

10 - Cultivated Agriculture - Special Agrarian Communities

11 - View Protection

12 - Inadequate Public Services

13 - Riparian Vegetation

a - After any number indicates an area proposed for acquisition by a State Agency

PP - Existing Power Plant

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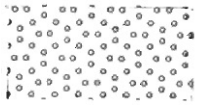
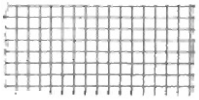
Power Plant Site Maps
CEC Natural Resource Pattern Key

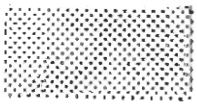
Reserves



Wetlands

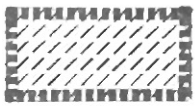


Estuary



Commercial and Recreational Resources

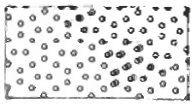
Endangered Species



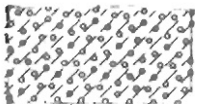
Power Plant Area

* In three cases, power plant boundary patterns overlap the CEC natural resource patterns of wetlands and endangered species, as follows:

Wetlands



Wetlands and Power Plant



Endangered Species

Endangered Species and Power Plant

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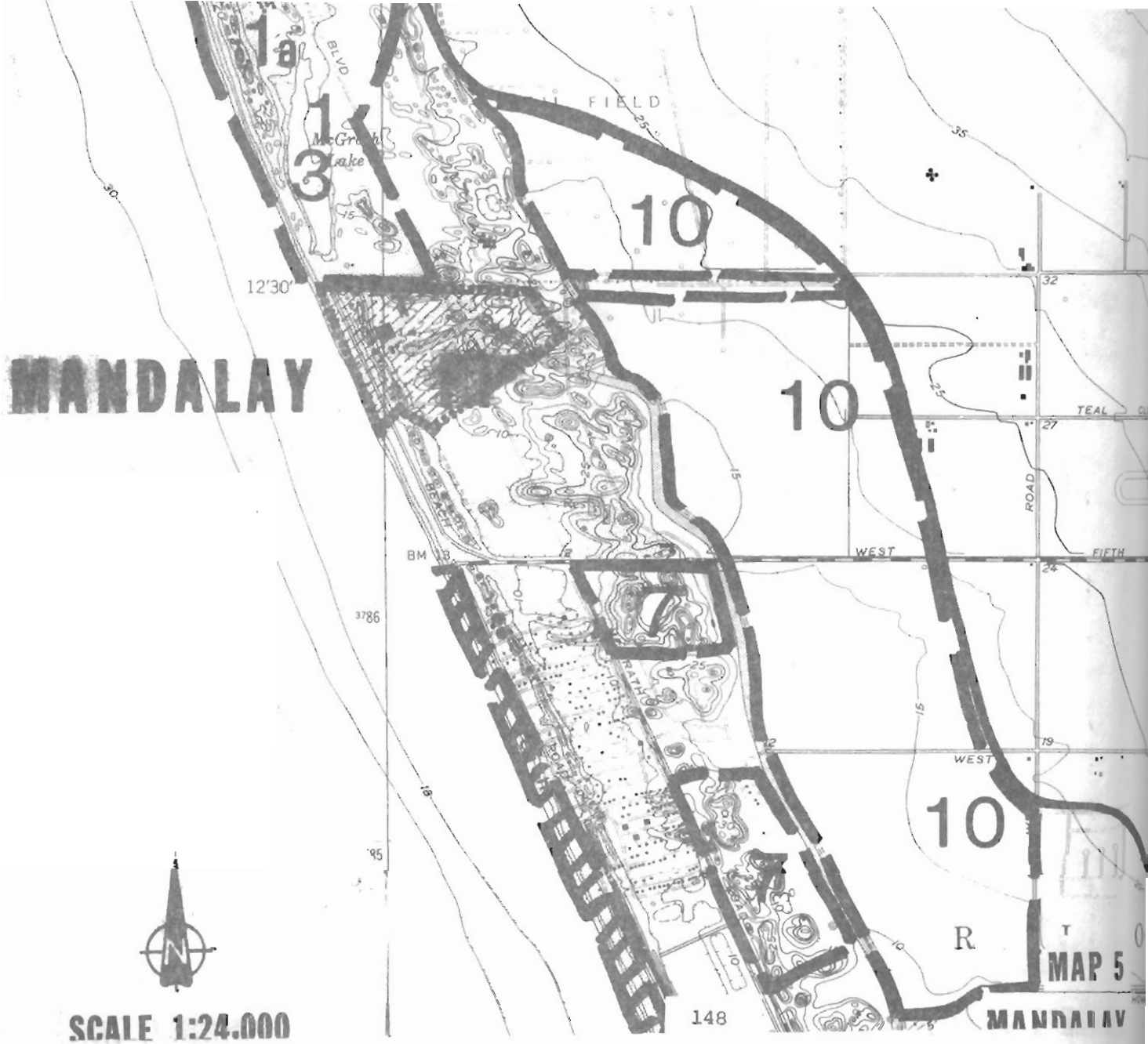
MANDALAY
FIELD
McGrath Lake
BLVD
12'30"
BM 13
3786
WEST
FIFTH
TEAL
ROAD
BEACH
RATHBONE
ROAD
10
10
10
R
T
MAP 5
MANDALAY
SCALE 1:24.000
148

mrs
Marine • Research • Specialists

July 2, 2008

Ms. Alison Dettmer
Supervisor, Energy and Ocean Resources Unit
California Coastal Commission
45 Fremont
Suite 2000
San Francisco, California
94105-2219

Re: SCE McGrath Beach Peaker Project Greenhouse Gas Emissions

Dear Alison:

Marine Research Specialists (MRS) has reviewed Southern California Edison's (SCE) analysis of greenhouse gas (GHG) emissions associated with their proposed McGrath Beach Peaker Project. While we generally concur with most of their analysis regarding the net change in GHG emissions associated with the proposed project, we believe there would be a net increase in GHG emissions associated with the project. Our review and comments are provided in the following sections.

Operational Emissions

The proposed peaker plant operation emissions would result for normal operations and transmission system upgrades.

Peaker Plant Emissions

The McGrath Beach peaker will emit greenhouse gases from the combustion of natural gas in its turbine and the emergency ("black start") generator. SCE estimated the maximum potential to emit GHG emissions based on the Ventura County Air Pollution Control District (VCAPCD) permit limit of 2,121 hours per year, plus 50 operating hours for reliability testing. The maximum potential to emit from the proposed project is 51,032.7 Metric Tonnes CO_2E[1] per year. Assuming an operational life of 30 years, the maximum potential to emit over the life of the project is 1,530,981 Metric Tonnes CO_2E. Under the economic dispatch scenario, which is how

[1] When quantifying GHG emissions, the different global warming potentials (GWP) of the various greenhouse gases are usually taken into account by normalizing their rates into an equivalent CO_2 emission rate. Carbon dioxide equivalent emissions (CO2 Eq, CO_2E or CO_2e) represents the amount of CO_2 emissions that it would take to create a climate impact equivalent to the emissions of the specific gas or source of interest. This standardization is useful for comparison purposes, since the emissions impact of different source types and gases can then be directly compared.

3140 Telegraph Road, Suite A Ventura, California 93003-3238
ph. 805.289.3920 fax 805.289.3935 www.mrsenv.com

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the peaker plant will likely be operated, potential emissions from the proposed project are 2,496 Metric Tonnes CO_2E[2] per year, or 74,881 Metric Tonnes CO_2E over a 30-year operating period.

MRS concurs with SCE's estimate of operational GHG emissions.

Transmission Emissions

The McGrath Beach peaker will require the installation of one new SF_6-insulated circuit breaker, which will contain 52 pounds of sulfur hexafluoride (SF_6). SF_6 has a relatively high global warming potential (approximately 23,900 times that of CO_2), so even small emissions of SF_6 can contribute to climate change. The leak rate for this equipment is guaranteed by the manufacturer to not to exceed one percent per year. Therefore, the maximum potential to emit of this circuit breaker will be 0.52 pounds of SF_6 per year, which is equivalent to 5.6 Metric Tonnes CO_2E per year. Assuming an operational life of 30 years, the maximum potential to emit over the life of the project is 168 Metric Tonnes CO_2E.

