Process

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ORIGINAL

Decision 88-01-062 January 28, 1988

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

In the Matter of the Application of Pacific Gas and Electric Company for a certificate of public convenience and necessity under Section 1001 of the California Public Utilities Commission General Order No. 131-C, authorizing the construction, operation and maintenance of a 230 kV transmission line from applicant's Tesla-Newark 230 kV transmission line to applicant's Vineyard Substation in Alameda County. (U39E)	Application 86-10-006 (Filed October 1, 1986)

Howard V. Golub, Roger J. Peters, and Mark R. Huffman, Attorneys at Law, for Pacific Gas and Electric Company, applicant.

David F. Adams, Assistant to the City Manager, for City of Livermore; Peter MacDonald, Attorney at Law, for the City of Pleasanton; and Farrow, Schildhause & Wilson; by Anne Ronan, Attorney at Law, for Wayne Hahner, Pamela and Richard Corbett, Robert and Sharon Heinz, Brian and Mei-Laing Lin; protestants.

Armour, St. John, Wilcox, Goodin & Schlotz, by James Squeri and David A. Simpson, Attorneys at Law, for Wente Bros.; Brobeck, Phleger & Harrison, by Gordon E. Davis, Attorney at Law, for Kottinger Ranch and Victor Lund, Jr.; and Alannah Kinser, for the Public Advisor's Office; interested parties.

Kathleen Kiernan-Harrington, Attorney at Law, Donna Orebic, and Elaine Russell, for the Division of Ratepayer Advocates.

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INTERIM OPINION

Summary

This decision grants Pacific Gas and Electric Company (PG&E) a certificate of public convenience and necessity (CPCN) to construct the Vineyard transmission system which includes the Vineyard substation on Stanley Boulevard in Pleasanton, 5.6 miles of all-underground 230 kilovolt (KV) transmission line from the Vineyard Substation generally southeasterly to a transition station where the line converts to overhead and connects with the existing Tesla-Newark 230 kV transmission line south of State Route 84 (Vallecitos Road). The cost of the approved alternative is estimated by PG&E at $31 million, or $10 million more than the proposed project which would have had only 1.6 miles of transmission line underground. Undergrounding is necessary under the California Environmental Quality Act to avoid significant visual and land use impacts where the line crosses Alameda County designated Scenic Roads and in areas of planned residential development. The decision orders the Division of Ratepayer Advocates (DRA) to prepare a supplemental Environmental Impact Report on the approved all-underground (all-U.G.) Alternate 4. PG&E is ordered to prepare an updated cost estimate on all-U.G. Alternate 4, and is further ordered to prepare a study comparing the economics and operational considerations of all-U.G. Alternate 4 with expansion of the San Ramon substation. DRA is to report on the reasonableness of the updated PG&E cost estimate.

I. Filing

On October 1, 1986, PG&E filed this application seeking a CPCN under Section 1001 of the California Public Utilities (PU) Code and under the Commission's General Order (GO) 131-C and Rules 17.1 and 18 for authority to construct, operate, and maintain

a 230 (KV) transmission line from PG&E's Tesla-Newark 230 kV transmission line to the proposed Vineyard substation in Alameda County.

Section 1001 requires that before construction of facilities as herein addressed, the utility must obtain from the Commission a certificate "that the present or future public convenience and necessity require or will require such construction". GO 131-C sets forth detailed rules for filing a CPCN application, required for transmission line additions operating above 200 kV. GO 131-C also addresses environmental requirements; a final Environmental Impact Report (EIR) or Negative Declaration is required; and where the Commission is the lead agency under California Environmental Quality Act (CEQA), Rule 17.1 applies.

Rule 17.1 requires a Proponent's Environmental Assessment (PEA) to be filed with the application for CPCN. The PEA is intended as a guide to assist in the initial evaluation of impacts of the project and in determining whether a Negative Declaration or Environmental Impact Report is required under CEQA.

Rule 18 sets out in more detail other filing requirements including utility financial information.

PG&E submitted the PEA with the application, identifying potentially significant project environmental effects as follows:

- Effects on unknown cultural and biological resources in the construction area.
- Effects on traffic during construction of the underground section.
- Effect on views after the overhead line is constructed.

III. Public Involvement

Significant public interest in the project developed early and continued throughout the certification process. A number of types of public involvement occurred, including parties with intervenor status who filed legal briefs and sponsored witnesses, cross-examined other parties' witnesses, or offered statements and letters from parties including local agencies and citizen groups in response to the CPUC's Notice of Preparation and EIR;

A number of public forums were conducted to elicit public input. A public scoping meeting on February 4, 1987 in Pleasanton to explain the project and the environmental study process to the public and elicit response from the public. The Notice of Preparation of the Environmental Impact Report of February 9, 1987 was served on all interested parties. A public workshop was held on May 18, 1987 in Pleasanton to discuss in greater detail the engineering review report and environmental studies. A questionnaire was give to a sample group of the public to elicit their concerns about specific types of environmental impacts. Public Hearings in Pleasanton were held on August 25, and in San Francisco on August 26, 1987 to allow the public to make statements in a less formal manner than in the evidentiary hearings to follow. Evidentiary hearings on September 28, 29, 30 and October 1, 1987 in San Francisco in the Commission Courtroom.

IV. Application Summary and Recommendations

The application's main features can be summarized as follows:

A. Need for the Project

PG&E states that the Pleasanton area "has been the focus of substantial commercial and business park development." PG&E estimates that the area's load growth will continue at the recent

rate of 9.0 megawatts (MW) per year. As a result, the capacity of the present system has nearly been reached, necessitating upgrading of the present transmission system serving the Pleasanton area distribution system by 1989.

B. Description of the Project

PG&E's study concluded that the proposed project is the most effective means of meeting that need. The proposed project consists of construction of the proposed Vineyard Substation and the Vineyard 230 kV transmission line, which will carry electricity from PG&E's existing Tesla-Newark 230 kV transmission line to the Vineyard Substation. The 21 kV distribution system carries electricity from the substation to the customers.

The Vineyard Transmission Line proposal is located within the geographical jurisdictions of Alameda County (Alameda) and the City of Pleasanton (Pleasanton), and consists of 1.6 miles of underground 230 kV transmission line and 3.7 miles of overhead 230 kV transmission line for a total length of 5.3 miles. Approximately 30% of the length or 1.6 miles is proposed to be underground.

C. Components

PG&E considers the project to have four separate components:

- The Vineyard Substation
- The 230 kV underground transmission line
- An underground to overhead transition station
- The 230 kV overhead transmission line

PG&E proposes to use conventional technologies for this project, including:

> Vineyard substation is proposed to be approximately 400 by 420 feet, constructed on the leveled quarry site and landscaped to minimize visual impact. It is to consist of two 230 kV underground cable terminations, two 230 kV power circuit breakers, one 230/21 kV

transformer, two 21 kV pothead foundations, and a control building;

The underground portion of the line is proposed to use high-pressure oil-filled pipe-type (HPOFPT) cable circuits. Each 230 kV circuit consists of three underground cables encased in an 8-5/8 inch oil-filled pipe, pressurized to 200 psig with pretreated electrical insulating oil, buried in trenches 4 to 6 feet deep and 20 feet apart. A pressurization plant will be installed at the Vineyard substation to maintain proper oil pressure. Manholes will be placed at intervals of 1,000 to 3,500 feet for installing and joining cables.

The overhead to underground transition station is located in a 150 by 150 foot fenced area, constructed on fill, and comprised of a control building, dead-end termination structures, potheads (termination of overhead 230 kV lines), 230 kV disconnect switches, surge arrestors, and coupling capacitor voltage transformers. The station is to be painted and landscaped.

The overhead portion of the line is a double-circuit 230 kV tower line with 1,113 kcmil aluminum non-specular conductors. Towers are galvanized steel lattice type ranging from 100 to 175 feet high, with a base of 25 to 30 feet on a side. Each leg is supported by a concrete foundation; spans range from 700 to 1,400 feet with an average of 1,200 feet.

D. Proponent's Environmental Assessment

The PEA identified several potential environmental impacts as well as mitigation measures. Following is a summary of those impacts and proposed mitigation:

1. Cultural Resources

No known cultural resources were identified, however, unknown cultural resources could be affected by the construction activities. As a result, when actual locations are determined for roads, towers and any other ground-disturbing activities after certification, a qualified archaeologist will conduct an intensive

survey of cultural resources. If significant cultural resources are identified, they will be avoided or mitigation measures will be undertaken.

2. Biological Resources

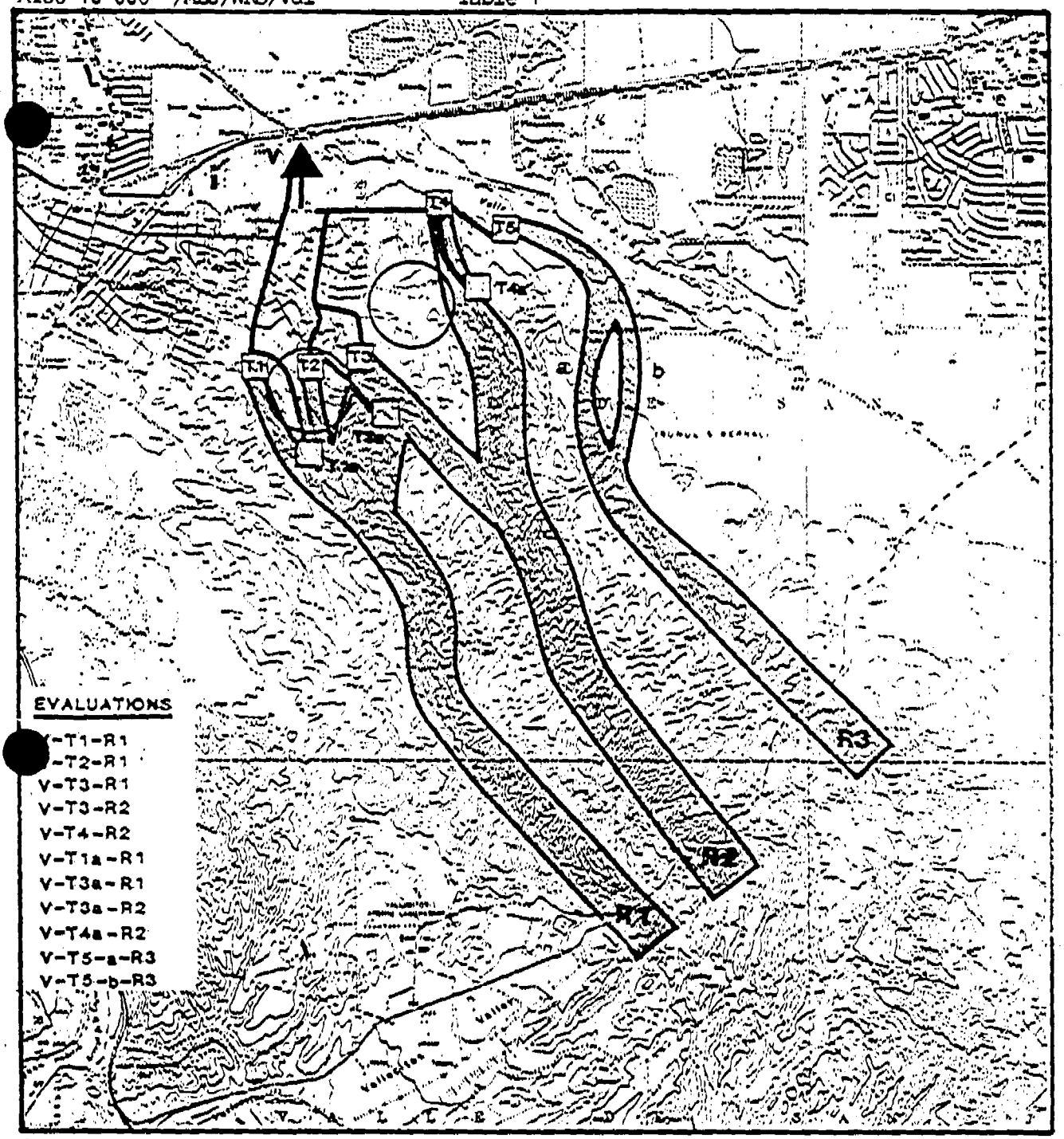
No threatened or endangered species are known to exist in the project area, but habitat suitable for several state or federally listed species does exist. Therefore, after specific locations are determined for construction and facilities, an intensive biological survey will be conducted. Project facilities and construction will then be adjusted if necessary to avoid such resources.

3. Visual Resources

PG&E has identified approximately 15 homes within one-half mile of the overhead transmission with significant impacts on some views. Strategic tower placement and landscaping around the transition station are proposed to reduce the visual impact.

4. Alternatives

Figure 10-2 is reproduced here as Table 1 as a guide to comparative route locations for the alternates:



OVERHEAD TRANSMISSION LINE ROUTE

UNDERGROUND TRANSMISSION LINE ROUTE

TRANSITION STATION (OVERHEAD TO UNDERGROUND)

SUBSTATION SITE

APPROVED/DEVELOPING RESIDENTIAL AREA

0 2000 4000

Feet

N

PG&E

PACIFIC GAS AND ELECTRIC CO.

OCTOBER 1986

VINEYARD SUBSTATION AND 230 KV TRANSMISSION LINE PROJECT

TRANSMISSION LINE ROUTES EVALUATED

FIGURE 10-2

PG&E presented a number of alternatives both in supplying load and in route alternatives to the proposed project as described below:

a. A no project alternate, which PG&E dismissed as not feasible since load growth in this are would cause overloading of existing facilities after 1990.

b. A tower design alternate discusses tubular steel towers but concludes that the proposed lattice steel towers are preferable because they are less noticeable visually at long distances which are typical of the majority of views of the line. The use of tubular steel towers would also add approximately $400,000 (1986$) to the total project cost.

c. An energy conservation-load management alternative was reviewed, but PG&E concluded that this alternative could not keep up with load growth in the Pleasanton area.

d. The 21 kV feeder alternative could serve the load growth in the Pleasanton area by reinforcing the San Ramon substation and its transmission system and adding 21 kV feeders from it. This alternative was rejected by PG&E as not feasible since the cost would be about 50% more than the proposed project.

e. An underground alternative was evaluated but dismissed due to cost; the overhead line alternative was estimated to cost $148 per foot compared to underground at $1,167 per foot, not including right of way costs. PG&E concluded that "visual benefits gained by undergrounding the remaining 3.7 miles of overhead transmission line are outweighed by the economic constraints."

f. An all overhead route was not considered a feasible alternative due to residential development expanding into the area.

g. A number of route alternatives were considered, resulting in the proposed project and two alternatives in the PEA:

(1) Route 1 alternatives; the two best alternates of the five variations studied were considered as final contenders for the project; V-T1-R1 and V-T1a-R1.

(2) Route 2 alternatives; the two Route 2 alternatives were eliminated due to consideration of reliability, visual impact, geology, and land use.

(3) Two Route 3 alternatives considered were similar; the variation that ultimately became the proposed project (V-T5-a-R3) was selected because it allows a greater length of natural visual screening of the overhead portion against the rolling hills.

PG&E's prepared testimony lists the estimated project cost for the proposed project and three alternates plus the all underground alternate, considered by request of DRA. This information is shown in Table 2. PG&E's proposed project is PG&E Alternate 3, Route 3, Option 1.

VINEYARD TRANSMISSION PROJECT - ROUTE ALTERNATIVES COST COMPARISON ($1,000) August 13, 1987

	ALTERNATIVE 1 R1, OPTION 1	ALTERNATIVE 2 R1, OPTION 2	ALTERNATIVE 3 R3, OPTION 1	ALTERNATIVE 4 R3, OPTION 2	ALTERNATIVE 5 R4
1 - OVERHEAD LINE					NO OVERHEAD
A. ENGINEERING	$101	$94	$94	$58	
B. CONSTRUCTION					
LABOR	344	300	301	212	
MATERIAL	750	662	679	556	
EMPL REL	76	66	66	47	
CONTRACT	50	50	50	27	
OTHER	0	0	0	0	
C. MAINTENANCE	6	6	6	6	
D. ESCALATION	337	300	322	225	
E. CONTINGENCY	267	236	253	172	
TOTAL DIRECT:	1,930	1,714	1,779	1,303	
F. INDIRECTS	609	537	547	377	
G. OVERHEADS	393	349	377	265	
GROSS FINANCIAL	2,932	2,600	2,694	1,945	100
2 - TRANSITION STATION					
A. ENGINEERING	86	91	86	86	86
B. CONSTRUCTION					
LABOR	196	272	269	269	269
MATERIAL	616	629	614	614	614
EMPL REL	34	35	34	34	34
CONTRACT	201	259	191	191	191
OTHER	0	0	0	0	0
C. ESCALATION	87	95	86	86	86
D. CONTINGENCY	104	110	102	102	102
TOTAL DIRECT	1,323	1,491	1,381	1,381	1,381
E. INDIRECTS	355	363	354	354	354
F. OVERHEADS	375	401	371	371	371
GROSS FINANCIAL	2,053	2,256	2,106	2,106	2,106
3 - UNDERGROUND LINE					
A. ENGINEERING	277	277	277	315	355
B. CONSTRUCTION					
LABOR	1,162	1,457	1,278	2,478	3,255
MATERIAL	2,329	2,934	2,635	4,870	7,440
EMPL REL	0	0	0	0	0
CONTRACT	139	359	218	648	925
OTHER	59	59	59	69	69
C. ESCALATION	309	396	343	820	1,410
D. CONTINGENCY	0	0	0	0	0
TOTAL DIRECT:	4,328	5,542	4,802	9,175	13,445
E. INDIRECTS	1,521	1,857	1,646	3,270	4,315
F. OVERHEADS	1,343	2,091	1,812	3,050	5,400
GROSS FINANCIAL	7,190	9,490	8,260	15,495	23,160

4 - REM./COMM./PROJECT.