MRS concurs with SCE's estimate of transmission system upgrade GHG emissions.

Construction Emissions

SE estimated construction emissions for the proposed peaker plant. Construction emissions would represent a one-time contribution to total project-related GHG emissions of 618.0 Metric Tonnes. In order to prepare the local distribution system for the installation of the McGrath Beach peaker, 32 existing circuit breakers were replaced during 2007. These circuit breakers were oil-insulated models that were scheduled to be replaced as part of SCE's planned transmission and distribution system expansion activities in the Oxnard area. However, their replacement was accelerated by one year to occur in 2007, so that the system would be ready to accommodate the additional generation from the Mandalay site. The installation of the new circuit breakers represents an additional one-time maximum potential emission increase of 180.4 Metric Tonnes CO_2E.

MRS concurs with SCE's estimate of construction GHG emissions.

Statewide System Emissions

The proposed peaker plant would replace emissions from an existing generating facility. The relative changes in systemwide emissions are discussed below.

[2] When quantifying GHG emissions, the different global warming potentials (GWP) of the various greenhouse gases are usually taken into account by normalizing their rates into an equivalent CO_2 emission rate. Carbon dioxide equivalent emissions (CO2 Eq, CO_2E or CO_2e) represents the amount of CO_2 emissions that it would take to create a climate impact equivalent to the emissions of the specific gas or source of interest. This standardization is useful for comparison purposes, since the emissions impact of different source types and gases can then be directly compared.

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Systemwide Power Plant Emissions

Based on the economic dispatch of generation, it is likely that the McGrath Peaker would displace similar generation in terms of operational efficiency and GHG emissions. SCE used the Ventyx Market Analytics and the Ventyx Planning and Risk models to simulate the operation of its electric system and estimate GHG emissions for the units that would be replaced by the McGrath Peaker. In each case evaluated by SCE, emissions associated with the McGrath Peaker would be approximately the same as the generation that is replaced. Therefore, it is unlikely that there would be any appreciable net change in GHG emissions associated with the operation of the proposed peaker and displacement of existing generating units.

Indirect Line Loss Emissions

One of the more difficult aspects of the GHG emission inventory to validate is related to the amount of energy lost during electrical transmission, and the equivalent amount of GHGs that would be emitted to make up for the lost energy. As noted in SCE's analysis:

> *When electricity travels across the wires of the transmission system it creates friction. This friction in turn creates waste heat that results in a measurable energy loss. This energy loss, called line loss, occurs both due to the distance that power must travel from its source to its destination, and due to differences in the materials that are used in different types of electric conductors across which the power must flow.*

The main presumption contained in the SCE GHG analysis is that power generated by the Mandalay Beach Peaker Project would replace more distant generation and be used for local power needs. This assumption appears to be consistent with the CPUC order requiring SCE to develop additional peaking capacity, which states:

> *"Such units should be black-start capable and dispatchable, and should bring collateral benefits to SCE's transmission and distribution system as well as the CAISO grid." (CPUC, 2006)*

In order to estimate potential improvements in system transportation, SCE utilized the General Electric (GE) Positive Sequence Load Flow (PSLF) software to simulate the Santa Clara 66 kV Subsystem. According to GE, the PSLF software is:

> *…designed to provide comprehensive and accurate load flow, dynamic simulation and short circuit analysis. Using this tool, engineers can analyze transfer limits while performing economic dispatch. PSLF is ideal for simulating the transfer of large blocks of power across a transmission grid or for importing or exporting power to neighboring systems.*

Existing power generation in the Oxnard area is transmitted to the Santa Clara substation via the 230 kV transmission system and them back to the area where it is generated via the less efficient 66 kV distribution system, thus resulting in line losses on the lower voltage 66 kV system. The proposed peaker plant would serve the local 66 kV distribution system and result in more

efficient power transmission. Therefore, while difficult to quantify in the absence of a complete independent model simulation of the SCE Santa Clara 66 kV Subsystem, the proposed peaker plant would clearly lessen potential line losses and associated GHG emissions. However, SCE has conducted the PSLF modeling for the Santa Clara 66 kV Subsystem, and modeling results appear to provide a reasonable estimate of potential improvement in local power distribution and reductions in line losses and GHG emissions.

Net Project GHG Emissions

SCE evaluated two generation scenarios, a maximum potential dispatch scenario and an economic dispatch scenario. Based on the worst-case economic dispatch scenario, which would most likely resemble actual peaker plant operations, the project-related net increase in GHG emissions can be summarized as follows:

McGrath Peaker Net CO_2E Emission Impact
Economic Dispatch Scenario

Operational Emissions	*Metric Tonnes of CO_2E*[1]
Power Plant	74,881
Transmission System	168
Construction Emissions	
Direct Construction	180
Transmission Interconnection	618
Systemwide Emissions	
Existing Power Plant Displacement	-74,881
Transmission System Line Losses	-240
Total:	**726**

[1.] Totals assuming a 30-year project life.

If you have any questions please do not hesitate to give me a call at 805.289.3927.

Best Regards,

Steven R. Radis
Principal

mrs

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ALTERNATIVES

The California Coastal Commission (the Commission) is a certified regulatory agency under the California Environmental Quality Act (CEQA). As such, it prepares an EIR-equivalent document, in this instance a Staff Report, that either addresses alternatives and mitigation measures or otherwise states that there are no significant or potentially significant effects. The Commission's review of the Proposed Project, SCE's Oxnard peaker unit, has concluded that the Proposed Project will not have any significant or potentially significant effects on the environment. (April 24, 2008 Commission Staff Report at p. 5); see also Mitigated Negative Declaration (MND) at pp. 100-101.) Thus, the Commission does not need to conduct an alternatives analysis under Section 15252 of the CEQA Guidelines.

Nonetheless, in response to public comments received, the Commission requested that Southern California Edison (SCE) provide additional information on: (1) the siting criteria that were used to select the Proposed Project site, and (2) the alternatives that SCE considered, with particular consideration given to replying to the alternatives that were identified in public comments.

The following sections describe the Proposed Project and its objectives and analyze the seven alternatives categories that have been identified by the public:

Alternative 1: No Project Alternative (do not construct a "black start" peaker in the Ventura/Santa Barbara area);

Alternative 2: Renewable/Demand Side Management/Energy Efficiency Alternative;

Alternative 3: Local Cogeneration Alternative;

Alternative 4: EF Oxnard Alternative;

Alternative 5: East of Harbor Boulevard Alternative;

Alternative 6: Mandalay Generating Station Alternative; and

Alternative 7: Non-Coastal Location in the Ventura/Santa Barbara Area Alternative.

The alternatives analysis includes all information that SCE considered from Project inception through the present analysis related to the selection of the Proposed Project site.

I. Project Description

SCE proposes to build a 45-MW, natural gas-fired electrical generation facility – a peaker" plant – to be located on a 16-acre, SCE-owned vacant site adjacent to (and within the same Energy Coastal ("EC") subzone as) Reliant Energy's existing Mandalay Generating Station. The site was formerly occupied by oil storage tanks, and is separated from the ocean by the Mandalay plant to the west and northwest and by the DCOR oil

processing facilities to the southwest. The peaker would be capable of being started up and fully dispatched on short notice (approximately 10 minutes) and would operate primarily at times of peak electricity demand or times of system strain or imbalance when a major power plant or transmission line becomes suddenly unavailable. The peaker will also have "black start" capability, meaning it will have the ability to start up without any external power source. Thus, it will be able to provide the power needed to restart other power plants and restore electrical service during area-wide power outages, as well as provide power for a limited number of essential services while the larger, slower-starting plants come back on-line.

II. Project Objectives

The California Public Utility Commission's (CPUC's) August 2006 Assigned Commissioner Ruling[6] defined the Proposed Project's objectives: (1) to construct SCE-owned black-start capable generating facilities; (2) that are dispatchable; (3) with collateral benefits to SCE's transmission and distribution system as well as the CAISO grid; (4) immediately. In determining the specific type and location of generation to construct, SCE gave primary consideration to complying with the four mandatory directives contained in the CPUC order.

A. CPUC Directive

The CPUC ordered SCE to "pursue the immediate development and installation of up to 250 MW of black-start, dispatchable generating capacity within its service territory for Summer of 2007 operation." (ACR, p. 2) Additionally, "[s]uch units… should bring collateral benefits to SCE's transmission and distribution system as well as the CAISO grid." (ACR, p. 6).

In response to the CPUC directive, SCE built and is now operating four of the five planned "peaker" plants located in the cities of Norwalk, Ontario, Rancho Cucamonga and Stanton. Each of these four peaker projects was granted a mitigated negative declaration under CEQA. The Oxnard Peaker would be the final generating facility developed to fulfill the CPUC directive.

B. Black Start Generation

1. Black Start Capable Generation Unit – A "Peaker" Unit

The CPUC specifically directed SCE to develop black state capable generation. All five peakers were sited at locations where they could black start one or more major generating units. Emergency black start capability requires specific characteristics from the generation unit. The most important of these characteristics are as follows:

[6] *Assigned Commissioner's Ruling Addressing Electric Reliability Needs in Southern California for Summer 2007*, issued by CPUC President Michael Peevey on August 15, 2006 ("ARC")

- The black start generator must be able to start at all times with no external source of electricity;
- This unit must be able to be remotely operated at the direction of the Independent System Operator (CAISO);
- The unit must be able to self-regulate its frequency to 60 Hz.[7]
- The unit must be able to provide the needed startup power and sustain the high electric and magnetic fields of alternating-current equipment.[8]
- The unit must be capable of supplying stable, continuous power over an extended period of time (i.e., 12-24 hours).

The above five characteristics can only be supplied by a high megawatt (MW) fossil fuel fired unit located reasonably close to the generating unit to be started. When combined with the need for generation at times of peak energy demand, these requirements prescribe peaking units.

2. A Peaker Unit Must Be Located Reasonably Close to the Generation Unit to Be Black Started

The specific distance that a peaker unit can be located from the generating unit to be started is primarily determined by: (1) the resistance to flow (impedance) of the transmission line, (2) the equipment that is located between the two generators, and (3) the ability of the operator to restrict the electricity flow to the desired route. High capacity transmission lines are designed to optimize the efficient transmission of electricity over long distances. These lines have lower impedance; therefore, less power is lost during the transmission of electricity. Consequently, a peaker can be located farther from the generating unit to be black started when the power is being transmitted on a higher capacity line (230 kV) than on a lower capacity line (66 kV). This is because power is lost when it is transmitted and there is a minimum amount of power needed to effect a black start.

The maximum separation distance is specific to the exact route that will be followed by the electricity. In the Oxnard area, SCE estimates that the maximum distance a black start unit could be located from the Mandalay Generating Station, the generating facility to be black started (see detailed discussion below at "Ventura/Santa Barbara County Specific Local Reliability Benefits"), is approximately 10-12 circuit

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[7] This characteristic requires a high mass spinning generator with the instrumentation and control system needed to regulate frequency to within tight parameters.

[8] In order to start a large generating unit such as the Mandalay Generating Station, multiple smaller motors that operate support equipment must be started prior to starting the generator itself. These motors include fuel gas compressors, circulating water pumps, and other process feed pumps. When an engine is at rest it requires additional energy ("inrush" energy) to break its inertia to bring it up to the required rotational speed. The amount of current required to start these large motors can be as high as three to seven times their basic operating requirements. This requires a black start unit capable of handling multiple high amperage, high VAR (Volt-Amp-Reactive) instantaneous draws. The larger the generating unit, the larger the black start unit must be to handle the needed startup power requirements.

miles on the 66 kV system. Circuit miles reflect the miles of the intervening conducting wire, as opposed to simply street distance. On the 230 kV system, the maximum distance that a black start unit can be located is farther away. SCE has estimated that this function could be performed from the Santa Clara Substation, but is unlikely to be successful from either the Goleta or Moorpark Substations.

C. Dispatchable Generation

Dispatchable generation refers to types of electric generating units whose operation is under the control of the CAISO, and can be called upon as needed to meet the energy or reliability requirements of the electric grid. Generation sources such as cogeneration units or renewable energy projects that provide power when it is available, and not at the direction of the CAISO, are not considered dispatchable generation.

D. Collateral Benefits

The primary benefit of the peakers is the reliability benefit they provide to the transmission and generation system – not their independent energy production value. Reliability benefits can occur at the systemwide or local level. Because energy production and systemwide reliability benefits can be provided from many sites, SCE asked its transmission and distribution team to identify the specific regions where peaking capacity would most benefit local reliability needs. Similar sites were ranked by the number of reliability needs or emergency contingency situations that could simultaneously be solved by a single project.

The reliability of the existing electric grid already takes into account the benefits provided by existing generating sources. Therefore, only new generating sources can provide the additional stability and reliability that the system needs.

Systemwide Reliability Benefits

a) Capacity - A peaker unit contributes a system capacity benefit simply by being a new generating source. The amount of energy that can be imported into the Los Angeles Basin from out-of-state sources is limited to a specified proportion of the generation that is produced from within the local area.[9] Thus, construction of new generation within this area (known as the ISO-defined SP15 transmission constrained area) allows additional out-of-state generation to be imported into Southern California to supply its energy demand.

b) Non-Spinning Reserve - When major generation or transmission equipment shuts down unexpectedly, it causes a disruption to the electric system that can result in widespread failure if the system is not quickly stabilized to meet control performance standards. Non-spinning reserve generators (generators that are not operated to generate electricity, but are held in reserve to operate on demand at the order of CAISO) provide voltage and frequency support that allows the system to recover from disturbances. This

[9] This is known as the Southern California Import Transmission (SCIT) limit.

benefit can only be provided by dispatchable generating units located within the control area. Because the proposed peaker has quick start ability, it can provide this benefit while it is shut down.

c) Renewable Energy Integration - The addition of intermittent renewable resources such as wind and solar generation to the electric grid requires the simultaneous availability of fossil fuel units[10] on the same electric subsystem as a backstop measure. This is because the power output from wind and solar resources fluctuates intermittently in time, for example, when wind levels decrease or clouds cover the sun. The electric system, on the other hand, must operate at a stable voltage and frequency, with a very low level of fluctuation. Dispatchable fossil fuel units such as the Proposed Project[11] are able to automatically adjust their output to fill in the gaps in the power supply that are caused by these fluctuations. These types of units can be controlled to increase or decrease their output to meet the electrical system demand. They also provide power when renewable resources are not available, such as at night or when the wind is not blowing.

General Local Reliability Benefits

a) Voltage Support - Due to electricity demand growth on the SCE system, certain areas on the system could benefit from additional local voltage or frequency support to improve power quality or relieve system overloads. In these cases, the existing transmission system was simply not constructed to supply the amount of energy now being demanded. Location of a peaker at these locations will avoid or defer future transmission or distribution projects that would otherwise be needed to address this issue. Voltage support is an ancillary benefit that was taken into consideration when discriminating between similar sites.

b) Line Loss Benefits – As discussed above, the farther electricity has to travel on the transmission system, the more power is lost. This is called line loss. This effect increases when the existing system is overloaded, such as on hot summer days. When a generator is connected close to the customers it serves, this loss is minimized and less electricity needs to be generated to serve the same load. Less generation means fewer air emissions and lower customer costs. Peakers operate for relatively few hours during the year; therefore, this benefit will occur primarily on the 66 kV system, where resistance to flow is higher. In the Santa Clara subsystem, the proposed peaker site is an optimal location to reduce line losses. Line loss is an ancillary benefit that was taken into consideration when discriminating between similar sites.

[10] In the future, a number of storage technologies currently under development will be capable of providing this benefit; however, these technologies will not be commercially available for a number of years.
[11] The peaker is capable of being fitted with a Remote Intelligent Gateway (RIG) that allows it to be used for Area Generation Control (i.e., automatic load following).