A. ENGINEERING	10	10	10	10	10
B. CONSTRUCTION					
LABOR	18	18	18	18	18
MATERIAL	20	20	20	20	20
EMPL REL	1	1	1	1	1
CONTRACT	0	0	0	0	0
OTHER	0	0	0	0	0
C. ESCALATION	4	4	4	4	4
D. CONTINGENCY	3	3	3	3	3
TOTAL DIRECT:	56	56	56	56	56
E. INDIRECTS	27	27	27	27	27
F. OVERHEADS	13	13	13	13	13
GROSS FINANCIAL	95	95	95	95	95

5 - SUBSTATION

A. ENGINEERING	180	180	180	180	180
B. CONSTRUCTION					
LABOR	341	341	341	341	341
MATERIAL	1,820	1,820	1,820	1,820	1,820
EMPL REL	57	57	57	57	57
CONTRACT	450	450	450	450	450
OTHER	0	0	0	0	0
C. ESCALATION	113	113	113	113	113
D. CONTINGENCY	474	474	474	474	474
TOTAL DIRECT:	3,436	3,436	3,436	3,436	3,436
E. INDIRECTS	530	530	530	530	530
F. OVERHEADS	984	984	984	984	984
GROSS FINANCIAL	4,950	4,950	4,950	4,950	4,950
TOTAL ROUTE FINANCIAL (ENGR'G & CONSTRUCTION)	17,220	19,390	18,105	24,590	30,419
TOTAL PROJECT PLANNING, CPUC, & LAND FINANCIAL COST	3,843	3,848	2,818	1,705	723
	ALT.1	ALT.2	ALT.3	ALT.4	ALT.5
TOTAL PROJECT FINANCIAL COST	$21,063	$23,238	$20,923	$26,295	$31,133

ROUTE DESCRIPTION:
ALTERNATIVE 1 - PGandE ROUTE R1-T1-V (4.7 Mi.; 1.2 Mi U/G, 3.5 Mi O/H)
ALTERNATIVE 2 - PGandE ROUTE R1 T1a-V (5.1 Mi.; 1.9 Mi. U/G, 3.2 Mi. O/H)
ALTERNATIVE 3 - PGandE ROUTE R3 -a-T3-V (5.3 Mi.; 1.6 Mi. U/G, 3.7 Mi. O/H - PROPOSED PROJECT)
ALTERNATIVE 4 - CPUC DATA REQUEST 4, QUES. 3.3.3a (5.6 Mi.;3.5Mi. U/G,2.1Mi. O/H)
ALTERNATIVE 5 - CPUC DATA REQUEST #4, QUES. 4 (ALL UNDERGROUND)

PG&E selected the proposed project as environmentally sound and cost justified, in the current era of competition in serving and generating electricity. Competition exists in the forms of self-generation, cogeneration, and purchases from parties other than PG&E.

IV. Draft Environmental Impact Report

The Draft Environmental Impact Report (DEIR), prepared by the CPUC as lead agency under CEQA, was issued July 20, 1987. The purpose of the DEIR is to comply with all provisions of CEQA, and assess the environmental impacts of the proposed project, and project alternatives. Included in the analysis are concerns of local governmental and citizen groups.

The DEIR includes a critical assessment of the PEA, supplementing basic PEA data with archival and field work in biology, geology, land use, and visual quality carried out by the EIR team, which includes DRA members and environmental and engineering consultants.

The DEIR states that in the process of public contact and participation, it became clear that the public was more concerned with two environmental factors than the others. The two are land use, and visual quality. Less concern was expressed regarding geology, wildlife, archaeology, construction traffic, and noise. As a result, the DEIR gave increased emphasis to those two factors in determining the least environmentally sensitive project alternative.

Nevertheless, substantial effort was expended in the DEIR in investigating other impacts in order to satisfy CEQA requirements. These areas include:

- o vegetation and wildlife
- o geology
- o traffic and construction

- noise
- public health and safety
- cultural resources
- growth inducements

Five alternatives to the proposed project, including the no project alternative were evaluated, as described under Section 1.3, pages 1-4 and 1-5 of the DEIR, following as Table 3:

1.3 ALTERNATIVES DESCRIPTION

ALTERNATIVE 1: ROUTE 1, OPTION 1

Beginning at the proposed Vineyard substation, Alternative one is undergrounded in a southwesterly direction for 1.2 miles until it reaches Picos Road extension at the boundary of the Kottinger Ranch subdivision, where it turns south to Transition Station 1. From this point alternative one is overheaded for three miles to Vallecitos Road turning southeast and tapping into the Tesla-Newark 230 kV transmission line. The alternative is 4.7 miles with 1.2 miles underground.

ALTERNATIVE 2: ROUTE 1, OPTION 2

Alternative two was included to examine a mitigation for visual impacts of alternative one. The underground portion of Alternative two would be the same as Alternative one except Alternative two would turn east at transition station 1 for approximately 1,400 feet. The route would turn south for 2,500 feet to an alternative transition station ($T1_A$) where it would be overheaded and would allow the same route as alternative one. The total distance of Alternative two would be 5.1 miles with 1.9 miles underground.

ALTERNATIVE 3: ROUTE 3, OPTION 2

Alternative three would follow the same route as the project until it reached Vineyard Avenue where it would turn southeast to East Vineyard Avenue then to the westernmost boundary of the Wente Brothers property. Alternative three would proceed southeast along the Wente Brothers property emerging at a transition station at the westernmost end of the Wente property in the R.3 corridor. The alternative would be overheaded for two miles to Vallecitos Road then to the Tesla-Newark 230 kV transmission line. Alternative three would be 5.6 miles long with 3.5 miles undergrounded.

ALTERNATIVE 4: Route 4

Alternative four would be 5.6 miles long with the entire route underground. Alternative four would follow the same route from the substations to East Vineyard Avenue as Alternative three. At East Vineyard Avenue the route would turn southeast following an easement along East Vineyard Avenue to Vallecitos Road. The route would go under Vallecitos Road to a transition station directly under the Tesla-Newark kV 230 transmission line.

ALTERNATIVE 5: NO PROJECT

Existing statutory authority requires that each electric utility in California, including PG&E, furnish and maintain adequate and continuing electrical service to the customers in its service area (California Public Utilities Commission Code, Section 451). Based on the projection of load and customer growth, the electric distribution system that serves the Pleasanton area will be deficient by 1990. The magnitude and duration of required load reduction would grow as area demands grow, until new and existing customers would be forced to utilize other energy sources or cease utilizing energy altogether.

A. **Alternatives**

DEIR Table 1-1 indicates comparative environmental impacts of the proposed project and four project alternatives shown as Table 4.

TABLE

RANKING OF PROPOSED AND ALTERNATIVE PROJECTS BY ENVIRONMENTAL CATEGORIES
(Least Impact = 1, Most Impact = 5)

Type of Environmental Impacts	Proposed project Route 3, Option 1	Alternative 1 Route 1, Option 1	Alternative 2 Route 1, Option 2	Alternative 3 Route 3, Option 2	Alternative 4 Route 4
Land Use Compatibility	3	5	4	2	1
Visual Quality	3	5	4	2	1
Biotic Factors	2	4	5	1	3
Geology	2	3	4	2	1
Traffic and Construction	1	3	4	2	5

Although the table lists impacts by all environmental factors and doesn't specifically differentiate relative importance, the discussion repeats that "the land use and visual quality impacts are considered by local government agencies, affected property owners, citizen groups and other public participants as the issues of paramount concern."

The alternates considered superior are all-U.G. Alternate 4 (Route 4), and 60% U.G. Alternate 3 (Route 3, Option 2); both alternates were developed in the DEIR and were not in the PEA, but were later investigated by PG&E as a result of CPUC data request.

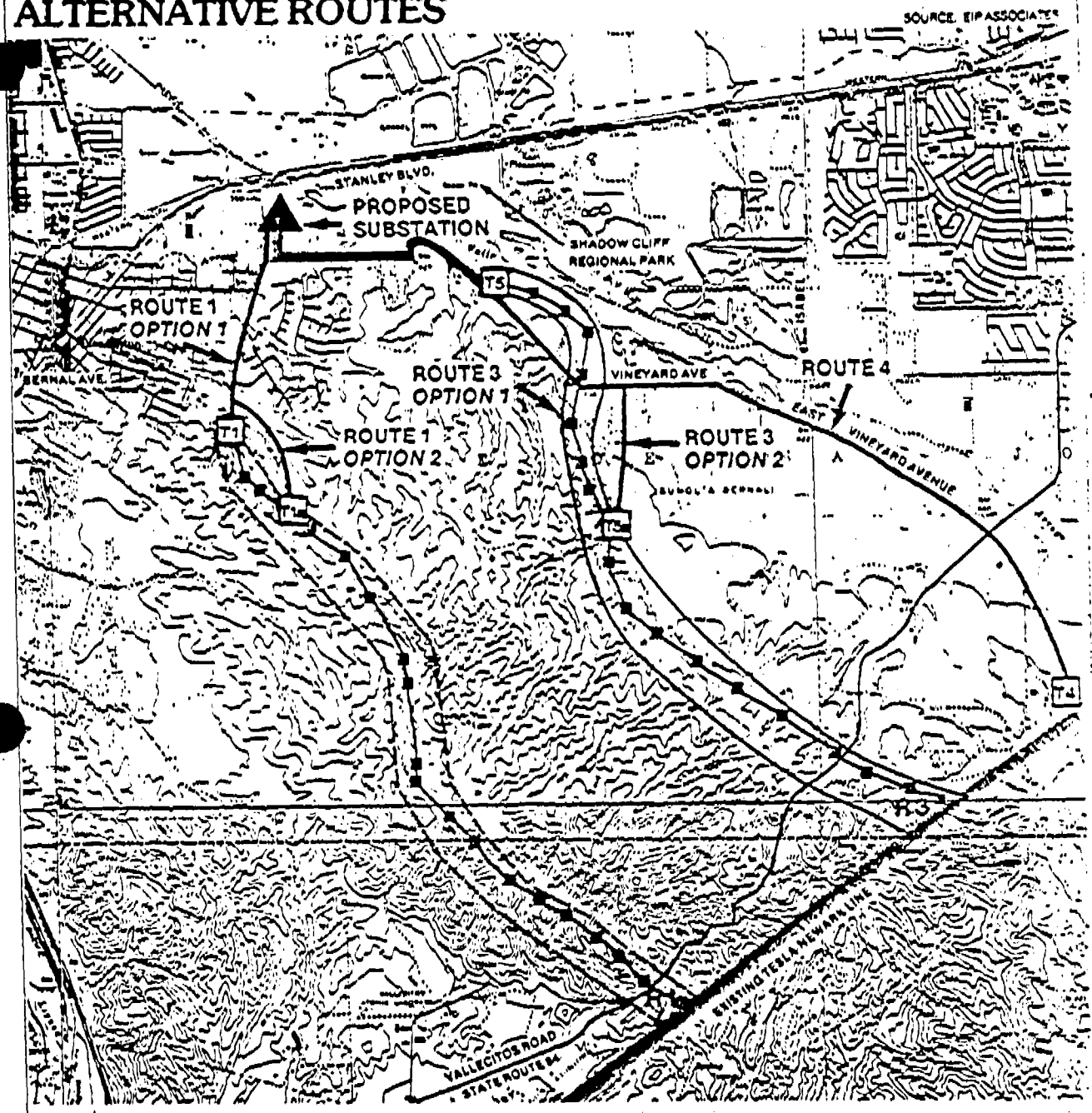
Alternate 5, the no project alternative, is not considered viable in the DEIR since projected load and customer growth will cause the electric distribution system serving the Pleasanton area to be deficient by 1990, with obvious service and reliability implications.

Alternate 3 is similar to the proposed project except that it has twice as much underground, which reduces land use and visual quality impacts.

All-U.G. Alternate 4 is the only alternate to avoid significant visual impacts including those associated with crossing over scenic roads, i.e., Vineyard Avenue and Vallecitos Road. As the only all-U.G. alternate, it is also the only one eliminating potential concerns about electric and magnetic fields that can induce voltage and currents in objects in proximity to the transmission line. Additionally, ozone and nitrogen oxides are generated. At 230 kilovolts many of the problems associated with higher voltages become insignificant, but the guidelines issued by the State of California, Environmental Protection Agency, and the National Electric Safety Code need to be considered with regard to overhead transmission lines. The DEIR recommends testing after construction to insure compliance if an alternate using overhead transmission lines is selected.

Figure 2-2 on page 2-4 of the DEIR shows the relative locations of the alternates considered in the DEIR shown as Table 5 following. (DEIR Alternate 3 is the same as PEA Alternate 4, DEIR Alternate 4 is the same as PEA Alternate 5.)

PROPOSED PROJECT AND ALTERNATIVE ROUTES



Comparative costs of the alternatives are listed in Table 2-1, p. 2-12 of the DEIR, shown below as Table 6:

SUMMARY OF PROJECT AND ALTERNATIVES

Plan Designation	Miles of Underground	Miles of Overhead	Total Miles	Total Estimated Cost
R3, Option 1[1]	1.6	3.7	5.3	$21,129,000
Alternative 1 R1, Option 1	1.2	3.5	4.7	$21,161,000
Alternative 2 R1, Option 2	1.9	3.2	5.1	$23,209,000
Alternative 3 R3, Option 2	3.5	2.1	5.6	$26,296,000
Alternative 4, Route 4	5.6	—	5.6	$31,034,000

[1]Applicants preferred plan.

B. Summary of DEIR Findings

The DEIR investigation concludes that the only significant, unavoidable, adverse impacts are visual impacts of overhead transmission lines and towers in at least three locations along the proposed route:

- Crossing Vineyard Avenue, a County designated Scenic Route;
- Adjacent to the Wente property;
- And crossing Vallecitos Road, a County designated Scenic Route.

All other impacts identified in the DEIR as significant can be reduced to moderate, low, or insignificant by mitigation measures.

The DEIR ranked the alternates by comparing impacts in areas where clear differences exist between them. Those differences by category of impact are summarized below.

All-U.G. Alternate 4 is environmentally superior because of:

- Elimination of visual impacts of overhead scenic road crossings;
- Low impacts to other land uses due to use of available existing right-of-way;
- Low impacts for the substation site after mitigation;
- Low impacts to airport safety, agricultural conservation, and land use planning policies.

60% U.G. Alternate 3 is ranked second due to low impacts to airport safety, agricultural conservation, and land use planning in the underground segment.

The PG&E proposed project is ranked third because of potential significant impacts on flight safety since the overhead segment could infringe on the FAA flight referral area. Added

potential significant impacts are on existing and proposed land uses in the overhead segment due to the amount of land needed for rights-of-way for the overhead segment, and on County Scenic Corridor policies.

Fourth and fifth ranking went to the two Route 1 alternates because of potentially significant impacts on existing and proposed land uses in the overhead areas, impacts on agricultural conservation policies and visual impacts.

V. Public Hearings

Public hearings were held on August 25 and 26, 1987 to elicit public comment on the DEIR in a less formal manner than in the evidentiary hearings that were to follow. At each public hearing session, DRA Assistant Project Manager Orebic explained the responsibility of the DRA in this type of proceeding, that public comments from the earlier public workshops were incorporated in the DEIR and that consultants were employed by DRA staff to assist in specific areas, i.e., EIP Consultants (EIP) to prepare the EIR and R. W. Beck to prepare the engineering report for the DRA evaluation of the application. Representatives of EIP summarized the findings of the DEIR. Staff counsel Harrington offered to help any party in participating or in understanding the Commission process.

A number of interested parties made statements regarding their views of the proposed project and the DEIR. Support for the DEIR recommended all-U.G. Alternate 4 was unanimous; concerns over aspects of the project and other alternates varied, but all who offered comments supported all-U.G. Alternate 4. Among those offering their views were residents of the cities of Livermore and Pleasanton, the County of Alameda, and Mayor Turner of Livermore. Assigned Commissioner Duda attended these hearings.

Concerns centered around visual impact and effect of the proposed project on land use, with particular concern voiced about

negative effect of overhead transmission facilities in this generally picturesque area of vineyards and historic old wineries. Additionally, the area, sometimes referred to by interested parties as the "fertile crescent" was characterized as having the potential to be a significant tourist attraction due to development plans that could result in facilities not unlike those of the Silverado area of Napa Valley, including hotels, wine tasting rooms, golf course(s) and similar amenities. Public sentiment, although strongly favoring the all underground alternate, generally did not otherwise oppose building a transmission project in the Pleasanton area.

VI. PG&E Motion to Limit Issues

On September 17, 1987, PG&E filed a motion to limit issues relating to alternate underground technologies and to prevent appointment of a Construction Project Board (Board). The DRA in its prepared testimony recommended that a comparative analysis of alternate technologies for 230 kV underground be conducted before PG&E is granted a CPCN for this project, based on the R. W. Beck report (Exhibit 12) entitled "Technology and Environmental Assessment Guide on Underground HV Power Transmission". DRA believes that the Vineyard project is a potential opportunity for evaluating technologies other than HPOFPT cable proposed by PG&E. The alternative technologies are low-pressure oil-filled (LPOF) cable and solid dielectric cable. PG&E argued that such an assessment could not be accomplished within the schedule for the project, and that it was unnecessary since the R. W. Beck report concluded that PG&E's proposed underground technology is a reasonable one. Additionally, PG&E's motion argued that Public Utilities (PU) Code Section 1091 does not apply to line extension projects of this type unless the

cost exceeds $50 million, and that the Board would have to be appointed earlier in the CPCN process so that its recommendations could be considered in the CPCN.

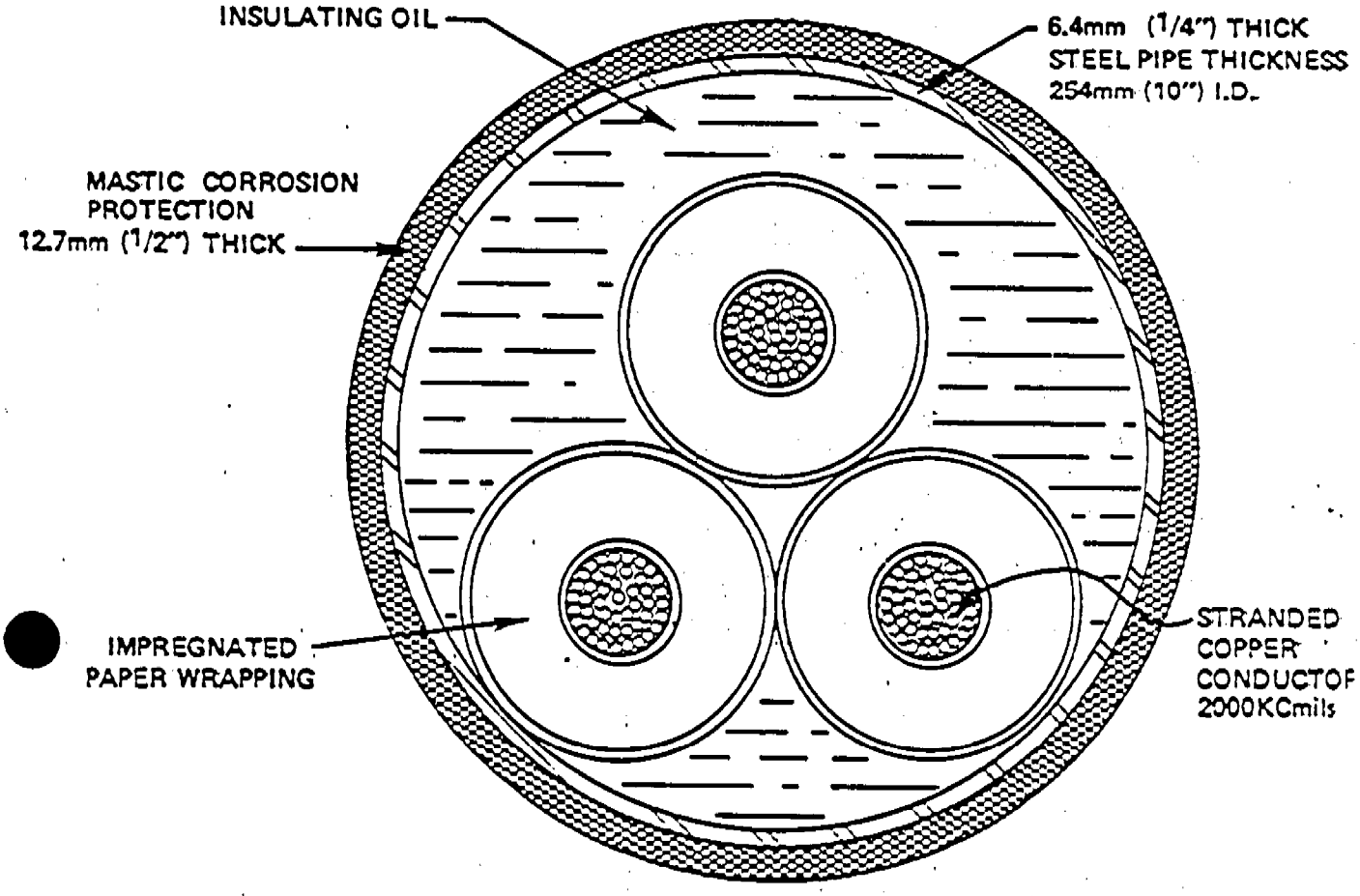
DRA opposed the motion on the grounds that adequate time exists to carry out the evaluation of alternate technologies without affecting the schedule for the CPCN, and that potentially cheaper alternatives offer not only possible savings, but can also provide valuable operating experience for PG&E for use when considering appropriate technologies for future underground transmission facilities. DRA also argued that PG&E's interpretation of PU Code Sec. 1091 is faulty in that the $50 million project cost relates to gas plant, not electric, that the Board can function as proposed, reporting to the Commission after issuance of a conditional CPCN.

Wente Brothers Winery and Signature Properties (Wente) opposed the motion on similar grounds.

PU Code § 1091 applies to electrical lines adding capacity in excess of 50 MW; the proposed project has a capacity substantially in excess of 50 MW.

The types of undergrounding technologies are described below; all types use a cable consisting of conductor(s) to carry the electricity, insulation to protect the conductor from electrical grounding and from the environment, insulation shielding to smooth electrical stress and carry fault current, a sheath to add strength and protection to the cable and provide a moisture barrier, and usually also a protective jacket to further protect the cable from the environment.

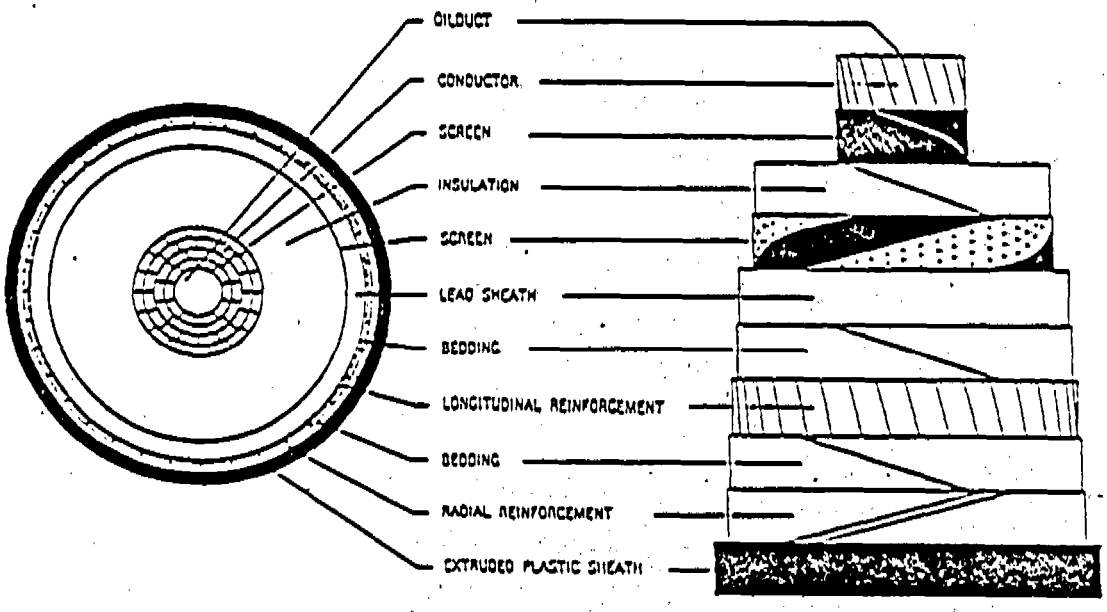
The HPOFPT uses cables in steel pipe filled with oil under about 200 psi pressure. The purpose of the oil is to absorb gas in the insulation, to eliminate voids and prevent ionization, corona discharge and insulation breakdown. A typical cross-section from the R. W. Beck Assessment Guide on underground technologies follows as Table 7.



TYPICAL HIGH PRESSURE OIL FILLED PIPE TYPE (HPOFPT) CABLE CROSS-SECTION

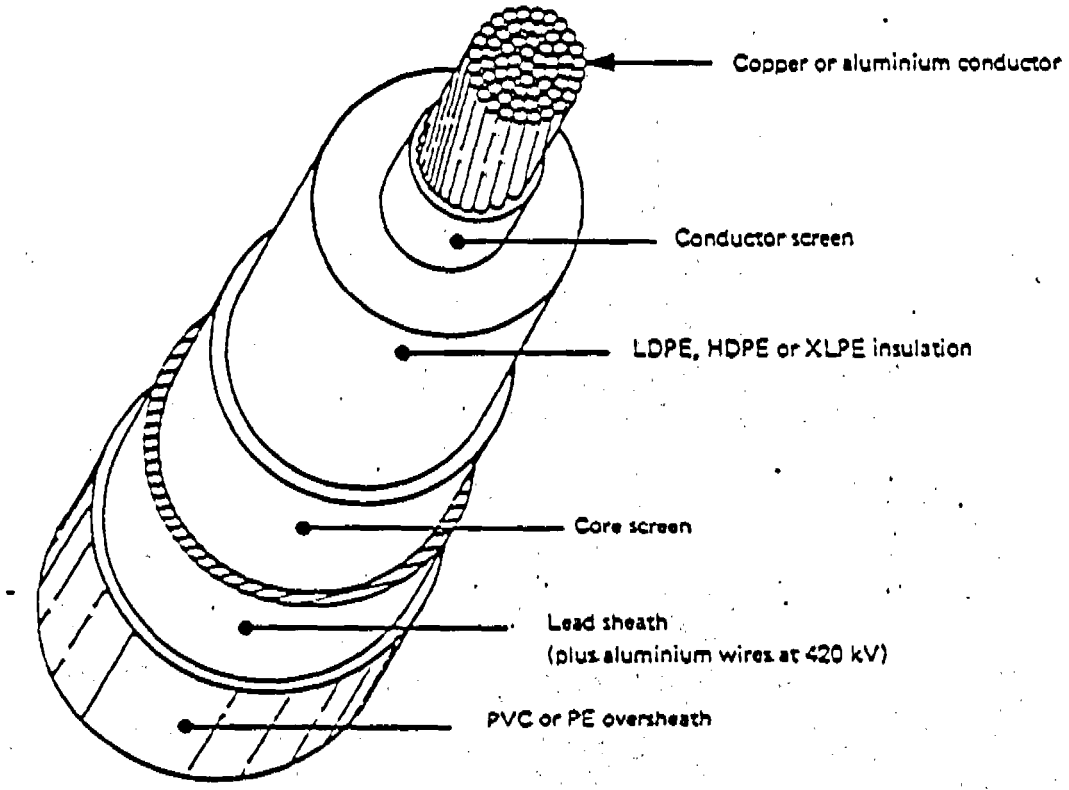
The two circuits for this project will be separated for cooling purposes, requiring separate trenches, usually on both sides of the road, in order to allow adequate thermal separation.

The LPOF system is a self-contained system using a conductor with an interior duct that carries oil at pressures in the range of 25 to 40 psi. Oil serves a function similar to the HPOFPT system; it absorbs gas in the insulation and eliminates void formation and ionization. A typical cross-section follows as Table 8.



TYPICAL SELF-CONTAINED OIL-FILLED (SCOF)
CABLE CROSS-SECTION

The solid dielectric system has no oil, rather it is a solid cable system consisting of a central conductor surrounded by insulation and protective sheathing as shown below as Table 9:



TYPICAL SOLID DIELECTRIC CABLE CROSS-SECTION

VII. Evidentiary Hearings

Four days of evidentiary hearings were held in San Francisco on September 28, 29, 30, and October 1, 1987. On the first day of hearing the Administrative Law Judge (ALJ) denied PG&E's motion to limit testimony on alternate U.G technologies and to limit discussion of appointment of a Construction Project Board, so that the record could be developed on these issues.

A. Positions of Parties

The positions of the parties can be summarized as follows:

1. PG&E

PG&E believes that load growth in the Pleasanton area necessitates increased ability to serve electric demand, and that the proposed project is the preferred means of serving it, that undergrounding is appropriate only for the length proposed. In PG&E's view, undergrounding the entire line is not worth the additional cost in other portions of the proposed alternate since residential development of Ruby Hills, a residential development project currently being planned by Wente, is speculative and uncertain. For the same reasons, the all-U.G. Alternate 4 is not appropriate due to its approximately $10 million additional cost, which PG&E believes cannot be justified.

Fear of bypass of PG&E's system by existing or potential PG&E customers is one reason PG&E is interested in keeping costs of the project minimized. PG&E argues that overhead transmission facilities are compatible with residential development and are a fact of life, and that proper subdivision design minimizes the resulting visual and land use impacts.

PG&E witness Maslowski testified that the all-U.G. Alternate 4 may not be an optimal solution even if visual impacts of the proposed project justified full undergrounding. In that case, PG&E would seriously consider alternates to the project, such

as expansion of the San Ramon substation, at a comparable cost to all-U.G. Alternate 4, but with the advantage of spreading the costs over the next 20 years since the substation expansion can be done in increments as load grows. This contrasts with the high initial costs associated with a new transmission project that can't practically be built in increments. However, the substation expansion could result in less reliability than the proposed project.

PG&E witness Kunitake testified on technology selection for the underground sections of the project, relating PG&E's experience and knowledge of other technologies suggested by the DRA consultant's engineering report. PG&E has one 3-1/2 mile section of 115 kV LPOF self-contained system in Oakland in service since 1938. Several sections were replaced in the 1950's due to corrosion of the lead sheath, with several more replaced in 1985 for the same reason. Corrosion of the lead sheath allows oil to leak and ultimately cause failure.

PG&E also has three 230 kV LPOF circuits installed at the Helms pumped storage plant, which are installed in a vertical shaft, a type of installation that would be difficult or impossible using conventional pipe-type cable due to the need to support the cable in the vertical run. Kunitake believes that LPOF systems should usually be installed in ducts for ease of maintenance, in which case the cost would be comparable to that of the HPOFPT system.

PG&E has in service about 100 circuit-miles of the HPOFPT and high-pressure gas-filled pipe-types, with an average age of 25 years. Oil-filled pipe-types are normally used except in hilly terrain where gas-filled pipe-types are used to reduce the problem of static head due to elevation differences. There has not been a single failure on these circuits to date.

Exhibit A of Exhibit 8 following as Table 10 indicates trouble rates in cable, joints, and terminations for four types of installations as reported in an Edison Electric Institute publication entitled "Transmission Cable Operation-1986" dated May 1987.

TROUBLE RATES, ALL VOLTAGES

	CABLE				JOINTS				TERMINATIONS			
YEAR	EXTRUDED	PAPER LEAD	SELF CONTAINED	PIPE CABLE	EXTRUDED	PAPER LEAD	SELF CONTAINED	PIPE CABLE	EXTRUDED	PAPER LEAD	SELF CONTAINED	PIPE CABLE
1986	3.42	15.91	0.83	0.04	0	1.31	6.26	0	1.55	0	1.95	0
1985	2.53	11.64	0.41	0.04	0	1.31	1.93	0.15	0	0	0.65	5.16
1984	2.69	14.64	0.41	0.04	2.23	2.67	2.57	0.51	4.68	0	0.65	0
1983	1.74	10.50	1.24	0.04	1.20	1.20	2.20	0	5.29	0	3.27	1.24
1982	3.01	2.97	4.13	0	1.50	1.51	3.24	1.09	9.71	0	2.67	3.72
1981	2.50	10.43	1.04	0.20	3.49	0.91	3.40	0.64	4.36	0	5.35	0.73
1980	4.73	22.41	1.47	0	6.44	1.22	3.31	0.76	2.63	0	6.08	1.86
1979	3.84	10.50	1.28	0.21	7.20	1.22	4.68	0.55	5.19	4.90	4.75	6.60

Definitions:
Extruded; extruded solid dielectric type cable
Paper lead; not relevant
Self contained; low-pressure oil-filled
Pipe cable; high-pressure oil-filled pipe-type cable

The trouble rates for cable are per 100 circuit-miles, and for joints and terminations are per 1,000 installations. Clearly the cable and joint failure rates are significantly lower for pipe cable than the other types, while the termination failure rate shows no clear advantage for pipe cable. However, Kunitake testified that terminations are relatively easy to repair.

Kunitake testified that PG&E's experience with solid dielectric cables has not been encouraging due to premature failures in lower voltage distribution systems; such failures are occurring after 15 years, half the design life. However, he believes the quality to be adequate for voltages to 60kV; above that voltage, the insulation is subject to degradation by ionization of gases entrapped in the voids of the insulation. This ionization can degrade the insulation and allow treeing which can ultimately cause cable failure. Tests conducted by the Electric Power Research Institute (EPRI) at the Waltz Mill test facility in the 1970's resulted in failure of all cables prematurely. More recently in the early 1980's tests of 138 and 230 kV solid dielectric cables also resulted in premature failures. One conclusion is that American-made solid dielectric cable is not adequate at these voltages, but that some foreign made cables may be adequate; therefore EPRI intends to test them at 230 kV in 1988 at Waltz Mill. The tests are accelerated durability tests that in two years simulate a normal 30-year life cycle, so the results of the 1988 tests should be available in 1990 or later.