Ventura/Santa Barbara County Specific Local Reliability Benefits

Certain locations on the SCE grid require additional generation or transmission infrastructure to address identified emergency scenarios. These locations will require the construction of future projects to eliminate these system weaknesses. Siting a peaker at these locations has the effect of both solving existing issues and replacing future projects that would otherwise need to be constructed.

In the Ventura-Santa Barbara System, SCE has identified the following local reliability projects: (1) providing black start service for the Mandalay Generating Station, and (2) providing additional emergency generation to the Goleta subsystem.

a) Mandalay Generating Station Black Start

Electricity use in the Ventura/Santa Barbara System has increased steadily at 2-3% per year as former agricultural lands are converted to residential, commercial and industrial projects; as consumers increase their energy usage by purchasing new electronic devices such as plasma televisions and digital video recorders; and as more coastal homes are constructed with air conditioning.

Presence of Air Conditioning in New Homes
Coastal Climate Zone 6[12]

	Pre-1992	1992-2003
No AC	71%	35%
AC	29%	65%

Consequently, peak electric load in this area has grown to 1,700 MW in 2008. In an emergency situation, when this area is isolated from the main electric grid, both the Mandalay (430 MW) and Ormond Beach (1,500 MW) Generating Stations must be operated at close to full load in order to supply sufficient electricity to meet local needs.

During major electric system upsets, generating stations are automatically programmed to shut down to prevent damage to their mechanical, electrical and fuel handling systems. Once a power plant has shut down, it requires an external source of energy to restart. There are currently no black start generators in the area that are capable of restarting either of these major plants to allow power to be restored to the electric grid. Without such a source of power, the Ventura/Santa Barbara area is at risk of remaining without electricity from several days to several weeks, while repairs are made to the system.

[12] Data was extracted from the California Energy Commission's Residential Appliance Saturation Survey 2004 (RASS 2004), which surveyed air conditioner installations in new homes throughout the state. The City of Oxnard is located in Coastal Climate Zone 6 of the survey.

b) Goleta Subsystem Generation

The Santa Barbara area is currently served through a single bulk power substation, the Goleta Substation that receives its power through two 50-mile–long, 230 kV transmission lines. These two lines share common towers and are subject to a joint outage from a single event that affects the towers, e.g., a fire, earthquake, or other earth movement. Because the majority of the towers are located in remote mountain terrain, if such an event were to occur, the Santa Barbara area would be subject to an extended outage while these lines were repaired. Since local generation in this area is currently lower than demand, some level of forced service interruption would result during this interim period.

In this event, a limited amount of power could be supplied through the Santa Clara 66 kV system to meet certain essential emergency service requirements (police, fire stations, hospitals, etc). However, in order to supply this power, a minimum level of generation must be provided from within the Santa Clara 66 kV subsystem to ensure adequate voltage support and prevent electric equipment overloads. The proposed peaker would meet the required specifications – 66 kV connection within the Santa Clara subsystem – to be able to provide the needed system support to the Goleta subsystem over an extended period of time.

E. Immediate Development

In order to complete permitting and construction of five generation projects in less than one year from the date the CPUC directive was issued (which set forth a one year goal ending Summer 2007) for the peaker projects to be operational, sites that required minimal time to complete these activities were selected. Although the goal of constructing all five peakers by the Summer of 2007 has passed, the Project is still urgently needed[13] as was recently reconfirmed in the May 2, 2008 CAISO letter to the Commission.

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[13] According to the CPUC, the surprising growth in electricity demand throughout the state, coupled with the July 2006 heat storm, exposed certain vulnerabilities in the electric generation and transmission infrastructure that required immediate attention to assure future reliability. The California Independent System Operator's ("CAISO") assessment for the Summer of 2006 had indicated that the system could handle a demand in excess of 48,000-MW, with limited or no impact on firm load customers. However, the peak demand during the heat wave was 51,000-MW, well above any of the scenarios that were assumed in CAISO's assessment. The Summer 2006 demand was 12% higher than 2005's record; 6% higher than the worst case scenario CAISO had analyzed in its assessment; and 38% higher than the peak demand of the crisis year 2001. Moreover, it represented a demand that was not forecast to occur for another five years. Across CAISO's service area, weighted average temperatures during the heat wave ranged between 106 and 110 degrees Fahrenheit on various days, which is higher than any temperatures recorded in the 30-year history of temperature models used by CAISO. Even with the additional installed and anticipated new generating resources that will have come on-line between the summers of 2006 and 2008, CAISO still predicts a 10% risk that operating reserves in Southern California could be insufficient this summer. Although new resources have been procured and will continue to come on-line, SCE predicts that there remains a significant need for additional peaking resources in the future.

Therefore, the following siting criteria that were used when initially comparing potential locations are still highly relevant. The identical criteria were utilized to site all five peakers within the SCE system.

a) Less than 50 MW Units

Given the grid's reliability issues and the need to swiftly comply with the CPUC directive, five 50 MW[14] units were selected for installation. Under the California Energy Commission's (the CEC) regulations, units less than 50 MW are exempted from the CEC's mandatory 12-18 month review period that is required for larger generating units. Further, constructing multiple units in different locations provides the highest degree of reliability benefits and has the potential to solve the greatest number of local reliability issues, in turn eliminating or deferring the maximum number of additional projects.

b) Existing SCE-Owned Property

The length of time required to purchase or condemn real estate for a potential peaker site would have prevented SCE from complying with the CPUC directive. Therefore, only existing SCE-owned properties were considered. Moreover, Project construction requires a minimum of 2-3 acres; therefore all candidate properties were screened to determine if sufficient space was available for the Proposed Project.

c) Transmission Availability

In locations where the transmission system is already overloaded, the existing infrastructure may not be capable of readily accepting additional energy. Therefore, only locations that had available capacity were selected. This is because the time and cost of upgrading the system would not be commensurate with either the schedule (delay to construct additional capacity would be too great) or size of the Proposed Project (the cost to provide additional transmission capacity would render the project infeasible).

d) No Significant Environmental Issues

Short list candidate sites were screened for environmental issues and rejected if any potentially significant environmental impacts were identified. To expedite permitting, SCE specifically selected sites that it believed would pose no significant adverse environmental impacts, and therefore would not require an EIR or lengthy permit processes.

[14] 50MW is the gross output rating of the selected LM6000 engine. After plant auxiliary loads and local temperature and elevation impacts, the net output of these units onto the SCE grid will be approximately 45MW.

e) Minimal Fuel Gas and Transmission Infrastructure Construction Requirements

Long interconnection distances increase permitting complexity, the potential for significant environmental issues, project costs, and the length of time needed for construction. Sites were screened to determine if the necessary natural gas and transmission inter-tie infrastructure was readily available and could be permitted and constructed in a relatively short time period. This entailed sites in close proximity to 66 or 115 kV tie-in locations and main gas lines with adequate capacity and pressure. SCE chose to interconnect the units on the lower voltage sub-transmission system, because the engineering and approval time needed to connect to the higher voltage 230 kV system was significantly greater due to the different process that must be followed. Connecting to the lower voltage system also provided greater local reliability benefits.

f) No Extraordinary Engineering or Construction Issues

Short list candidate sites were screened for geotechnical concerns, site access, equipment relocation, and other engineering and construction issues that would preclude the Proposed Project from meeting engineering or construction standards or would unreasonably delay the Proposed Project. Examples include significant grading or cut and fill site preparation which, in some cases, can only be conducted during certain times of year.

IV. Alternatives Analysis

Systemwide Site Selection

The number one location identified by SCE's transmission and distribution group as requiring a black start peaker and/or other projects to resolve local reliability needs was the Ventura/Santa Barbara system west of the Pardee Substation. In this area, the most important locational reliability criteria in order of importance are: (1) the ability to black start the Mandalay Generating Station; (2) providing additional generation capacity to the Goleta subsystem; and (3) providing local system reliability benefits such as voltage support and overload reduction.

In SCE's initial Fall 2006 assessment of potential locations, the primary criteria utilized when comparing sites was completing the Proposed Project by the Summer 2007, as required by the CPUC.

In February 2007, when it became apparent that Project approval was not forthcoming from the City of Oxnard, SCE reviewed the selection of the Mandalay site to determine if moving the Proposed Project to another site would be appropriate. At that time, SCE considered sites both within and outside of the Ventura/Santa Barbara system. However, because of the critical need for black start and local reliability projects in the Ventura/Santa Barbara area, which will require new generation and/or transmission projects to resolve these issues regardless of the Proposed Project, SCE determined that

the original location of the Proposed Project adjacent to the Mandalay Generating Station remained the best location on its system.

Through the various phases of the Proposed Project development process (including the various appeals), SCE has revisited project location to determine if greater need existed elsewhere. Every review has resulted in the same conclusion – that the Mandalay site is the optimal location for the Proposed Project on the SCE system.

Ventura/Santa Barbara Site Screening

At the time the CPUC directive was issued, SCE screened all available SCE-owned property inside its system according to the following criteria:

- SCE owned property
- 2-3 acres of available land within or adjacent to an existing 66 or 115 kV substation
- Not within 1,000 feet of a school or hospital

These criteria were used to assess general constructability, permitability, and speed of construction. Available land was first screened based on information provided by SCE's corporate real estate and transmission planning groups regarding parcel sizes. Promising sites were screened using Google Earth. As part of the current project reassessment, customer-owned substation properties were also reviewed, and all available sites in the Ventura/Santa Barbara area were screened using LandVision to confirm property acreages.

Substations Screened

Loc	Substation	City	Screening Assessment
SC	Camarillo	Camarillo	Not enough space. Residential on three sides. Across street on fourth.
SC	Camgen	Camarillo	Space available. Cogen. Serves CSU Channel Islands Campus. Greenfield.
G	Capitan	Naples/Goleta	Not enough space. Possibly a customer sub (Exxon). Hilly terrain.
G	Carpinteria	Carpinteria	Not enough space. Residential on one side.
SC	Casitas	Ventura	Not enough space. Residential on one side. Across street on second.
SC	Channel Island	Oxnard	Not enough space. Across the street from homes on the marina.
SC	Charmin	Oxnard	Space available. Cogen. Serves Proctor & Gamble.
G	Colegio	Isla Vista	Space available. Customer sub. Serves UC Santa Barbara.
SC	Colonia	Oxnard	Not enough space. Adjacent residence (Abel Ranch).
M	Crater	Calabasas	Not enough space.
G	Desal	Santa Barbara	Not enough space. Customer sub. City of Santa Barbara.
G	Ellwood	Goleta	Space available. Within 1,000 ft of Ellwood Unified school.
SC	Estero	Oxnard	Not enough space.
G	Exgen	Goleta	Space available. Cogen. Serves Exxon.
SC	Fillmore	Fillmore	Not enough space. Residential on three sides.
G	Gaviota	Gaviota	Not enough space. Possible transmission capacity issues.
SC	Getty	Ventura	Space available. Customer sub. Serves Chevron.

G	Goleta	Santa Barbara County	Space available. SCE sub.
SC	Gonzales	Oxnard	Not enough space. Residential on one side.
G	Isla Vista	Isla Vista	Not enough space. Residential on one side.
M	Latigo	Malibu	Not enough space. Nearby homes.
SC	Lehman	Oxnard	Not enough space. Customer sub. Serves Port Hueneme Seabee Base.
SC	Levy	Oxnard	Not enough space.
M	Malibu	Agoura Hills	Not enough space. Close to homes.
SC	Mandalay	Oxnard	Space available. SCE sub.
SC	Missile	Oxnard	Space available. Customer sub. Serves Point Mugu Air Station.
M	Moorpark	Moorpark	Space available. SCE sub.
M	Newbury	Thousand Oaks	Not enough space.
M	Oak Park	Thousand Oaks	Not enough space. Residential on two sides.
SC	Ojai	Ojai	Not enough space. Residential on three sides. Athletic club on the fourth.
G	Onshore	Goleta	Customer sub. Possibly serves the golf course.
SC	Ormond Beach	Oxnard	Not enough space. Available SCE land is mainly transmission line right of ways.
G	Ortega	Summerland	Not enough space. Residential on one side.
SC	Oxgen	Oxnard	Not enough space. Cogen. Serves Boskovich Farms food processing.
M	Pharmacy	Thousand Oaks	Customer sub.
M	Potrero	Thousand Oaks	Not enough space.
SC	Procgen	Oxnard	Space available. Cogen. Serves Proctor & Gamble.
M	Reclaim	Calabasas	Not enough space. Customer sub. Serves Las Virgines MWD.
M	Royal	Simi Valley	Not enough space.
G	San Marcos	Santa Barbara	Not enough space. Adjacent to condominiums.
SC	San Miguel	Ventura	Not enough space.
G	Santa Barbara	Santa Barbara	Not enough space.
SC	Santa Clara	Ventura	Space available. SCE sub.
SC	Saticoy	Saticoy	Not enough space. Across the street from residential housing.
M	Shelline	Calabasas	Customer sub.
SC	Shellsom	Somis	Not enough space. Customer sub. Serves industrial/petroleum customer.
SC	Somis	Somis	Not enough space. Customer sub. Serves industrial customer.
M	Tapia	Malibu	Not enough space.
SC	Tayshell	Ventura	Not enough space. Possibly a customer sub.
M	Thousand Oaks	Thousand Oaks	Not enough space. Residential on two sides.
SC	Three M	Camarillo	Space available. Customer sub. Serves Imation Corp.
SC	Unioil	Oxnard	Space available on adjacent SCE land. Customer sub. Serves DCOR.
M	Valdez	Calabasas	Not enough space. Residential on four sides.
G	Vegas	Goleta	Not enough space. Next to homes.
SC	Wakefield	Santa Paula	Not enough space. Within 1000 feet of Webster school.
SC	Wastewater	Oxnard	Not enough space. Customer sub. Serves City of Oxnard Wastewater Treatment.
SC	Williamette	Port Hueneme	Possible space available. Cogen. Serves Weyerhaeuser.

G = Goleta; M= Moorpark; SC = Santa Clara

Key:

	SCE Land – Space Available
	Customer Land – Space Available
	SCE/Customer Land – No Space Available

Exhibit 13
Application No,
A-4-OXN-07-096
So. California Edison

There are three bulk power substations located within the Ventura/Santa Barbara area. These are the Goleta, Santa Clara, and Moorpark Substations. All power in this area is supplied from one of these three electric systems. These three bulk substations and one generation site passed the initial screening process and were given more detailed analysis: the. These sites were:

- Goleta
- Mandalay
- Moorpark
- Santa Clara

This short list of potential sites was subjected to more detailed analysis. Based on the screening criteria listed above, additional transmission, environmental, and construction information was gathered to rank and assess each site. The criteria were:

- Transmission availability
- No significant environmental issues
- No significant engineering or construction issues
    - Minimum gas pipeline/transmission line infrastructure construction
- Local system reliability benefits
    - Black start Mandalay Generating Station
    - Provide emergency generation to the Goleta system
    - Provide local voltage support benefits

The information that was gathered is summarized below.

Goleta Substation

At this location the project site includes SCE-owned land both inside and outside the existing fenced substation, because insufficient space exists within the currently developed substation to house the Proposed Project. Therefore, the project would require clearing vegetation from previously undeveloped land, grading hillsides and redesigning the main access road. The gas connection would require trenching through several miles of undeveloped land and include one railroad and one highway crossing. Road redesign would require road realignment near the substation and road widening in several locations. This would require coordination with Santa Barbara County, which may require additional concurrent work along the full 3 mile length of the road. A minimum of four 66kV lines would require relocation to improve site accessibility.

Transmission Availability
The Goleta Substation has sufficient capacity to accept connection by the project. However, facility upgrades would be needed that require 12 months to construct.