PG&E witness McCullough testified regarding land-use impacts, visual effects and costs. His testimony offered examples of development that occurred despite the existence of overhead transmission facilities, a notable example being the Blackhawk subdivision, which has two overhead lines crossing it. McCullough believes that subdivision development is compatible with overhead transmission lines, and that Ruby Hills could be developed reasonably with the proposed project. Since most visual impacts

would be at a distance they would not be significant due to natural shielding and strategic placement of towers. On cross-examination, McCullough stated that he had not talked directly to anyone representing Blackhawk in formulating his conclusion regarding the effects of transmission lines on residential development. Although he testified regarding potential impacts on the Ruby Hills development, "I think that if the towers were in and then this subdivision were constructed , the impact on those would be negligible." (Tr. p. 250), on cross-examination he conceded that "The perception of the vast majority of the people is that they don't like transmission lines, yes." (Tr. p. 251.) Regarding PG&E's decision to not give the Ruby Hills proposal the same treatment as the Kottinger and Lund residential development projects, i.e., undergrounding in the project vicinity to avoid visual and land-use impacts, McCullough stated that Ruby Hills is different. The Kottinger project has an approved Planned Unit Development (PUD), and although the Lund project does not yet have a PUD, or at least didn't at the time of PG&E's selection of the proposed project, it is, in his estimation, very close to receiving approval from the county. Ruby Hills, in his opinion, is speculative since approval would require either changes in existing county planning, changes in zoning, or annexation of this area to the City of Pleasanton. He conceded that zoning laws frequently change and that city boundaries of a growing city such as Pleasanton usually grow or extend over time.

Further testimony of McCullough centered on land acquisition costs, visual impacts of tower placement, and the issue of who should pay for the additional costs of undergrounding the entire route, as in all-U.G. Alternate 4, if that is ordered by the Commission. He believes that those parties who benefit from the undergrounding, should pay the added costs, i.e., "...the City of Pleasanton, the City of Livermore, and the portion of the county

where property owners live where the transmission line would cross." (Tr. p. 338.)

PG&E witness Jones, PG&E's only senior routing engineer, testified regarding effects of overhead transmission lines on residential development. Although he was unsuccessful in contacting Blackhawk representatives, he did talk to another developer, Tassajara Development Corporation (Tassajara) who is developing a parcel adjacent to the transmission corridor. He reported that Tassajara feels that competent architects and designers have many factors to deal with, and things such as orientation of the house can overcome problems such as immediately adjacent visual impacts. Offsetting advantages in developing a home adjacent to a transmission line are open space or green belt in the transmission corridor. Jones investigated parcels adjacent to and away from the transmission corridor regarding assessor valuation to determine if a difference in value was apparent. He found no such difference.

Jones also testified regarding another developer, Braddock and Logan Associates (B&L), who had been in contact with PG&E concerning the possible purchase of a parcel of property owned by PG&E adjacent to a transmission line. The B&L representative indicated to PG&E that the presence of two parallel transmission lines bisecting a development would not have a measureable effect on the selling price of homes in the $200,000 to $300,000 price range in this development.

Jones acknowledged that PG&E's preferred route includes an added $9 million for mitigation by undergrounding 1.6 miles of line, as compared to the cost of an all overhead route, but did not agree that the additional $10 million for undergrounding of the DEIR recommended all-U.G. Alternate 4 could be justified under any assumptions.

2. Division of Ratepayer Advocates

DRA presented four witnesses, beginning with the panel consisting of witnesses Wood and Pereira. The panel testified to

the engineering report and to the report by R. W. Beck and Associates entitled "Technology and Environmental Assessment Guide on Underground High Voltage Power Transmission". The latter report is intended as a generic reference guide for the CPUC, to be used also for other transmission line proceedings.

Pereira testified that the data used by PG&E in evaluating the reliability of solid dielectric cable is not necessarily the best to use since it covers only recent years when the United States has gone through its learning curve, and therefore the data is not comparable with data for the HPOFPT system. He also believes that the LPOF system should be considered for the project. The panel discovered a number of errors in the failure rate data, some of which were corrected on the stand, and others were corrected in the final report.

Witness Trembley sponsored the DEIR; in response to the many comments in public sessions regarding the relative importance of environmental criteria, he explained that the alternatives were ranked for each category on a best to worst basis. Regarding suggestions that relative weighting be used considering the importance of each category, Trembley suggested that such weighting is not practical. The environmental assessment and rankings of the alternates was done without consideration of costs, since although it is easy to express costs for items such as easements or land, "It is quite another thing to give a quantitative figure for the value of an Alameda striped racer, or give a number for the value of a single visual impact." (Tr. p. 447.)

Trembley explained that considering all aspects, the all-U.G. Alternate 4 is preferred and that many of the impacts associated with it are very short term, such as construction, traffic, and noise. All other alternatives have significant unmitigatable visual impacts that occur at the crossings of county designated scenic corridors, i.e., at Vineyard Avenue and at Vallecitos Road.

Witness Russell testified regarding the recommendation of a cost cap based on PG&E's cost estimate for the HPOFPT system. Her recommendation is that if a lower cost alternate is selected, the cost saved can be set aside for contingency in case added maintenance costs result from the alternative undergrounding technology.

She explained that the role of DRA in evaluating an application for CPCN is to evaluate four major factors; need for the project, economics of the project, engineering feasibility, and environmental impacts. Russell also explained that additional impetus for the all-U.G. Alternate 4 is provided by the stated intent of some of the local representatives to encourage development of a tourist attraction centered on the region's wine growing.

Regarding the issue of who should be responsible for the extra costs of undergrounding, Russell testified that if the all-U.G. Alternate 4 is selected, all PG&E ratepayers should share the cost. She testified that DRA gave considerable thought to the issue, but couldn't determine a rational means for any other allocation; "...it would be very difficult to draw an exact line around those people that have a direct benefit from this line going underground. ...you could probably expand it a little beyond the Livermore Valley and the direct communities and in the Bay Area region,...maybe a little beyond that. . . . We did consider earlier in the process trying to find a mechanism of setting up some regional assessment district or something, but we felt that there was no way to determine who those direct beneficiaries were and to try to assign those costs, you know, given the other situations where undergrounding has taken place, that it is just too difficult to do that." (Tr. p. 501, 502.)

3. Wente Brothers Winery, Signature Homes or Signature Properties, and certain Vineyard Avenue Property Owners (Wente)

Wente witness Weissman testified regarding visual impacts and that Alternates 1 and 3 will interfere with development of residential housing. Although the Wente project (Ruby Hills) is not as far along as the two along Route 1, it is being actively developed at this time. In her view, the only environmental difference between the routes is that the timing of development along Alternate 3 is slightly behind Route 1, but the visual and land use impacts are comparable. Weissman pointed out that the photographs with superimposed transmission towers leave out a major feature of the proposal, i.e., access roads necessary to construct and maintain the towers and line.

Weissman believes that the proper way to do a visual analysis is to take photos from every point along the line; the assumption is that if you can see something, it can see you. Furthermore, the photos furnished by PG&E are about a mile away from the transmission line and therefore don't show the impact on possible residents of Ruby Hills who would be much closer.

Weissman testified that she talked to the President of Blackhawk Properties and the Executive Vice-President of Blackhawk Corporation regarding impacts on development and property values of the transmission line crossing that area. They felt that the impact was greatest during the initial sales of the properties, and also indicated the need for substantial changes to the project as a result of the transmission line. Homes adjacent to the transmission line initially sold for 20 to 30% less than comparable homes away from the it, while resales were less affected in price.

Weissman contacted several vineyards, Chateau Souverain, and Wente, whom she is representing, on the impact of overhead transmission lines on viticulture. A number of concerns were expressed including conflict with farm machinery, especially when

vines are replaced, hazard of electrocution of workers, aerial spraying difficulty, effect of herbicides used to control growth in the transmission line corridor, and aesthetics. Aesthetics affects marketability and pricing of varietal wines since the price people are willing to pay for a bottle of wine depends on their perception of the winery itself. Additionally, as related by Mr. Wente to Weissman, publicity by wine journals and magazines is adversely affected due to visual effects of overhead transmission lines.

Weissman believes that the visual impact of the proposed project would be as great on Ruby Hills as it would be on Pleasanton if PG&E were to build the transmission line overhead through Pleasanton, because much of the alignment through Ruby Hills would be part way up the hillside and thus be more visible from the surrounding area.

Wente witness Howerton, a landscape architect and planner, testified that in his experience there would be no reason to spend the time and money that's been spent on the Ruby Hills project if it were not a viable, marketable project. In his view the project should be considered likely to be consumated.

Wente witness Cavagnaro testified that the cost estimates by PG&E for the underground portion are questionable since they vary substantially from the estimates by Beck. For all-U.G. Alternate 4, PG&E estimates labor at $4,001,591, compared to Beck at $6,699,000; material is estimated by PG&E at $8,240,695 compared to Beck's estimate at $4,858,000. Cavagnaro recommends intensive investigation of the rationale and numbers used by PG&E.

4. Signature Properties, Inc., Jack Nicklaus Golf Services, and Wente

Witness Ghielmetti testified that the proposed project would have very significant effects on the proposed development of the Wente properties and surroundings. He believes that the additional $10 million cost for the all-U.G. Alternate 4 is justified for the long-term benefit of the Livermore Valley. Ghielmetti doesn't see undergrounding as a benefit to the Wente property since it would not improve the existing condition, but would merely maintain approximately the status quo. Wente is not interested in sharing the added $10 million cost of undergrounding. The witness indicated a willingness to negotiate underground easements, possibly at no cost to PG&E, and added that if overhead were pursued, potentially costly condemnation procedures could be required.

5. Individuals Representing Themselves

Mr. Lund testified regarding the effect of Alternate 1 on the Lund Ranch, a planned residential development located within the City of Pleasanton. The planned development is in conformance with the City's general plan. Alternate 1 lies within the Lund Ranch along its northwestern border. Lund supports all-U.G. Alternate 4 as an environmentally acceptable alternate benefitting the area and those passing through it.

Mr. Hahner owns 37 acres that he anticipates developing at some time in the future. The PG&E proposed project goes through his property with the transition station located in his front yard. He supports all-U.G. Alternate 4, and believes that traffic and noise impacts of it are overstated in the DEIR as they are short term in nature, compared to the 40- or 50-year life of an overhead transmission line.

Ms. Heinz owns a parcel of 21+ acres and likewise intends to develop it at some future time; her concern regards the

proposed project. Heinz would be willing to dedicate rights of way for either Alternate 3 or all-U.G. Alternate 4.

6. Kottinger Ranch

Mr. Fairfield, a consulting civil engineer for Kottinger Ranch, with considerable experience in CEQA and environmental impact reports, testified concerning visual impacts of Alternate 2. He believes that the top half of the tower exiting the transition station would be visible from many lots of the Kottinger project. He emphasized that the impacts of underground construction are much greater when the construction is done after completion of a residential development project, as compared to before.

Fairfield also testified that he talked to a principal of the Blackhawk Company and was told that lots in close proximity to the transmission line had to be discounted by 20 to 40% to the original builder or homeowner because of negative feelings about transmission lines. He believes that the visual impact of overhead transmission lines on the Kottinger project would be comparable for the Ruby Hills developments, assuming the latter developed in a definable period of time.

7. The City of Pleasanton

Peter MacDonald, City Attorney for the City of Pleasanton, testified regarding the official position of Pleasanton, i.e., that all-U.G. Alternate 4 is the environmentally superior alternative, that 60% U.G. Alternate 3 is marginally acceptable, and the other three alternates are unacceptable in varying degrees. The City is most concerned with the "fertile crescent" as a tourist attraction, and is concerned that overhead transmission lines may disturb the unique setting the area offers.

8. Alameda County

Edward Campbell, an Alameda County Supervisor, was unable to attend the hearings, but filed a late-filed exhibit stating the concerns of the county regarding the "fertile crescent". Alameda County's constituents clearly favor the all-U.G Alternate 4, feeling that overhead towers would have a great negative impact on the natural beauty of the area. This exhibit is a statement rather than sworn testimony and is not given the weight of testimony.

9. Alameda County Flood Control and Water Conservation District

The Alameda Flood Control District did not attend the hearings but sent letters stating concerns about the effect of all-U.G. Alternate 4 on plans to construct a 36-inch water line along the same portion of Vineyard Avenue. This is not evidence but the potential effects will be investigated in the Supplemental EIR.

VIII. Final Environmental Impact Report

The final Environmental Impact Report (FEIR) was issued on October 15, 1987. This document includes a summary of the draft EIR, comments received during the draft review period and public hearings, as well as responses to all comments. Incorporated by reference in the final EIR are the draft EIR, the R. W. Beck Engineering Report, and the R. W. Beck preliminary report

"Technology and Environmental Assessment Guide on Underground High-Voltage Power Transmission" of September, 1987.

The conclusion is the same as in the draft EIR, that significant unavoidable impacts that cannot be mitigated are associated with all DEIR alternates except all-U.G. Alternate 4. Those impacts are visual impacts of transmission lines crossing over scenic roads (Vineyard Avenue and Vallecitos Road). All other impacts can be reduced to moderate, low, or insignificant ratings through mitigation measures. All-U.G. Alternate 4 is the environmentally superior alternative, 60% U.G. Alternate 3 is second best, followed by the other three alternates. Since the all-U.G. Alternate 4 was advanced after environmental field work was underway on the other alternates, it was not possible in the time available to conduct a complete environmental review. Additional environmental work resulting in a supplemental EIR will be required, if all-U.G. Alternate 4 is selected.

Comments on the FEIR were received from several parties who repeat the comments they furnished on the DEIR, that the categories of impacts should be weighed. We conclude that the explanation of relative importance of the categories adequately considers that issue. The other major comment on the FEIR is from the Alameda County Flood Control and Water Conservation District (Flood Control) repeating the concern they expressed by letter about the impact the all-U.G. Alternate 4 route would have on construction of the Zone 7 proposed 36-inch Vineyard Pipeline, a water line. Flood Control is concerned that the route and construction of the pipeline may be severely hampered by the location of the underground transmission line, resulting in potential substantial cost escalation. We will order the Supplemental EIR for all-U.G. Alternate 4 to consider this issue.

Because of the need for a Supplemental EIR for all-U.G. Alternate 4 if it is approved, the FEIR will not be a complete document complying with CEQA until the Supplemental EIR is completed and adopted.

IX. Discussion

A. Need for the Project

The applicant, DEIR, and parties agree that there is a need for additional electrical capacity to serve this growing area. No party offered reasonable alternates to expanding the transmission capacity except for the PG&E alternate of expanding the San Ramon substation, which could be more cost-effective but might offer less reliability than the proposed transmission line. However, PG&E has not offered evidence on the comparative reliabilities, comparative cost, or cost effectiveness of alternate levels of reliability for the Pleasanton area.

The Pleasanton area is situated strategically both as a bedroom community and as a hub for commercial and business park development due to its location near the junction of two major freeways, Interstate Routes 580 and 680. Growth in electrical load has been 9 MW per year recently, and that trend is expected to continue in the foreseeable future. Concern has been expressed by the cities about reliability of electric service, an important consideration for commercial and business park development.

We conclude that an upgrade of electrical capability to Pleasanton is needed.

B. CEQA

The California Environmental Quality Act requires in Section 21081 that "no public agency shall approve or carry out a project for which an environmental impact report has been completed which identifies one or more significant effects thereof unless such public agency makes one, or more, of the following findings:

> "(a) Changes or alterations have been required in, or incorporated into, such project which mitigate or avoid the significant environmental effects thereof as identified in the completed environmental impact report..."

* * *

"(c) Specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives identified in the environmental impact report." (Emphasis added.)

C. Selection of Route Alternate

The five alternates to the proposed project considered in the draft EIR and final EIR include the two Route 1 options in the PEA, Alternates 1 and 2. Two additional alternates are a variation of the Route 3 option having additional undergrounding (60%), the all-U.G. Route 4, and the no project alternate. Those five alternates are:

Proposed project: Route 3, Option 1
Alternate 1: Route 1, Option 1
Alternate 2: Route 1, Option 2
Alternate 3: Route 3, Option 2 (60% U.G.)
Alternate 4: Route 4 (all-U.G.)
Alternate 5: no project

We note at the outset that PG&E could have provided more sufficient justification for choosing between the various alternatives in this case on environmental grounds and has not adequately defined other alternatives to the proposed project which are comparable in cost to Alternatives 2, 3, and 4.

1. The proposed project, Route 3, Option 1, generated significant controversy regarding the two environmental areas of greatest concern, visual quality and land use, with visual quality as the predominant consideration. Extensive testimony of DRA and consultants, property owners, public officials, developers, planners and other experts, and local citizens all express considerable concern about the impact of overhead transmission towers and lines on this unique area referred to as the Fertile Crescent. The cities of Pleasanton and Livermore, Wente, and other parties mention potential plans for development of a tourist

attraction similar to Silverado in the Napa Valley. In their view, overhead transmission facilities are not compatible or desirable with such uses. Property owners and developers fear that overhead transmission lines will reduce the desirability of their property and development, both by rendering some portion unusable for development and by degradation of the natural beauty of this unique area. Concern was expressed by many parties over the visual impact of transmission lines crossing County designated scenic roads.

PG&E defends the proposed project as adequately protecting the environment by undergrounding the 1.6 miles proposed, and believes that any further undergrounding is not justified unless the affected or benefited parties are willing to pay the added costs. In PG&E's view, Ruby Hills is a speculative and uncertain development. However, it could be developed reasonably with the proposed project, since subdivisions are compatible with overhead transmission lines and most visual impacts are minor due to the great distance of the observer from the line.

Giving due consideration to the evidence, we disagree that Ruby Hills is a speculative or unlikely development even though some changes in zoning or city boundaries are required before it can be approved. Changes of this type are not unusual, especially in rapidly growing areas, and there has been no indication in this proceeding of any attempt to slow or stop growth in the Pleasanton area. The changes could delay the development, but the intent and commitment by Wente to developing the project would indicate probable success of Ruby Hills or a similar development, by Wente or others. We strongly disagree with PG&E's treatment of the Wente potential development as unlikely and unworthy of the same consideration, i.e., undergrounding, given the Kottinger and Lund development projects. In our view, the fact that Ruby Hills is behind the schedule of development for Lund and Kottinger is not significant when compared to the visual impact (and land use impact) of transmission towers and lines with an

expected life of 50 years. PG&E's arguments that overhead transmission lines and residential development are not only compatible but a fact of life are not convincing. The example of the Blackhawk project merely shows that if an overhead transmission line is already in place, development can still occur, but not necessarily as well as if the line were underground. If PG&E's contention is valid, seemingly most of the undergrounding in PG&E's proposed project could have been avoided. However, PG&E doesn't see an all-overhead alternate as viable, and proposes a project that includes $9 million added costs for undergrounding. We agree that all-overhead is not viable for this project. We similarly don't see overhead as viable in the vicinity of the Wente property and at the two crossings of County designated Scenic Roads.

2. Alternate 1: Route 1, Option 1 has a number of environmental impacts that are greater than the proposed project, although most others are the same or similar to it. The greater impacts are included in all the general environmental categories: land use compatibility, visual quality, biotic factors, geology, and traffic and construction. It ranks worst of the alternates in the first two categories, and inferior to the proposed project in all categories. Some of the reasons for higher impacts are the amount of access roads required, 27,000 feet, causing damage to marsh and potential loss of trees, local adverse impacts on land use planning, visual impacts of the transition station and five towers on the Kottinger Ranch and existing homes to the northwest. Additional impacts are the effects on development of some of the Lund Ranch lots, towers visible from the Alameda County fairgrounds and the Pleasanton Ridge, and some southerly towers are skylighted, i.e., are silhouetted against the sky and as a result are clearly visible even at a distance. The transition station is visible from portions of the Lund property. Because of all these impacts, and

since other alternates have reduced impacts, we conclude that this alternate does not warrant further consideration for this project.

3. Alternate 2: Route 1, Option 2 was developed in the DEIR as an attempt to mitigate the visual impacts of Alternate 1, through additional undergrounding and relocation of the transition station, at an additional cost of $2 million. Although significant improvements resulted, this alternate is still rated worse than the PG&E proposed project in all five major categories. Compared to Alternate 1, Alternate 2 has less impact in land use compatibility and visual quality, but greater impact in biotic factors, geology, and traffic and construction. Some of the areas of concern are loss of woodland, visibility of the transition station and a tower from the Kottinger Ranch, and some skylighted towers. Skylighting is a particular concern to the City of Pleasanton, as it wishes to maintain an uncluttered skyline view. For this reason it required Kottinger Ranch to revise its development to eliminate lots where homes could be built on the skyline.

The results of Alternate 2 seem to indicate that the improvements achieved were at the expense of other environmental considerations. The net result is an alternate with significant impacts, very similar to Alternate 1; we therefore conclude that this alternate also does not warrant further consideration.

4. 60% U.G. Alternate 3 is a variation of PG&E's proposed project with two miles of additional undergrounding and an added cost of $5 million. It has less impact than the proposed project in three categories, land use, visual quality, and biotic factors while it has a greater impact only in traffic and construction. Among the alternatives it ranks second to the all-U.G. Alternate 4 in the categories deemed most important by the participants in this proceeding, i. e., land use and visual quality. The added undergrounding eliminates the overhead crossing of Vineyard Avenue, but the overhead section still crosses Vallecitos Road. Transition Station T5A would have visual impact on existing rural residential

and possible future Wente homes, and the overhead towers would have the same impact as this section of the proposed project. The additional undergrounding to the southwest of the Ruby Hill winery site might eliminate the need for Federal Aviation Administration (FAA) referral and attendant potential for significant adverse impacts on air navigation and safety. The segment of the alternate south of the transition station could cause significant adverse impacts on the City of Pleasanton General Plan Conservation and Open Space Element Programs due to the amount of land needed for overhead rights of way and access roads.

Although 60% U.G. Alternate 3 has the least impacts of all alternates having overhead portions, it has greater impacts than the all-U.G. Alternate 4. However, it cannot be dismissed as a potentially viable alternate until other aspects as cost and mitigation of impacts are considered further, especially in view of PG&E's strong contention that the extra cost of all-U.G. Alternate 4 is not justified and can't be sustained by PG&E's ratepayers as a whole in this period of competition in supplying electricity.

5. All-U.G. Alternate 4 is the all underground route that costs about $10 million more than the proposed project and eliminates the land use and visual impacts that are associated in varying degrees with all the other alternates. It was developed by DRA as a means of alleviating public concerns over those impacts. Of the five broad environmental categories, all-U.G. Alternate 4 has the least impacts in land use, visual quality, and geology, the greatest impact in traffic and construction, and middle impact in biotic. Traffic and construction is a short-term impact and it is not a major concern to the parties in this proceeding.

6. Alternate 5 is the no-project alternate. Given our conclusions under the need section, we conclude that a no-project alternate is not viable and will not further consider Alternate 5.

We now focus on all-U.G. Alternate 4 recommended in the FEIR and the 60% U.G. Alternate 3. The area of controversy is

whether all-U.G. Alternate 4 is required or justified considering the additional cost of about $10 million more than the PG&E proposed project, and $5 million more than 60% U.G. Alternate 3. All parties except PG&E believe that the added cost is either warranted or required under CEQA. PG&E strongly supports its proposed project, stating that added undergrounding is not justified given the speculative or uncertain nature of the potential Ruby Hills development. Additionally, PG&E is concerned with minimizing costs in order to keep rates as low as possible to minimize the threat of bypass by existing or potential PG&E customers.

The impacts caused by the proposed project and 60% U.G. Alternate 3 are similar except that the former has additional impacts in the area where it is overhead and the latter is underground. If we were to approve an alternate containing an overhead portion it likely would be Alternate 3, assuming the additional $5 million over the PG&E proposed project were justified or necessary under CEQA.

Next we compare 60% U.G. Alternate 3 to all-U.G. Alternate 4. The major impacts caused by Alternate 3 that are substantially eliminated or reduced to acceptable levels in all-U.G. Alternate 4 are land use and visual impacts. Land use impacts are associated with new residential development and with regional development plans. Residential development is adversely affected by land needed for the overhead transmission line corridor, the resulting views from residences, the access roads required for maintenance, and the broad public perception that nearby overhead transmission lines are not desirable. The latter causes a probable reduction in property values, especially in original sales, a primary concern of developers considering feasibility of development.

We are convinced that in the foreseeable future development will occur at a steady pace in the Pleasanton area.

Testimony about development pressures due to the proximity of Interstate Freeways 580 and 680, and the recent history of growth convince us that the Wente property is likely to develop, whether by Wente or others. Equally important is the fact that development underway or planned for this area is being done in an environmentally sensitive manner emphasizing the picturesque rural nature of the area. This leads into the next concern.

Visual impacts are a concern of substantially all parties to the proceeding, relating to planned new development, existing homes, scenic roads, and the general character of the "fertile crescent" area.

From the standpoint of regional development an overhead transmission line detracts from the picturesque nature of the area, and would make development of a tourist attraction similar to Silverado in the Napa valley a more difficult and probably less successful venture. Even without that type of development the proposed project would visually impact people visiting the area as well as those residing there. This application for CPCN is an opportunity to protect a unique area from avoidable significant environmental impacts. On the other hand, given the large towers and high voltage lines (Tesla-Newark) on the ridge over Vallecitos Road, we are not entirely convinced that in fact the overhead section resulting from construction of the 60% Alternate 3 creates an additional "significant" visual/environmental impact. In this regard, we believe that PG&E has not provided sufficient evidence to make better comparisons between alternative routes. Although we applaud PG&E for its concern with minimizing costs in general, we must rely upon the record in this proceeding in weighing the added costs against the relevant environmental factors.

All-U.G. Alternate 4 has a cost approximately $5 million greater than 60% U.G. Alternate 3 and $10 million greater than the PG&E proposed project. Saving $5 million in our view does not satisfy the CEQA requirements that would allow significant

environmental impacts to remain because of specific economic factors making mitigation infeasible. PG&E has not made an adequate showing that the $10 million additional cost of all-U.G. Alternate 4 over its proposed project would cause such effects; we conclude that the $5 million additional cost of all-U.G. Alternate 4 over 60% U.G. Alternate 3 would cause even less significant economic effects. The final EIR clearly indicates that total undergrounding is required to mitigate significant unavoidable impacts. Therefore, all-U.G. Alternate 4 is the environmentally superior alternate, given the record in this case.

As we indicated earlier, PG&E stated that upgrading the San Ramon substation might be preferrable to all-U.G. Alternate 4 with its added $10 million cost compared to the proposed project. We will order PG&E to provide a cost-benefit analysis comparing the upgrade of the substation to all-U.G. Alternate 4. PG&E may petition the Commission to modify this decision and reopen this proceeding if they so chose to provide additional evidence on the relative environmental merits of alternative routes and on other alternatives to this transmission project.

D. Mitigation Measures for All-U.G. Alternate 4

Mitigation measures are identified in the DEIR and adopted in the FEIR to reduce or avoid significant impacts in the environmental categories that follow:

Wildlife

A preconstruction survey is needed to determine presence and location of nesting raptors, nesting burrowing owls, active kit fox dens, and coastal sage scrub.

If raptors nest in the area route the line to avoid the nest sites and seasonal restrictions placed on construction to minimize interference with courtship, nest building and incubation.

Route to avoid riparian areas and coastal sage scrub, and make maximum use of existing roads and trails.

If burrowing owls nest in the area, PG&E should avoid the nest sites, and should leave mounds of dirt from construction and maintenance in the areas if doing so doesn't cause maintenance or health hazards.

Seasonal restriction on construction in Arroya del Valle Creek are needed to minimize interference with migration of fish and breeding of fish and wildlife. Revegetate of disturbed areas in consultation with the California Department of Fish and Game. Revegetate disturbed vegetation sites with native plant species that have value as food and cover for wildlife.

Geotechnical

Have a geotechnical engineer define liquefaction and lateral spreading potential and comply with his recommendations for mitigation.

Land Use and Regulatory Policies

Appropriate uses need to be determined for the portion of the substation site not developed as part of the project, consistent with the City of Pleasanton's General Plan. Prescriptive rights of access across the southern portion of the substation site may exist; if so dedication of a portion of the site as a trail may be needed to allow public access to continue. This should be coordinated with the City of Pleasanton.

Traffic and Construction

Coordination of underground construction with the City of Pleasanton and Alameda County is necessary to plan construction phasing and traffic detours to minimize traffic disruption.

Visual Quality

The transition station needs to be positioned to maximize terrain screening, with buffer landscaping including large specimen trees and earth berms added after construction.

Cultural Resources

Surface inspection during the detailed archaeological survey may indicate the need for auguring to determine if

unrecorded cultural resources exist along the route. Mitigation should be determined by a qualified archaeologist.

The mitigation measures identified are reasonable and will be adopted as conditions to the CPCN.

E. Responsibility for the Additional Cost of the Undergrounding

We now deal with the issue of financial responsibility for the added cost of all-U.G. Alternate 4.

The issue of responsibility for added costs of undergrounding is a complex one with potential inequities. For example, is it reasonable to charge Wente for a portion of the extra $5 million cost of undergrounding in all-U.G. Alternate 4 compared to Alternate 3? Should Kottinger Ranch and Lund Ranch share in the added $9 million cost of PG&E's proposed project over an all overhead alternate? How much of either or both of these costs should the cities of Pleasanton and Livermore share? How should the County of Alameda share, i.e. all the county, or only that portion in reasonable proximity to the project? How will future developments and residents share these added costs that will environmentally benefit the area for perhaps 50 years? Should visitors and tourists share directly or indirectly in these costs?

Although the Commission will consider methods for equitable sharing of added costs of undergrounding in the future, we are convinced that at this time no such method has been developed. We invite the Commission Advisory and Compliance Division to advise us by memorandum of the scope of this issue, including other options for having certain additional costs borne by local entities directly benefitting. We especially seek advice on the how we might address the local option issue and how it may be raised in the future. In the instant proceeding, we will treat the added undergrounding costs the same as other reasonable project costs, to be ultimately shared by all ratepayers.

F. Cost-Effectiveness, Cost Allocation, and Reliability Determinations

This proceeding has presented the Commission with a number of very difficult issues related to the level of reliability needed, the cost-effectiveness of the project given the cost of undergrounding, the benefits which flow to surrounding landowners from undergrounding, the alternative routes and options proposed, and the allocation of costs for additional undergrounding. We believe that PG&E could have defined other less expensive alternatives to the All U.G. Alternate 4, but did not do so.

The issues raised in this proceeding on responsibility for additional costs of undergrounding and the related issue of the proper and desired level of reliability and service quality are of great interest to the Commission. We expect to address these issues more fully in specific applications involving the major electric utilities. We expect the parties, including DRA, to address the following two issues:

- How should the Commission more specifically define reliability and service quality as related to electric transmission and distribution projects in order to more closely meet customer preferences regarding cost and service level?

- How should the costs of reliability requirements and environmental mitigation be allocated among customers?

In the context of specific applications we hope to develop guidelines for future application to proceedings such as this.

G. Technologies for Undergrounding

DRA recommendation that a Project Construction Board be appointed by the Commission to evaluate the alternate underground technologies possible for the Vineyard project deserves consideration along with the information presented on those technologies. The information indicates a significant level of

uncertainty regarding the reliability and durability of the alternate underground technologies, as shown on the Trouble Rate Table 10 above.

Testimony by DRA consultants Pereira and Wood attempts to minimize the importance of the comparative data, but they offer no better means of comparison. Pereira's contention is that utilities were going through a learning curve with alternate technologies which now may be comparably reliable is speculative and without foundation in test results or in actual field experience in the United States. Reliability data from other countries is difficult to compare to that of the United States since outage criteria are not identical, and language barriers add a level of uncertainty in understanding the data and underlying assumptions.

PG&E witness Kunitake presented the most up-to-date information on testing of solid dielectric cable conducted by EPRI at the Waltz Mill test facility. Tests to date have resulted in consistently premature failures; another set of tests are scheduled to be started in 1988 and will conclude in 1990. Those tests will evaluate foreign manufactured cable, since other countries such as France and Japan appear to have better experience with this technology, indicating that they may have better mastered the manufacturing and/or quality control processes. We are convinced that at the present time solid dielectric cable is not a viable technology for this project, and that further evaluation of the technology is not warranted at this time. PG&E is encouraged to continue to monitor test results and evaluate the feasibility of solid dielectric cable for new installations.

The other alternate technology proposed in the DEIR to be considered is LPOF cable, which has potential advantages of lower initial cost and less oil spill volume in the event of a rupture or leak. Regarding cost, testimony by Kunitake points out that a major element of cost saving for this technology results from not using pipe as is used for the high-pressure oil- filled pipe-type

system. Kunitake recommends that if the LPOF system is used, it be installed in pipe for increased reliability since the oil would otherwise be contained in a lead sheath which is weak and subject to fatigue failure. Additionally, the pipe provides better protection against damage from digging, backhoes, etc. Although Kunitake had no detailed, accurate cost information, his opinion is that costs would be close between HPOFPT and LPOF if the low-pressure system were installed in pipe. The additional cost of installing the LPOF system in pipe appears justified given the consequences of outages of underground transmission lines, especially with regard to the length of time needed to repair it. Although such an outage doesn't necessarily imply a service outage, at times an outage could result, especially if problems occurred concurrently on other systems supplying the electricity.

Testimony by both DRA and PG&E convinces us that we can depend on the excellent service reliability of the system most used by PG&E, the HPOFPT system. Kunitake testified that the company has not experienced a single failure of this technology which is in very widespread use (Tr. p. 199). The average age of the HPOFPT system in service on the PG&E system is 25 years. Although the LPOF is an older technology than HPOFPT, it has not been in widespread use so it is not likely that we will have enough added experience with it in the near future to determine comparative reliability.

Also worth noting is that PG&E is totally familiar with all aspects of installation and maintenance of the high-pressure system. We see no probable advantage to the ratepayer in further considering the LPOF system for this project. Perhaps in the future other technologies may offer potentially worthwhile savings or other advantages, but at present we will not risk compromising service reliability for questionable benefits.

In summary, since solid dielectric and LPOF technologies do not offer advantages over the HPOFPT system proposed for

underground use by PG&E, we conclude that there is no need to employ the Board recommended by DRA to evaluate alternate underground technologies for this project.