Environmental Issues
Environmentally sensitive habitat is known to occur in the vicinity of this site and along the access road that would need to be expanded if the project were developed. The toxic endpoint[15] of a potential ammonia release would likely exit the fenced site boundary. The clearing of undeveloped land would likely cause permitting delay and additional environmental review requirements, which may include the preparation of an EIR. The Santa Barbara Air Pollution Control District (SBAPCD) permit processing time is expected to be lengthy based on recent permitting history for major projects. The required City permitting for road reconstruction would also likely be lengthy because of the need to negotiate ancillary road upgrades long desired by the County. Given the identified issues, permitting was unlikely to be completed in time for Summer 2007 operations, as required by the CPUC directive.

Construction Issues
Even if permits could be obtained, the necessary engineering and construction of the access road, pipeline, transmission upgrades, and developed site expansion made a project at this site unlikely to be completed by Summer 2007, as required under the CPUC Directive. Even after road reconstruction, access issues would still need to be addressed to get the required equipment to the project site due to the existing terrain.

Reliability Benefits
Siting a peaker at this location would provide generation to the Goleta subsystem, as well as local voltage and frequency benefits. However, it is unlikely that a peaker at this location would be able to black start the Mandalay Generating Station.

Summary
Potential environmental and construction issues have been identified at this location. This site will not fulfill the need for black start generation at Mandalay, the primary criteria guiding site selection. When SCE initially began the site selection process, this site was eliminated because it could not be completed in time for the 2007 start date required by the CPUC directive. Greater environmental impacts, greater costs, and fewer reliability benefits continue to weigh against its selection, particularly in light of the continuing and urgent need for black-start capable generating facilities in the region.

Mandalay Brownfield Site

At this location the project site is a previously developed brownfield site that contained a former tank farm that once served the adjacent Mandalay Generating Station. Gas and electrical connections are short and located in previously disturbed areas. The nearest homes are located 750 feet away from the Proposed Project site.

[15] The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible of other serious health effects or symptoms which could impair an individual's ability to take protective action.

Transmission Availability
The adjacent substation contains sufficient capacity to accept connection by the Proposed Project. Local system upgrades consisting of the replacement of 32 breakers will be required, but could have been completed expeditiously to meet a Summer 2007 schedule.

Environmental Issues
No significant environmental issues were identified at the proposed site. Houses are located a sufficient distance away that noise impacts can be mitigated. No known endangered species exist in the identified construction zones, and the project site does not encompass any environmentally sensitive habitat area. Sufficient land exists to site the ammonia storage and injection equipment at a location that will eliminate potential offsite impacts.

Construction Issues
No significant construction issues were identified at the proposed site. Minor geotechnical issues can be easily overcome based on past construction experience with the adjacent plant and the extensive existing geotechnical data.

Reliability Benefits
The proposed site is the best location to black start the adjacent Mandalay Generating Station. Power can be used to serve load in the Santa Barbara system during emergencies via the 66 kV system. The substation connection is deep within the distribution system and will create local reliability benefits, including voltage support, reduced equipment overloading, and reduced line losses.

Summary
No known significant or construction issues exist for this site. The site fulfills all identified local reliability criteria in the region, thereby avoiding the maximum number of additional future local generation and transmission projects. This location is the least cost, least impact, best fit of all sites that were considered.

Moorpark Substation

This project site is located in the previously graded and graveled southwest corner of the substation that fronts Los Angeles Avenue. Houses currently exist or are scheduled to be constructed immediately across the street and within approximately 200 feet of the project site on two sides. Future housing will also be constructed on the hillside to the north at elevations above the project site. There are no available gas lines in the immediate vicinity, which will require the construction of a 5.8 mile long gas line that is expected to run under paved city streets for its full length.

Transmission availability
The substation contains sufficient capacity to accept connection by the project. Local system upgrades consisting of the replacement of 32 breakers will be required.

Environmental Issues
Insufficient space may exist at this site to provide landscaping or a sound wall. This coupled with the fact that residences will be located at elevations above the project site may make it difficult to mitigate potential noise issues, resulting in a permitting delay or the inability to permit the site. Less available space in which to site the ammonia storage and injection system may prevent potential ammonia release hazards from being contained on site.

Construction Issues
Existing substation equipment would need to be relocated to make space for the peaker.

Reliability Benefits
A peaker sited at this location would not provide any local reliability benefits. It is unlikely that a peaker at this location would be able to black start the Mandalay Generating Station. This location cannot provide additional generation to the Goleta subsystem because the two systems do not have a common 66 kV connection. No local reliability benefits to the Moorpark subsystem would be produced because: a) voltage support is not an issue at this location; and b) the peaker would be connected to a bulk 230/66 kV transmission substation which eliminates the line loss benefits that would accrue if the peaker would be connected to at 66/12 kV local substation, such as is the case at the Mandalay site.

Summary
Potential environmental issues may exist at this location. This site will provide no local reliability benefits and no greater systemwide reliability benefits than a location elsewhere on SCE's system. In 2007, this site was rejected because it was less certain the site could be permitted and constructed within the required timeframe than the Mandalay site and it provided none of the desired local reliability benefits. Under the current analysis, this site would not be selected under any circumstances because it will not provide local reliability benefits.

Santa Clara Substation

At this location the only space available for a peaker project is outside the existing fence line at the southeast corner of the property, thereby impacting presently undeveloped land. Construction at this location would require extensive grading, leveling, filling, and relocation of the main drainage structure for the site to create sufficient space. Due to the existing, steep access road into the site on the East side, a massive retaining wall would have to be constructed to allow sufficient space and to contain the fill material.

Transmission availability
The substation contains sufficient capacity to accept connection by the project. Specific interconnection studies were not performed for this location, so it is not known if system upgrades will be required for connection.

Environmental Issues
Significant greenfield construction at this site suggests potential environmental impacts, and the preparation of an EIR may be required. Because the required permitting would have delayed development of the project at this site beyond the 2007 deadline, no additional environmental screening was performed.

Construction Issues
Construction at this site could not be completed in 2007. The significant engineering challenges at this site may make it non-constructible regardless of schedule. Construction at the available site is constrained by multiple existing 66 kV transmission lines. Gas pipeline construction would require a directional bore under the CA-126 freeway. Costs for this site would be significant and could be prohibitive. Because the site could not be constructed in 2007, no additional screening was performed.

Reliability
A peaker at this location would likely be capable of black starting the Mandalay Generating Station. Power from this location can be used to serve load in the Santa Barbara system during emergencies via the 66 kV system. No local reliability benefits to the Santa Clara subsystem would be produced from a connection at this location for the same reasons as the Moorpark connection.

Summary
This site possesses significant engineering challenges that may make it non-constructible. This site was rejected in 2007 because it could not be constructed on the required schedule and more favorable sites existed. Greater environmental impacts and fewer reliability benefits, coupled with the identified construction issues continue to weigh against this site.

Initial Site Screening Summary

At the time of its initial siting assessment, SCE would have preferentially sited the project at a site that could have been constructed by Summer 2007, even if that site would have provided fewer reliability benefits than alternate sites, due to its need to comply with the timing requirements of the CPUC directive. As such, constructability was ranked higher than reliability during the first pass screening.

Summary Site Ranking Criteria

Importance		1	2	3	4	5	6
Rank	Location	Available Transmission Capacity	No Significant Environmental Issues	No Significant Construction Issues	Black Start Mandalay	Goleta System Power	Local System Benefits
1	Mandalay	Y	Y	Y	Y	Y	Y
2	Moorpark	Y	N	Y	N	N	N
3	Goleta	Y	N	N	N	Y	Y
4	Santa Clara	Y	N	N	Y	Y	N

Based on the detailed screening information obtained for each site, the Mandalay site was determined to be superior in all respects. At the Mandalay site, the Proposed Project would have:

- No significant environmental impacts
- No construction issues
- Maximum reliability benefits

Furthermore, Mandalay was the site with the greatest potential to meet the required schedule, if permitting were to proceed expeditiously.

Moorpark was judged superior to Goleta as a backup site during the initial assessment period because it was judged to have the potential to achieve the 2007 deadline, even though this location did not provide the desired reliability benefits, as long as further analysis was able to demonstrate that the site could be quickly permitted.