H. Comments

Comments on the proposed decision were filed by DRA, PG&E and Wente. Some attempts were made to relitigate issues. In addition, the comments of DRA and PG&E pointed out a technical mischaracterization of treeing and tree root intrusion which has been corrected. DRA also pointed out that SF6 gas insulated cable and nitrogen gas insulated cable were not recommended for evaluation although they were mentioned in the R. W. Beck report, "Technology and Environmental Assessment Guide Underground HV Power Transmission."

The references to SF6 gas insulated cable and nitrogen gas insulated cable have been removed.

Both DRA and PG&E requested additional time for compliance items in the ordering paragraphs, with the resulting extension of CPCN expiration date. Additional time has been granted in the proposed decision.

PG&E points out that the Commission cannot order compliance with a future supplemental EIR until it is adopted. The relevant language has been revised to properly reflect this point.

Other nonsubstantive editorial changes have also been made in the proposed decision.

Findings of Fact

1. PG&E filed an application for a certificate of public convenience and necessity on October 1, 1986 for authority to construct, operate, and maintain a 230 kV transmission line from PG&E's Tesla-Newark 230 kV transmission line to the proposed Vineyard substation in Alameda County.

2. Load growth in the Pleasanton area recently has been and is expected to continue at the rate of approximately 9.0 MW per year.

3. The present transmission system serving the Pleasanton area will be deficient by around 1990.

4. The proposed project will upgrade the present transmission system adequately to serve the expected maximum future load of the Pleasanton area.

5. The proposed project consists of four main parts:

- Vineyard substation on Stanley Boulevard near the Valley Avenue extension in Pleasanton.
- 1.6 miles of underground 230 kV transmission line from Vineyard substation to a transition station.
- A transition station to convert from underground to overhead located near the Arroyo del Valle gravel quarry.
- 3.7 miles of overhead 230 kV transmission line from the transition station to a junction with the existing Tesla-Newark transmission line south of Vallecitos Road.

6. PG&E proposes to use conventional technologies including HPOFPT cable for the underground section, and steel lattice type towers for the overhead section.

7. PG&E indicated that it may consider expanding the San Ramon substation instead of constructing the all-U.G. Alternate 4 transmission system.

8. Expanding the San Ramon substation or other project alternatives may offer benefits or shortcomings as compared to constructing the all-U.G. Alternate 4 transmission system.

9. DRA recommends that a Project Construction Board be appointed by the Commission to evaluate alternate underground technologies.

10. PG&E has not experienced any failures in its high-pressure oil-filled system which is in widespread use.

11. The two major concerns of the parties regarding the proposed project are visual impact and land use impact.

12. The Commission issued a draft Environmental Impact Report (DEIR) on July 20, 1987 as lead agency under CEQA.

13. The DEIR determined all-U.G. Alternate 4 to be the environmentally superior alternate for the project.

14. At the public hearings, all parties except PG&E supported the all-U.G. Alternate 4.

15. Four days of evidentiary hearings were held in San Francisco on September 28, 29, 30 and October 1, 1987.

16. At the evidentiary hearings all witnesses except for PG&E supported all-U.G. Alternate 4 as appropriate to mitigate visual and land use impacts.

17. PG&E opposes undergrounding beyond the 1.6 miles recommended to be undergrounded in the proposed project, as not being justified considering the additional cost.

18. All DEIR alternates except all-U.G. Alternate 4 have one or more significant environmental effects that can't be mitigated to lesser levels.

19. The Commission's DRA issued a final environmental impact report (FEIR) on October 15, 1987 as lead agency under CEQA. The FEIR adopted the conclusions of the DEIR.

20. A number of parties indicated potential plans for a tourist attraction in the "fertile crescent" of the Pleasanton-Livermore area of Alameda County.

21. PG&E recommends that if all-U.G. Alternate 4 is certificated, the local parties who benefit from the added undergrounding pay the added costs of it.

22. The Commission intends to include in future proceedings the issues of reliability and service quality related to electric transmission projects, and asks for advice from CACD on allocation of costs of reliability requirements and environmental mitigation among customers.

23. PG&E may petition to modify and reopen this proceeding.

Conclusions of Law

1. The Pleasanton area requires upgraded electrical facilities by 1990 to meet growth in electrical demand.

2. PG&E should evaluate the costs and benefits of the approved project compared to expansion of the San Ramon substation and other project alternates before commencing construction.

3. A supplemental EIR is required for all-U.G. Alternate 4.

4. Alternate technologies for underground transmission do not at this time offer potential for significant advantages over the HPOFPT cable system proposed by PG&E for underground use.

5. The HPOFPT cable system proposed by applicant for the underground section has proven extremely reliable and is the appropriate technology for this project.

6. It is not appropriate to appoint a Project Construction Board to evaluate alternate underground technologies for this project.

7. The economics of all-U.G. Alternate 4 do not make it infeasible under the CEQA.

INTERIM ORDER

IT IS ORDERED that:

1. A certificate of public convenience and necessity is granted to Pacific Gas and Electric Company (PG&E) to construct, operate, and maintain the all-U.G. Alternate 4 variation of the proposed project, subject to the following conditions:

   a. PG&E is ordered to comply with the mitigation measures contained in the Final Environmental Impact Report and in this opinion.

   b. PG&E is ordered to comply with the mitigation measures contained in the Supplemental Environmental Impact Report that will be prepared on the approved all-U.G. Alternate 4, to the extent they are adopted by the Commission.

2. PG&E is ordered to prepare a study comparing the economics and operational considerations of all-U.G. Alternate 4 with the expansion of the San Ramon substation alternate. This study shall be coordinated with DRA regarding scope and DRA needs for information to prepare the supplemental EIR, and served on the Commission and all parties to the proceeding within 180 days of the effective date of this order.

3. The Commission's Division of Ratepayer Advocates (DRA) shall prepare and submit to all parties of record in this proceeding a supplemental environmental impact report (EIR) on all-U.G. Alternate 4 within 90 days of receipt of all-U.G. Alternate 4 route information from PG&E. The supplemental EIR shall include consideration of impacts on the Alameda County Flood Control and Water Conservation District plans to construct a new water line along a portion of this project.

4. PG&E shall submit an updated cost estimate for all-U.G. Alternate 4 reflecting the supplemental EIR mitigation measures, final design criteria, and any revisions to project costs resulting from the conditions in this order, within 90 days of receipt of the supplemental EIR.

5. DRA shall evaluate and recommend to the Commission on the reasonableness of the PG&E updated cost estimate within 60 days of receipt of the estimate.

6. The authorization granted in this decision shall expire if construction is not commenced within two years of the effective date of this order.

7. The Executive Director of the Commission shall file a Notice of Determination for the project as set forth in Appendix A to this decision with the Secretary for Resources.

8. The application is granted as set forth above.

This order is effective today.

Dated January 28, 1988, at San Francisco, California.

STANLEY W. HULETT
President
DONALD VIAL
FREDERICK R. DUDA
G. MITCHELL WILK
JOHN B. OHANIAN
Commissioners

I CERTIFY THAT THIS DECISION WAS APPROVED BY THE ABOVE COMMISSIONERS TODAY.

Victor Weisser, Executive Director

APPENDIX A
NOTICE OF DETERMINATION

TO: Secretary for Resources
1416 9th St., Room 1312
Sacramento, CA 95814

FROM: Calif. Public Utilities Comm.
350 McAllister Street
San Francisco, CA 94102

SUBJECT: Filing of Notice of Determination in compliance with Section 21008 or 21152 of the Public Resources Code.

PROJECT TITLE: 230 kV Transmission Line from Vineyard Substation to the PG&E Tesla-Newark 230 kV Transmission Line

STATE CLEARINGHOUSE NUMBER: N/A

CONTACT PERSON: Elaine Russell

PROJECT LOCATION: City of Pleasanton and Alameda County, California.

PROJECT DESCRIPTION: Vineyard Substation, 5.6 miles of underground 230 kV transmission line, and an underground to overhead transition station, and an overhead connection to the Tesla-Newark 230 kV transmission line.

This is to advise that the California Public Utilities Commission, as Lead Agency, has approved the above-mentioned project and has made the following determinations regarding the above-mentioned project:

1. The project will not have a significant effect on the environment.

2. A Final Environmental (Impact Report) was prepared for this project pursuant to the provisions of CEQA. A copy of the Final Environmental may be obtained at 1107 9th Street, Suite 710, Sacramento, CA 95814.

3. Mitigation measures were made a condition of the approval of this project.

4. A Statement of Overriding Consideration was not adopted for this project.

DATE RECEIVED FOR FILING _____

PROPOSED APPROVAL

_____
EXECUTIVE DIRECTOR

Date: _____

ALJ/WRS/fs

Decision _____

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

In the Matter of the Application of Pacific Gas and Electric Company for a certificate of public convenience and necessity under Section 1001 of the California Public Utilities Commission General Order No. 131-C, authorizing the construction, operation and maintenance of a 230 KV transmission line from applicant's Tesla-Newark 230 kV transmission line to applicant's Vineyard Substation in Alameda County. (U39E)	)	Application 86-10-006 (Filed October 1, 1986)

Howard V. Golub, Roger J. Peters, and Mark R. Huffman, Attorneys at Law, for Pacific Gas and Electric Company, applicant.

David F. Adams, Assistant to the City Manager, for City of Livermore; Peter MacDonald, Attorney at Law, for the City of Pleasanton; and Farrow, Schildhause & Wilson; by Anne Ronan, Attorney at Law, for Wayne Hahner, Pamela and Richard Corbett, Robert and Sharon Heinz, Brian and Mei-Laing Lin; protestants.

Armour, St. John, Wilcox, Goodin & Schlotz, by James Squeri and David A. Simpson, Attorneys at Law, for Wente Bros.; Brobeck, Phleger & Harrison, by Gordon E. Davis, Attorney at Law, for Kottinger Ranch and Victor Lund, Jr.; and Alannah Kinser, for the Public Advisor's Office; interested parties.

Kathleen Kiernan-Harrington and Elaine Russell, Attorneys at Law, and Donna Orebic, for the Division of Ratepayer Advocates.

I N D E X

INTERIM OPINION

Summary

This decision grants Pacific Gas and Electric Company (PG&E) a certificate of public convenience and necessity (CPCN) to construct the Vineyard transmission system which includes the Vineyard substation on Stanley Boulevard in Pleasanton, 5.6 miles of all-underground 230 kilovolt (kV) transmission line from the Vineyard Substation generally southeasterly to a transition station where the line converts to overhead and connects with the existing Tesla-Newark 230 kV transmission line south of State Route 84 (Vallecitos Road). The cost estimated by PG&E is $31 million, or $10 more than the proposed project which would have had only 1.6 miles underground. Undergrounding is necessary under the California Environmental Quality Act to avoid significant visual and land use impacts at crossings of Alameda County designated Scenic Roads and in areas of planned residential development. The decision orders the Division of Ratepayer Advocates (DRA) to prepare a supplemental Environmental Impact Report on the approved all-underground Alternate 4. PG&E is ordered to prepare an updated cost estimate on Alternate 4, and is further ordered to prepare a study comparing the economics and operational considerations of Alternate 4 with expansion of the San Ramon substation. DRA is to report on the reasonableness of the updated PG&E cost estimate.

I. Filing

On October 1, 1986, PG&E filed this application seeking a CPCN under Section 1001 of the California Public Utilities (PU) Code and under the Commission's General Order (GO) 131-C and Rules 17.1 and 18 for authority to construct, operate, and maintain

a 230 (kV) transmission line from PG&E's Tesla-Newark 230 kV transmission line to the proposed Vineyard substation in Alameda County.

Section 1001 requires that before construction of facilities as herein addressed, the utility must obtain from the Commission a certificate "that the present or future public convenience and necessity require or will require such construction". GO 131-C sets forth detailed rules for filing a CPCN application, required for transmission line additions operating above 200 kV. GO 131-C also addresses environmental requirements; a final Environmental Impact Report (EIR) or Negative Declaration is required; and where the Commission is the lead agency under California Environmental Quality Act (CEQA), Rule 17.1 applies.

Rule 17.1 requires a Proponent's Environmental Assessment (PEA) to be filed with the application for CPCN. The PEA is intended as a guide to assist in the initial evaluation of impacts of the project and in determining whether a Negative Declaration or Environmental Impact Report is required under CEQA.

Rule 18 sets out in more detail other filing requirements including utility financial information.

PG&E submitted the PEA with the application, identifying potentially significant project environmental effects as follows:

- Effects on unknown cultural and biological resources in the construction area.
- Effects on traffic during construction of the underground section.
- Effect on views after the overhead line is constructed.

III. Public Involvement

Significant public interest in the project developed early and continued throughout the certification process. A number of types of public involvement occurred, including parties with intervenor status who filed legal briefs and sponsored witnesses, cross-examined other parties' witnesses, or offered statements and letters from parties including local agencies and citizen groups in response to the CPUC's Notice of Preparation and EIR;

A number of public forums were conducted to elicit public input, including a public scoping meeting on February 4, 1987 in Pleasanton the Notice of Preparation of the Environmental Impact Report on February 9, 1987 and a public workshop on May 18, 1987 in Pleasanton, Public Hearings in Pleasanton on August 25, and in San Francisco on August 26, 1987 and evidentiary hearings on September 28, 29, 30 and October 1, 1987 in San Francisco in the Commission Courtroom.

IV. Application Summary and Recommendations

The application's main features can be summarized as follows:

A. Need for the Project

PG&E states that the Pleasanton area "has been the focus of substantial commercial and business park development." PG&E estimates that the area's load growth will continue at the recent rate of 9.0 megawatts (MW) per year. As a result, the capacity of the present system has nearly been reached, necessitating upgrading of the present transmission system serving the Pleasanton area distribution system by 1989.

B. Description of the Project

PG&E's study concluded that the proposed project is the most effective means of meeting that need. The proposed project

CORRECTION

THIS DOCUMENT HAS

BEEN REPHOTOGRAPHED

TO ASSURE

LEGIBILITY

consists of construction of the proposed Vineyard Substation and the Vineyard 230 kV transmission line, which will carry electricity from PG&E's existing Tesla-Newark 230 kV transmission line to the Vineyard Substation. The 21 kV distribution system carries electricity from the substation to the customers.

The Vineyard Transmission Line proposal is located within the jurisdictions of Alameda County (Alameda) and the City of Pleasanton (Pleasanton), and consists of 1.6 miles of underground 230 kV transmission line and 3.7 miles of overhead 230 kV transmission line for a total length of 5.3 miles. Approximately 30% of the length or 1.6 miles is proposed to underground.

C. Components

PG&E considers the project to have four separate components:

- The Vineyard Substation
- The 230 kV underground transmission line
- An underground to overhead transition station
- The 230 kV overhead transmission line

PG&E proposes to use conventional technologies for this project, including:

> Vineyard substation is proposed to be approximately 400 by 420 feet, constructed on the leveled quarry site and landscaped to minimize visual impact. It is to consist of two 230 kV underground cable terminations, two 230 kV power circuit breakers, one 230/21 kV transformer, two 21 kV pothead foundations, and a control building;
>
> The underground portion of the line is proposed to use high-pressure oil-filled pipe-type (HPOPPT) cable circuits; each 230 kV circuit consists of three underground cables encased in an 8-5/8 inch oil-filled pipe, pressurized to 200 psig with pretreated electrical insulating oil, buried in trenches 4 to 6 feet deep and 20 feet apart. A pressurization plant will be installed at the Vineyard substation to

maintain proper oil pressure. Manholes will be placed at intervals of 1,000 to 3,500 feet for installing and joining cables.

The overhead to underground transition station is located in a 150 by 150 foot fenced in area, constructed on fill, and comprised of a control building, dead-end termination structures, potheads (termination of overhead 230 kV lines), 230 kV disconnect switches, surge arrestors, and coupling capacitor voltage transformers. The station is to be painted and landscaped.

The overhead portion of the line is a double-circuit 230 kV tower line with 1,113 kcmil aluminum non-specular conductors. Towers are galvanized steel lattice type ranging from 100 to 175 feet high, with a base of 25 to 30 feet on a side. Each leg is supported by a concrete foundation; spans range from 700 to 1,400 feet with an average of 1,200 feet.

D. Proponent's Environmental Assessment

The Proponent's Environmental Assessment (PEA) identified several potential environmental impacts as well as mitigation measures. Following is a summary of those impacts and proposed mitigation:

1. Cultural Resources

No known cultural resources were identified, however, unknown cultural resources could be affected by the construction activities. As a result, when actual locations are determined for roads, towers and any other ground-disturbing activities after certification, a qualified archaeologist will conduct an intensive survey of cultural resources. If significant resources are identified, they will be avoided or research mitigation will be undertaken.