Site Reassessment

As previously discussed, by February 2007, when it became apparent that the Mandalay project would not be constructed in time to meet Summer 2007 needs, SCE reassessed the Project to determine if the peaker would be better placed at a different location on the SCE system to provide needed reliability benefits. At this point, a project that was not already under environmental review could not be constructed by the required deadline. With this specific timing constraint eliminated, the most important criteria became finding a site that would provide the most local reliability benefits. The Ventura/Santa Barbara system remains the most important location on the SCE system in which to site new black start peaking generation. Therefore, this area ranks even higher when the specific timing requirements are no longer relevant. Although the initial Summer 2007 deadline has passed, timing is still an important criterion.

After removing criteria directly related to Summer 2007 timing, transmission capacity remains the threshold issue for project viability. Although the level of expected environmental impacts and the difficulty/cost of project construction are still important in distinguishing between similar sites, the primary consideration is now local reliability.

Importance		1	2	3	4	5	6
Rank	Location	Available Transmission Capacity	Black Start Mandalay	Goleta System Power	Local System Benefits	No Significant Environmental Issues	No Significant Construction Issues
1	Mandalay	Y	Y	Y	Y	Y	Y
2	Goleta	Y	N	Y	Y	N	N
3	Santa Clara	Y	Y	Y	N	N	N
4	Moorpark	Y	N	N	N	N	Y

Based on the most current assessment of potential project sites, Mandalay remains the preferred location for the same reasons it was initially selected. It is the site with: (1) the least environmental impacts (2) that best meets the purpose and need of the Proposed Project; and (3) entails the least complicated construction at lowest cost to SCE's customers.

In this analysis, Goleta ranks second, because even though this location does not provide black start capability, it provides important local reliability benefits to the Goleta subsystem that would otherwise require the construction of a new generation project in the Santa Barbara area. In this event, a second generation project would need to be proposed and constructed in the Oxnard area in order to provide black start capability. Santa Clara is ranked third because it is unlikely that a project could be constructed at this location under any circumstances or that project costs would be reasonable. In this analysis, Moorpark ranks fourth. Since it provides no local reliability benefits, a project would not be constructed at this location.

Non-SCE Owned Property

As part of the current assessment, SCE also reviewed existing customer substations with available adjacent land to determine if these locations could provide the same reliability benefits as the Mandalay site while allowing construction outside of the coastal zone. Because the Mandalay Generating Station can only be black started from within the Santa Clara subsystem when the peaker is connected is made to a non-bulk power 66 kV substation, only customer substations within Santa Clara were assessed. These sites included:

Substation	City	Screening Assessment
Camgen	Camarillo	Cogen. Serves CSU Channel Islands.
Charmin	Oxnard	Cogen. Serves Proctor & Gamble.
Getty	Ventura	Customer sub. Serves Chevron.
Missile	Oxnard	Customer sub. Serves Point Mugu Air Station.
Procgen	Oxnard	Cogen. Serves Proctor & Gamble.
Three M	Camarillo	Customer sub. Serves Imation Corp.
Unioil	Oxnard	Customer sub. Serves DCOR.
Williamette	Port Hueneme	Cogen. Serves Weyerhaeuser.

Circuit diagrams were reviewed to determine the circuit distance from these locations to the Mandalay Generating Station. These distances are as follows:

Substation	Distance
Camgen	28 miles
Charmin	18 miles
Getty	19 miles
Missile	30 miles
Procgen	18 miles
Three M	28 miles
Unioil	0.7 miles
Williamette	36 miles

In the Oxnard area, a black start generator must be located within 10-12 circuit miles to allow a successful black start. Only the Unioil Substation is located close enough to the Mandalay Generating Station for this to occur. The Unioil 66 kV substation is located within the DCOR oil processing facility located adjacent and to the west of the project site and between it and the ocean. Therefore, connecting the peaker to this location would not move its proposed footprint. As such, the existing site remains the preferred alternative.

Discussion of Project Alternatives

The following project alternatives were identified from a review of comment letters and testimony provided during both the City of Oxnard and the Commission's environmental review processes.

1) No Project Alternative

The Ventura/Santa Barbara system west of the Pardee Substation area has been identified as the area on the SCE system most in need of the Proposed Project. In this area, local reliability needs include: 1) providing black start service for the Mandalay Generating Station, and 2) providing additional emergency generation to the Goleta subsystem through the 66 kV system. No other projects have been proposed that will

provide the reliability benefits of the Proposed Project. If the Proposed Project is not constructed, one or more future generation or transmission projects will need to be constructed in this same area to address these issues.

This alternative does not satisfy the fundamental purpose and need for the project.

2) Renewable Energy/Demand Side Management/Energy Efficiency Alternative

Renewable energy, demand side management and energy efficiency projects are valuable to help reduce demand on SCE's system; however, they do not fulfill the purpose and need for the Proposed Project. Projects in these three categories are neither black start capable or dispatchable as required by the CPUC directive. More importantly, none of these project categories have the physical characteristics required to provide black start capability to the Mandalay Generating Station, nor to provide the voltage support inside the Santa Clara system that is required to allow additional emergency generation to be routed into the Goleta system via the 66 kV network.

Wind and solar project cannot be counted on to start at all times and provide stable, continuous power over an extended period of time (i.e., 12-24 hours) as is required during emergency situations. The wind is not always blowing and the sun is not always shining. Although demand side management and energy efficiency projects are effective in reducing the demand for electricity, they do not generate additional electricity, and therefore cannot provide reliability benefits.

The electric system needs many types of projects to function effectively. SCE is pursuing numerous renewable, demand side management, and energy efficiency projects in parallel with the Proposed Project. The same CPUC directive that directed SCE to install new peaking capacity also ordered SCE to aggressively expand its Air Conditioner Cycling Program by 300 MW.

> "… I direct Southern California Edison Company (SCE) to expand its Air Conditioning Cycling Program (ACCP, also referred to as Summer Discount Plans) to target an additional 300 megawatts (MW) of program capacity for the summer 2007 season." (ACR, p. 2)

In parallel with developing the proposed peakers by the Summer 2007, SCE was successful in adding 187 MW of new ACCP capacity to its program, resulting in a total demand response capability of 1,260 MW, the largest such program in the state. This capacity represents over 28 times the generation provided by the Proposed Project.

SCE is also recognized as the nation's leader in energy efficiency programs. Between 2004-2013, SCE plans to develop programs to achieve cumulative energy savings goal of 2,228 MW, more than 49 times the generation from the Proposed Project. Based on the programs that have been implemented to date (2004-2008), SCE is expected to achieve more energy efficiency benefits for its customers than any utility in the country by the end of this year. In the Ventura County area alone, SCE has contributed

$2.2 Million to the Ventura Country Regional Energy Alliance (VCREA), a joint powers agency composed of public agencies working in collaboration to implement energy efficiency programs in Ventura County. The City of Oxnard is a member of the alliance and benefits from these funds.

SCE also leads the nation in renewable energy procurement. SCE purchases more than one-eighth of all renewable electricity produced for sale in the U.S., including 90% of all solar power generated. Since 2002, SCE has entered into long term contracts for up to 4,500 MW of renewable capacity, more than 100 times the generation from the Proposed Project. A majority of these contracts are for the development of new facilities throughout the Southern California region. The State's renewable procurement targets are some of the most aggressive in the Nation and SCE is pursuing a variety of alternatives to help meet these goals.

At the local level, SCE is the administrator of $1 billion in funding under the California Solar Initiative that is available to all SCE customers, including customers in the Ventura/Santa Barbara area, on a first come, first serve basis to defer the cost of installing up to 805 MW of small scale (1 kW-5 MW) residential and commercial rooftop solar projects within SCE's service territory. SCE has also proposed the largest utility-owned industrial scale rooftop solar project in the world. This project would install 250 MW of solar panels on 65 million square feet of unused industrial rooftops in Southern California. Jointly, these two projects will provide over 23 times the amount of generation from the Proposed Project.