2. Biological Resources

No threatened or endangered species are known to exist in the project area, but habitat suitable for several state or federally listed species does exist. Therefore, after specific

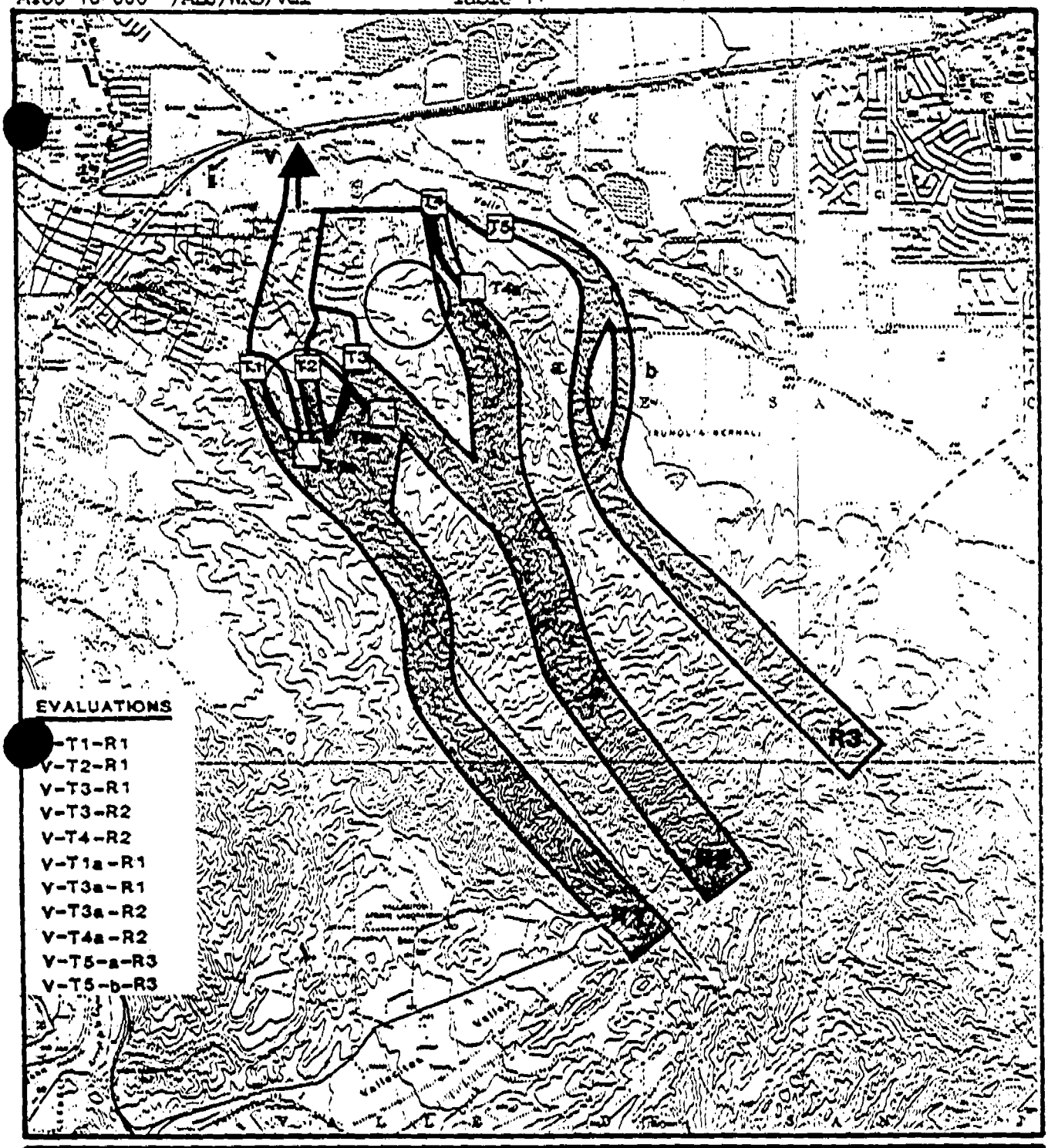
locations are determined for construction and facilities, an intensive biological survey will be conducted. Project facilities and construction will then be adjusted if necessary to avoid such resources.

3. Visual Resources

PG&E has identified approximately 15 homes within one-half mile of the overhead transmission with significant impacts on some views. Strategic tower placement and landscaping around the transition station are proposed to reduce the visual impact.

4. Alternatives

Figure 10-2 is reproduced here as Table 1 as a guide to comparative route locations for the alternates:



OVERHEAD TRANSMISSION LINE ROUTE

UNDERGROUND TRANSMISSION LINE ROUTE

TRANSITION STATION (OVERHEAD TO UNDERGROUND)

SUBSTATION SITE

APPROVED/DEVELOPING RESIDENTIAL AREA

0 2000 4000
Feet

N

PG&E

PACIFIC GAS AND ELECTRIC CO.
OCTOBER 1986

VINEYARD SUBSTATION AND 230 KV TRANSMISSION LINE PROJECT

TRANSMISSION LINE ROUTES EVALUATED

FIGURE 10-2

PG&E presented a number of alternatives both in supplying load and in route alternatives to the proposed project as described below:

a. A no project alternate, which PG&E dismissed as not feasible since load growth in this are would cause overloading of existing facilities after 1990.

b. A tower design alternate discusses tubular steel towers but concludes that the proposed lattice steel towers are preferable because they are less noticeable visually at long distances which are typical of the majority of views of the line. The use of tubular steel towers would also add approximately $400,000 (1986$) to the total project cost.

c. An energy conservation-load management alternative was reviewed, but PG&E concluded that this alternative could not keep up with load growth in the Pleasanton area.

d. The 21 kV feeder alternative could serve the load growth in the Pleasanton area by reinforcing the San Ramon substation and its transmission system and adding 21 kV feeders from it. This alternative was rejected by PG&E as not feasible since the cost would be about 50% more than the proposed project.

e. An underground alternative was evaluated but dismissed due to cost; the overhead line alternative was estimated to cost $148 per foot compared to underground at $1,167 per foot, not including right of way costs. PG&E concluded that "visual benefits gained by undergrounding the remaining 3.7 miles of overhead transmission line are outweighed by the economic constraints."

f. An all overhead route was not considered a feasible alternative due to residential development expanding into the area.

g. A number of route alternatives were considered, resulting in the three alternatives in the PEA:

(1) Route 1 alternatives; the two best alternates of the five variations studied were considered as final contenders for the project; V-T1-R1 and V-T1a-R1.

(2) Route 2 alternatives; the two Route 2 alternatives were eliminated due to consideration of reliability, visual impact, geology, and land use.

(3) Two Route 3 alternatives considered were similar; the variation that ultimately became the proposed project (V-T5-a-R3) was selected because it allows a greater length of natural screening of the overhead portion against the rolling hills.

PG&E's prepared testimony lists the estimated project cost for the proposed project and three alternates plus the all underground alternate, considered by request of DRA. This information is shown in Table 2. PG&E's preferred alternate is PG&E Alternate 4, Route 3, Option 2.

VINEYARD TRANSMISSION PROJECT - ROUTE ALTERNATIVES COST COMPARISON ($1,000) August 13, 1987

	ALTERNATIVE 1 R1, OPTION 1	ALTERNATIVE 2 R1, OPTION 2	ALTERNATIVE 3 R3, OPTION 1	ALTERNATIVE 4 R3, OPTION 2	ALTERNATIVE 5 R4
1 - OVERHEAD LINE					**NO OVERHEAD**
A. ENGINEERING	$101	$94	$94	$58	
B. CONSTRUCTION					
LABOR	344	300	301	212	
MATERIAL	750	682	679	556	
EMPL EXP.	76	66	66	47	
CONTRACT	50	50	50	27	
OTHER	0	0	0	0	
C. MAINTENANCE	6	6	6	6	
D. ESCALATION	337	300	322	225	
E. CONTINGENCY	267	236	253	172	
TOTAL DIRECT:	1,930	1,714	1,770	1,303	
F. INDIRECTS	609	537	547	377	
G. OVERHEADS	393	349	377	265	
GROSS FINANCIAL	2,932	2,600	2,694	1,945	100
2 - TRANSITION STATION					
A. ENGINEERING	86	91	86	86	86
B. CONSTRUCTION					
LABOR	196	272	269	269	269
MATERIAL	616	829	614	614	614
EMPL EXP.	34	35	34	34	34
CONTRACT	201	259	191	191	191
OTHER	0	0	0	0	0
C. ESCALATION	87	95	86	86	86
D. CONTINGENCY	104	110	102	102	102
TOTAL DIRECT	1,323	1,491	1,381	1,381	1,381
E. INDIRECTS	355	363	354	354	354
F. OVERHEADS	375	401	371	371	371
GROSS FINANCIAL	2,053	2,256	2,106	2,106	2,106
3 - UNDERGROUND LINE					
A. ENGINEERING	277	277	277	315	355
B. CONSTRUCTION					
LABOR	1,162	1,457	1,270	2,470	3,255
MATERIAL	2,329	2,994	2,635	4,870	7,440
EMPL EXP.	0	0	0	0	0
CONTRACT	190	350	218	740	925
OTHER	50	50	50	60	60
C. ESCALATION	309	396	343	820	1,410
D. CONTINGENCY	0	0	0	0	0
TOTAL DIRECT:	4,326	5,542	4,802	9,175	13,445
E. INDIRECTS	1,521	1,857	1,648	3,270	4,315
F. OVERHEADS	1,343	2,091	1,812	3,050	5,400
GROSS FINANCIAL	7,190	9,490	8,260	15,495	23,160

4 - RES./COMM./PROJECT.					
A. ENGINEERING	10	10	10	10	10
B. CONSTRUCTION					
LABOR	18	18	18	18	18
MATERIAL	20	20	20	20	20
EMPL REL	1	1	1	1	1
CONTRACT	0	0	0	0	0
OTHER	0	0	0	0	0
C. ESCALATION	4	4	4	4	4
D. CONTINGENCY	3	3	3	3	3
TOTAL DIRECT:	56	56	56	56	56
E. INDIRECTS	27	27	27	27	27
F. OVERHEADS	13	13	13	13	13
GROSS FINANCIAL	95	95	95	95	95
5 - SUBSTATION					
A. ENGINEERING	180	180	180	180	180
B. CONSTRUCTION					
LABOR	341	341	341	341	341
MATERIAL	1,820	1,820	1,820	1,820	1,820
EMPL REL	57	57	57	57	57
CONTRACT	450	450	450	450	450
OTHER	0	0	0	0	0
C. ESCALATION	113	113	113	113	113
D. CONTINGENCY	474	474	474	474	474
TOTAL DIRECT:	3,436	3,436	3,436	3,436	3,436
E. INDIRECTS	530	530	530	530	530
F. OVERHEADS	984	984	984	984	984
GROSS FINANCIAL	4,950	4,950	4,950	4,950	4,950
TOTAL ROUTE FINANCIAL (ENGR'G & CONSTRUCTION)	17,220	19,390	18,185	24,590	30,410
TOTAL PROJECT PLANNING, CPUC, & LAND FINANCIAL COST	3,843	3,648	2,818	1,705	723
	ALT.1	ALT.2	ALT.3	ALT.4	ALT.5
TOTAL PROJECT FINANCIAL COST	$21,063	$23,038	$20,823	$26,295	$31,133

ROUTE DESCRIPTION:
ALTERNATIVE 1 - PG&E ROUTE R1-T1-T (4.7 Mi.: 1.2 Mi U/G, 3.5 Mi O/H)
ALTERNATIVE 2 - PG&E ROUTE R1 T1a-T (5.1 Mi.; 1.9 Mi. U/G, 3.2 Mi. O/H)
ALTERNATIVE 3 - PG&E ROUTE R3 -a-T5-T (5.3 Mi.; 1.6 Mi. U/G. 3.7 Mi. O/H. - PROPOSED PROJECT)
ALTERNATIVE 4 - CPUC DATA REQUEST 4, QUES. 3.3.3a (5.6 Mi.; 3.5 Mi. U/G, 2.1 Mi. O/H)
ALTERNATIVE 5 - CPUC DATA REQUEST #4, QUES. 4 (ALL UNDERGROUND)

PG&E selected the preferred alternate as environmentally sound and cost justified, in the current era of competition in serving and generating electricity.

IV. Draft Environmental Impact Report

The Draft Environmental Impact Report (DEIR), prepared by the CPUC as lead agency under CEQA, was issued July 20, 1987. The purpose of the DEIR is to comply with all provisions of CEQA, and assess the environmental impacts of the proposed project, and project alternatives. Included in the analysis are concerns of local governmental and citizen groups.

The DEIR includes a critical assessment of the PEA, supplementing basic PEA data with archival and field work in biology, geology, land use, and visual quality carried out by the EIR team, which includes DRA members and environmental and engineering consultants.

The DEIR states that in the process of public contact and participation, it became clear that the public was more concerned with two environmental factors than the others. The two are land use, and visual quality. Less concern was expressed regarding geology, wildlife, archaeology, construction traffic, and noise. As a result, the DEIR gave increased emphasis to those two factors in determining the least environmentally sensitive project alternative.

Nevertheless, substantial effort was expended in the DEIR in investigating other impacts in order to satisfy CEQA requirements. These areas include:

- vegetation and wildlife
- geology
- traffic and construction
- noise
- public health and safety

- o cultural resources
- o growth inducements

Five alternatives to the proposed project, including the no project alternative were evaluated, as described under Section 1.3, pages 1-4 and 1-5 of the DEIR, following as Table 3:

1.3 ALTERNATIVES DESCRIPTION

ALTERNATIVE 1: ROUTE 1, OPTION 1

Beginning at the proposed Vineyard substation, Alternative one is undergrounded in a southwesterly direction for 1.2 miles until it reaches Picos Road extension at the boundary of the Kottinger Ranch subdivision, where it turns south to Transition Station 1. From this point alternative one is overheaded for three miles to Vallecitos Road turning southeast and tapping into the Tesla-Newark 230 kV transmission line. The alternative is 4.7 miles with 1.2 miles underground.

ALTERNATIVE 2: ROUTE 1, OPTION 2

Alternative two was included to examine a mitigation for visual impacts of alternative one. The underground portion of Alternative two would be the same as Alternative one except Alternative two would turn east at transition station 1 for approximately 1,400 feet. The route would turn south for 2,500 feet to an alternative transition station ($T1_A$) where it would be overheaded and would allow the same route as alternative one. The total distance of Alternative two would be 5.1 miles with 1.9 miles underground.

ALTERNATIVE 3: ROUTE 3, OPTION 2

Alternative three would follow the same route as the project until it reached Vineyard Avenue where it would turn southeast to East Vineyard Avenue then to the westernmost boundary of the Wente Brothers property. Alternative two would proceed southeast along the Wente Brothers property emerging at a transition station at the westernmost end of the Wente property in the R.3 corridor. The alternative would be overheaded for two miles to Vallecitos Road then to the Tesla-Newark 230 kV transmission line. Alternative three would be 5.6 miles long with 3.5 miles undergrounded.

ALTERNATIVE 4: Route 4

Alternative four would be 5.6 miles long with the entire route underground. Alternative four would follow the same route from the substations to East Vineyard Avenue as Alternative three. At East Vineyard Avenue the route would turn southeast following an easement along East Vineyard Avenue to Vallecitos Road. The route would go under Vallecitos Road to a transition station directly under the Tesla-Newark kV 230 transmission line.

ALTERNATIVE 5: NO PROJECT

Existing statutory authority requires that each electric utility in California, including PG&E, furnish and maintain adequate and continuing electrical service to the customers in its service area (California Public Utilities Commission Code, Section 451). Based on the projection of load and customer growth, the electric distribution system that serves the Pleasanton area will be deficient by 1990. The magnitude and duration of required load reduction would grow as area demands grow, until new and existing customers would be forced to utilize other energy sources or cease utilizing energy altogether.

A. **Alternatives**

DEIR Table 1-1 indicates comparative environmental impacts of the proposed project and four project alternatives shown as Table 4.

TABLE

RANKING OF PROPOSED AND ALTERNATIVE PROJECTS BY ENVIRONMENTAL CATEGORIES
(Least Impact = 1, Most Impact = 5)

Type of Environmental Impacts	Proposed project Route 3, Option 1	Alternative 1 Route 1, Option 1	Alternative 2 Route 1, Option 2	Alternative 3 Route 3, Option 2	Alternative 4 Route 4
Land Use Compatibility	3	5	4	2	1
Visual Quality	3	5	4	2	1
Biotic Factors	2	4	5	1	3
Geology	2	3	4	2	1
Traffic and Construction	1	3	4	2	5

Table 4

Although the table lists impacts by all environmental topics and doesn't specifically differentiate relative importance, the discussion repeats that "the land use and visual quality impacts are considered by local government agencies, affected property owners, citizen groups and other public participants as the issues of paramount concern."

The alternates considered superior are all-underground (all-U.G.) Alternate 4 (Route 4), and 60% underground (U.G.) Alternate 3 (Route 3, Option 2); both alternates were developed in the DEIR and were not in the PEA, but were later investigated by PG&E as a result of CPUC data request.

Alternate 5, the no project alternative, is not considered viable in the DEIR since projected load and customer growth will cause the electric distribution system serving the Pleasanton area to be deficient by 1990, with obvious service and reliability implications.