Nonetheless, despite the fact that SCE is conducting all of the above projects, they neither replace nor reduce the purpose and need of the Proposed Project.

3) Existing Local Cogeneration Alternative

Existing cogeneration units located within the Santa Clara subsystem do not meet the purpose and need of the Proposed Project. Cogenerators typically utilize similar hardware to the Proposed Project in order to simultaneously create steam for industrial processes and power for on-site equipment. Excess power is sold to SCE. Although similar hardware is used, the equipment is configured and operated differently than peakers. Cogenerators can also be operated at a relatively constant level without producing steam to either provide power to an industrial process or to burn a waste stream from an industrial process, such as a landfill. Again, these units are not configured to operate in the same fashion as a peaker.

The output of all existing generation resources, including cogenerators, was taken into account by the CAISO and the CPUC prior to their determination that more peak generation was necessary. Therefore, the CPUC order to construct 250 MW of new generation would not be satisfied by assuming that existing cogeneration units can provide the needed electricity.

Further, because the output of cogenerations are designed to remain stable to support industrial processes, they are not dispatchable on peak, nor can they provide the other system reliability benefits that would be provided by a peaker. Finally, these units are not configured for black start capability and have already been taken into consideration when determining the amount of generation needed within the Santa Clara Subsystem to allow emergency power to be routed into the Goleta subsystem.

Consequently, these units do not meet the purpose and need of the Proposed Project.

4) EF Oxnard Alternative

EF Oxnard contacted SCE in March 2007 suggesting that its site would be suitable for the Proposed Project. At that time, SCE conducted a preliminary screening investigation of the site and concluded that the site did not meet its initial screening criteria. SCE has reviewed this site again as part of its current review and has reached the same conclusion.

The primary reason the site is not suitable is that it does not posses the required amount of unoccupied land to house the project's 2-3 acre footprint. The land that was identified by EF Oxnard as available for SCE's use contains less than 0.5 acres of available space. Even assuming that existing structures could be removed, only 1 acre of space is available in which to construct both the project and a new substation. (See Attachment B)

The existing substation and transmission lines at this location were not designed to accommodate more than a single generating unit. The existing underground 66 kV transmission line is located in a vault that would need to be expanded to house a second line. In addition, a new loop substation would need to be constructed to accommodate the additional SCE peaking unit. This new substation would require an additional 0.25 acres of contiguous fenced space.

Because there is insufficient space at this location to construct the Proposed Project, this alternative does not meet the purpose and need of the Proposed Project.

5) East of Harbor Boulevard Alternative

At the time the Proposed Project was originally sited, the City of Oxnard asked SCE to consider constructing the peaker on SCE-owned land on the east side of Harbor Boulevard behind the Mandalay 66 kV substation. This location consists of previously undeveloped, but degraded dune habitat. SCE considered this site as requested, but concluded that a peaker at this location would:

1) Still be located within the coastal zone;
2) Require clearing 2-3 acres of undeveloped dune land for the project, as well as an additional 2-3 acres for laydown and the natural gas metering station;

3) Require the additional construction of a new transmission line and access road across currently undeveloped land;
4) Be more visible to residents, because it would not be viewed against the backdrop of the Mandalay Generating Station;
5) Have a toxic endpoint from a potential ammonia tank release that would extend outside the project site;
6) Be located closer to residences once the adjacent agricultural land is converted to residential development.
7) Not be consistent with the principal of preferentially using brownfield sites to construct new generation

It was concluded that this location would likely have significantly greater environmental impacts than the proposed location.

6) Mandalay Generating Station Alternative

Use The Existing Mandalay Generating Station Peaker

Using the existing Reliant Energy peaker does not meet the purpose and need of the Proposed Project. The output of this peaker was taken into account when the need for additional generation was identified by the CAISO and the CPUC. Therefore, the CPUC order to construct 250 MW of new generation would not be satisfied by assuming that the existing unit is providing the needed electricity.

Further, this unit is not capable of meeting the grid reliability requirements needed in the area. The Reliant peaker has been in operation since 1970 and is capable of producing up to 140 MW of energy on peak, although its operation is limited to approximately 85 hours per year due to air quality permit emission limits. The equipment is over 30 years old and has been discontinued, such that parts are no longer readily available in the event of a breakdown. This unit is not configured to either black start or to provide auxiliary power to the main Mandalay generators; therefore, it cannot provide black start services. Due to its limited hours of operation, it cannot provide energy to the Goleta subsystem during extended outages. For these reasons, the existing unit does not have the desired reliability characteristics for an emergency function.

Because it was concluded that unit does not conform to the requirements of the CPUC directive, and neither provides additional energy or capacity benefits nor the required local reliability benefits, this alternative does not satisfy the purpose and need of the Proposed Project.

Replace the Existing Mandalay Generating Station Peaker

The existing Mandalay Generating Station peaker is operated by Reliant Energy. SCE neither owns property nor makes business decisions on behalf of Reliant Energy. SCE is not aware of any plans for Reliant Energy to retire this unit, which currently supplies power to the SCE system and produces revenue for Reliant's shareholders.

Construction on the Reliant site was originally rejected in 2007 because SCE-owned land was needed to meet the required schedule. Although the Summer 2007 deadline has passed, timing is still an issue.

As noted above, the CPUC directive requires 250 MW of new SCE-owned generation. Therefore replacing the existing 140 MW peaker with the proposed 45 MW peaker would not meet the purpose and need of the Proposed Project. A project capable of supplying a net total of 185 MW of power would be needed to ensure that an additional 45 MW of power would be available. This would require designing and permitting a significantly larger and completely different project than what has been proposed. The Proposed Project does not include removal and replacement of existing equipment, only the construction of a project on clear and available land. Such a project would trigger lengthy CEC review, which is inconsistent with project objectives.

Finally, any new project would be SCE-owned. This would require independent support equipment in order to provide mechanical and electrical separation from the Reliant facility. Even assuming the original 45 MW project, this requirement would result in a larger footprint (2-3 acres) than is being utilized by the existing equipment, which would require siting the unit at a different location on the property.

For all these reasons, replacing the existing unit with the Proposed Project is not viable, and would not meet the purpose and need of the Proposed Project.

Build SCE's Peaker on the Mandalay Generating Station Property

As noted above, SCE does not own this property and Reliant Energy has not indicated its willingness to sell SCE a portion of its land for the proposed project. Attempting to negotiate a real estate transaction for a portion of its property would delay the project and has no guarantee of success.

Further, based on a review of the site layout, the only available parcel of land that is of sufficient size to house the Proposed Project is located to the north of the existing generating units. This land is located immediately adjacent to the beach, sensitive dune habitat, and McGrath State Beach. This location would place the Proposed Project closer to sensitive habitat and would require the construction of a new transmission line across undeveloped land.

At this location, the peaker would:

1) Still be located within the coastal zone;
2) Would be located immediately adjacent to the beach, dune habitat, and McGrath State Beach park;
3) Require the construction of a new transmission line across currently undeveloped land;
4) Possess potential ammonia tank hazards that would extend outside the project site into publicly accessible areas; and

5) Be inconsistent with the principal of preferentially using brownfield sites to construct new generation.

Because constructing the peaker at this location would have greater environmental impacts than at its current location, the current location remains the preferred alternative.

7) Non-Coastal Location in the Ventura/Santa Barbara Area Alternative

At the time the peaker project was originally sited, SCE considered all SCE-owned property on its system, including all locations in the Ventura/Santa Barbara County areas located at or near 66 or 155 kV subtransmission lines. Since that time, SCE has also reviewed potential customer substation properties against its required criteria. In all cases, the current project site is environmentally superior, less costly, and provides the greatest amount of system reliability benefits.

Conclusion

SCE has conducted a detailed needs and siting assessment for the Proposed Project, both at the time of its original siting and subsequent to that time. Based on all available information, the Proposed Project site on SCE-owned brownfield land adjacent to the existing Mandalay Generating Station is the best location to meet the purpose and need of the project among the various alternatives considered, and is also the environmentally-preferred site.