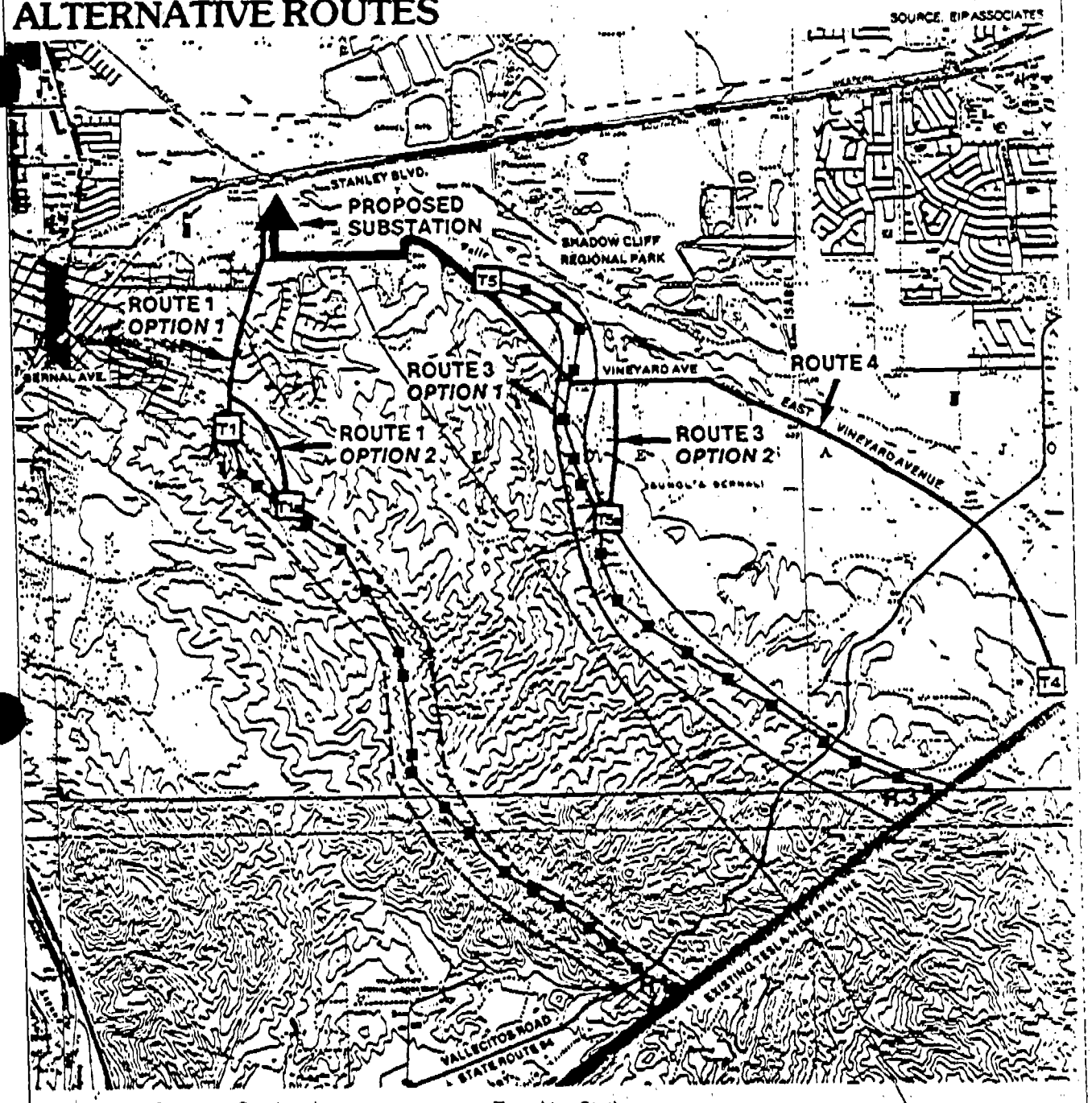
Alternate 3 is similar to the proposed project except that it has twice as much underground (60%), which reduces land use and visual quality impacts. Beginning at Vineyard Substation the underground line runs easterly to a crossing south through Arroyo del Valle Creek, entering Vineyard Mobile Trailer Park beneath Montana Drive, it then follows Montana Drive to Vineyard Avenue, following it to East Vineyard Avenue. It then turns southeast, following East Vineyard Avenue underground to the western boundary of the Wente property, then proceeding southeast along the Wente property to a transition station at the southwestern most end of the Wente property. It then leaves the transition station and continues overhead following the hills south for 2 miles to Vallecitos Road, crosses it and turns southeast to shortly connect with the Tesla-Newark transmission line.

All-underground Alternate 4 is the only alternate to avoid significant visual impacts including those associated with crossing over scenic roads, i.e., Vineyard Avenue and Vallecitos

Road. This alternate leaves Vineyard Substation and follows the same route initially as alternate 3 to Vineyard Avenue, then continues southeasterly following an easement along East Vineyard Avenue to Vallecitos Road, crossing under it to a transition station where it becomes overhead and connects shortly to the Tesla-Newark transmission line.

Figure 2-2 on page 2-4 of the DEIR shows the relative locations of the alternates considered in the DEIR shown as Table 5 following. (DEIR Alternate 3 is the same as PEA Alternate 4, DEIR Alternate 4 is the same as PEA Alternate 5.)

PROPOSED PROJECT AND ALTERNATIVE ROUTES



Comparative costs of the alternatives are listed in Table 2-1, p. 2-12 of the DEIR, shown below as Table 6:

SUMMARY OF PROJECT AND ALTERNATIVES

Plan Designation	Miles of Underground	Miles of Overhead	Total Miles	Total Estimated Cost
R3, Option 1[1]	1.6	3.7	5.3	$21,129,000
Alternative 1 R1, Option 1	1.2	3.5	4.7	$21,161,000
Alternative 2 R1, Option 2	1.9	3.2	5.1	$23,209,000
Alternative 3 R3, Option 2	3.5	2.1	5.6	$26,296,000
Alternative 4, Route 4	5.6	—	5.6	$31,034,000

[1]Applicants preferred plan.

B. Summary of Findings

The DEIR investigation concludes that the only significant, unavoidable, adverse impacts are visual impacts of overhead transmission lines and towers in at least three locations along the proposed route:

- Crossing Vineyard Avenue, a County designated Scenic Route;
- Adjacent to the Wente property;
- And crossing Vallecitos Road, a County designated Scenic Route.

All other impacts identified in the DEIR as significant can be reduced to moderate, low, or insignificant by mitigation measures.

The DEIR ranked the alternates by comparing impacts in areas where clear differences exist between them. Those differences by category of impact are summarized below.

All-underground alternate 4 is environmentally superior because of:

- Elimination of visual impacts of overhead scenic road crossings
- Low impacts to other land uses due to use of any existing right-of-way,
- Mitigation for the substation site would reduce impacts to low levels of significance,
- Low impacts to airport safety, agricultural conservation, and land use planning policies.

60% U.G. Alternate 3 is ranked second due to low impacts on land use in the underground segment, insignificant impacts on Williamson Act contract lands (agricultural conservation policies), and it is out of Federal Aviation Administration (FAA) flight referral areas.

The PG&E proposed project is ranked third because of potential significant impacts on flight safety and FAA policies, potential significant impacts on existing and proposed land uses in the overhead segment and potentially significant impacts on County Scenic Corridor policies.

Fourth and fifth ranking went to the two Route 1 alternates because of potentially significant impacts on existing and proposed land uses in the overhead areas, impacts on agricultural conservation policies and visual impacts.

V. Public Hearings

Public hearings were held on August 25 and 26, 1987 to elicit public comment on the DEIR in a less formal manner than in the evidentiary hearings that were to follow. At each public hearing session, DRA Assistant Project Manager Orebic explained the responsibility of the DRA in this type of proceeding, that public comments from the earlier public workshops were incorporated in the DEIR and that consultants were employed by DRA staff to assist in specific areas, i.e., EIP Consultants (EIP) to prepare the EIR and R. W. Beck to prepare the engineering report for the DRA evaluation of the application. Representatives of EIP summarized the findings of the DEIR. Staff counsel Harrington offered to help any party in participating or in understanding the Commission process.

A number of interested parties made statements regarding their views of the proposed project and the DEIR. Support for the DEIR recommended all-U.G. Alternate 4 was unanimous; concerns over aspects of the project and other alternates varied, but all who offered comments supported all-U.G. Alternate 4. Among those offering their views were residents of the cities of Livermore and Pleasanton, the County of Alameda, and Mayor Turner of Livermore. CPUC Commissioner Mr. Duda attended these hearings.

Concerns centered around visual impact and effect of the proposed project on land use, with particular concern voiced about negative effect of overhead transmission facilities in this generally picturesque area of vineyards and historic old wineries. Additionally, the area, sometimes referred to by interested parties as the "fertile crescent" was characterized as having the potential to be a significant tourist attraction due to development plans that could result in facilities not unlike those of the Silverado area of Napa Valley, including hotels, wine tasting rooms, golf course(s) and similar amenities. Public sentiment, although strongly favoring the all underground alternate, generally did not otherwise oppose building a transmission project in the Pleasanton area.

VI. PG&E Motion to Limit Issues

On September 17, 1987, PG&E filed a motion to limit issues relating to alternate underground technologies and to prevent appointment of a Construction Project Board (Board). The DRA in its prepared testimony recommended that a comparative analysis of alternate technologies for 230 kV underground be conducted before PG&E is granted a CPCN for this project, based on the R. W. Beck report (Exhibit 12) entitled "Technology and Environmental Assessment Guide on Underground HV Power Transmission". DRA believes that the Vineyard project is a potential opportunity for evaluating technologies other than high-pressure oil-filled pipe-type cable proposed by PG&E; alternative technologies include low-pressure oil-filled cable, solid dielectric cable, compressed SF6 gas insulated cable, and nitrogen gas insulated cable. PG&E argued that such an assessment could not be accomplished within the schedule for the project, and that it was unnecessary since the R. W. Beck report concluded that PG&E's proposed underground technology is a reasonable one. Additionally,

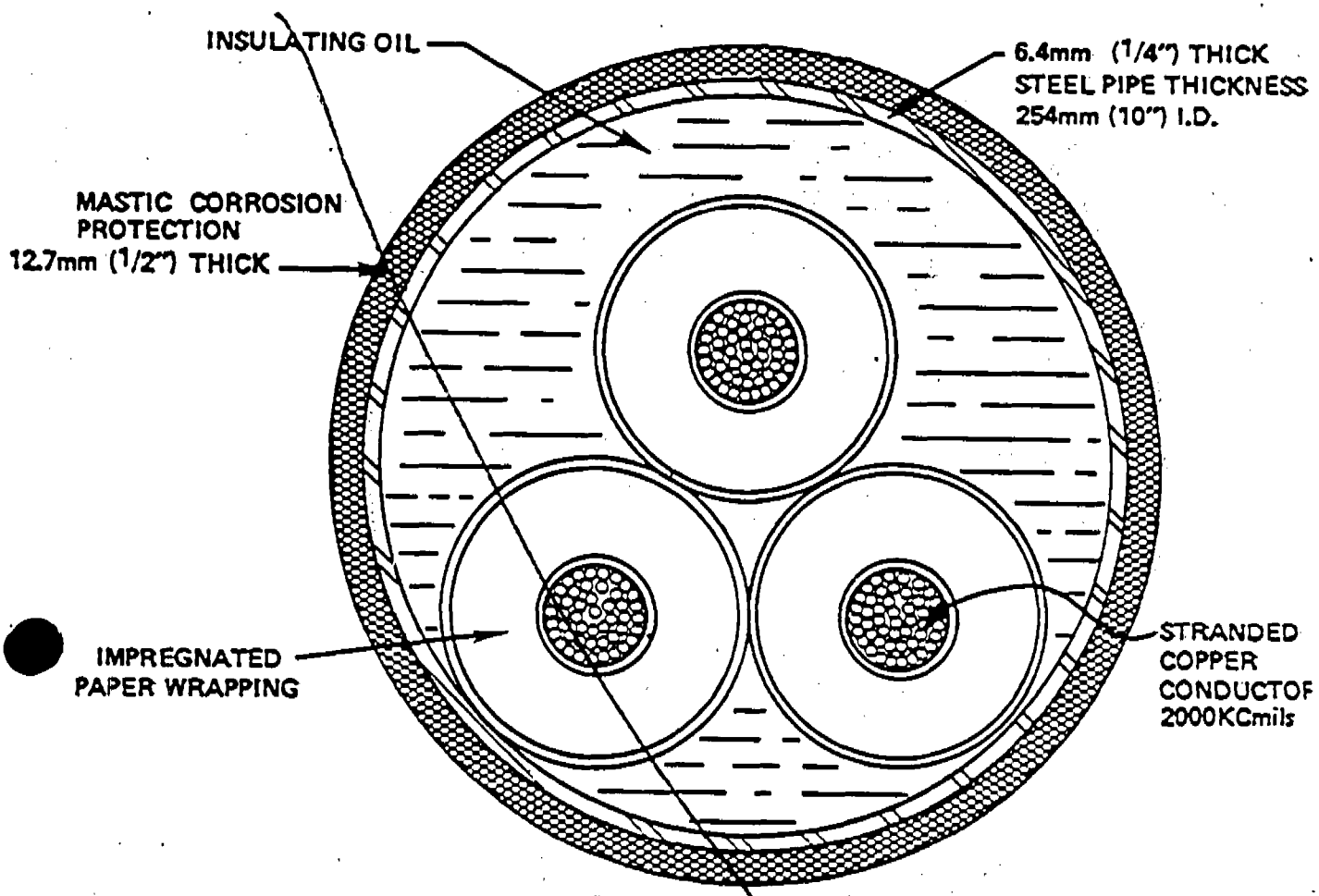
PG&E's motion argued that Public Utilities (PU) Code Section 1091 does not apply to line extension projects of this type unless the cost exceeds $50 million, and that the Board would have to be appointed earlier in the CPCN process so that its recommendations could be considered in the CPCN.

DRA opposed the motion on the grounds that adequate time exists to carry out the evaluation of alternate technologies without affecting the schedule for the CPCN, and that potentially cheaper alternatives offer not only possible savings, but can also provide valuable operating experience for PG&E for use when considering appropriate technologies for future underground transmission facilities. DRA also argued that PG&E's interpretation of PU Code Sec. 1091 is faulty, that the $50 million project cost relates to gas plant, not electric, and that the Board can function as proposed, reporting to the Commission after issuance of a conditional CPCN.

Wente Brothers Winery and Signature Properties (Wente) opposed the motion on similar grounds.

The types of undergrounding technologies are described below; all types use a cable consisting of conductor(s) to carry the electricity, insulation to protect the conductor from electrical grounding and from the environment, insulation shielding to smooth electrical stress and carry fault current, a sheath to add strength and protection to the cable and provide a moisture barrier, and usually also a protective jacket to further protect the cable from the environment.

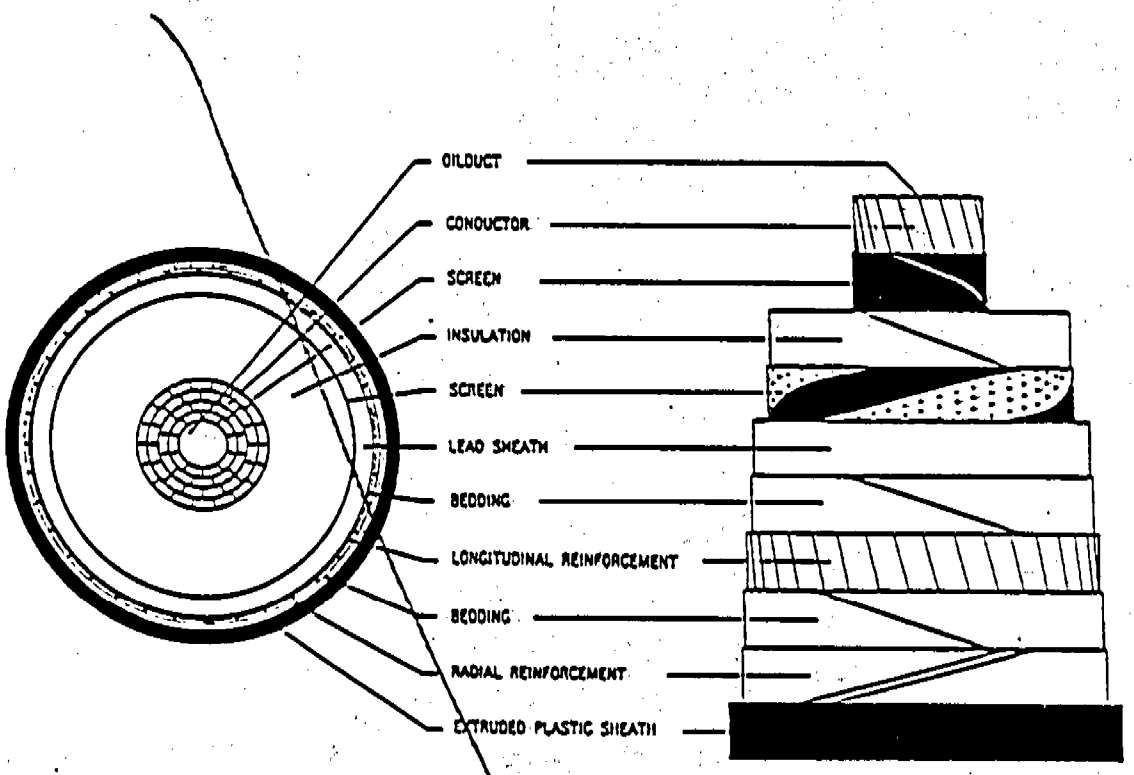
The high-pressure oil-filled pipe type system (HPOFPT) uses cables in steel pipe filled with oil under about 200 psi pressure. The purpose of the oil is to absorb gas in the insulation, to eliminate voids and prevent ionization, corona discharge and insulation breakdown. A typical cross-section from the R. W. Beck Assessment Guide on underground technologies follows as Table 7.



TYPICAL HIGH PRESSURE OIL FILLED PIPE TYPE (HPOFPT) CABLE CROSS-SECTION

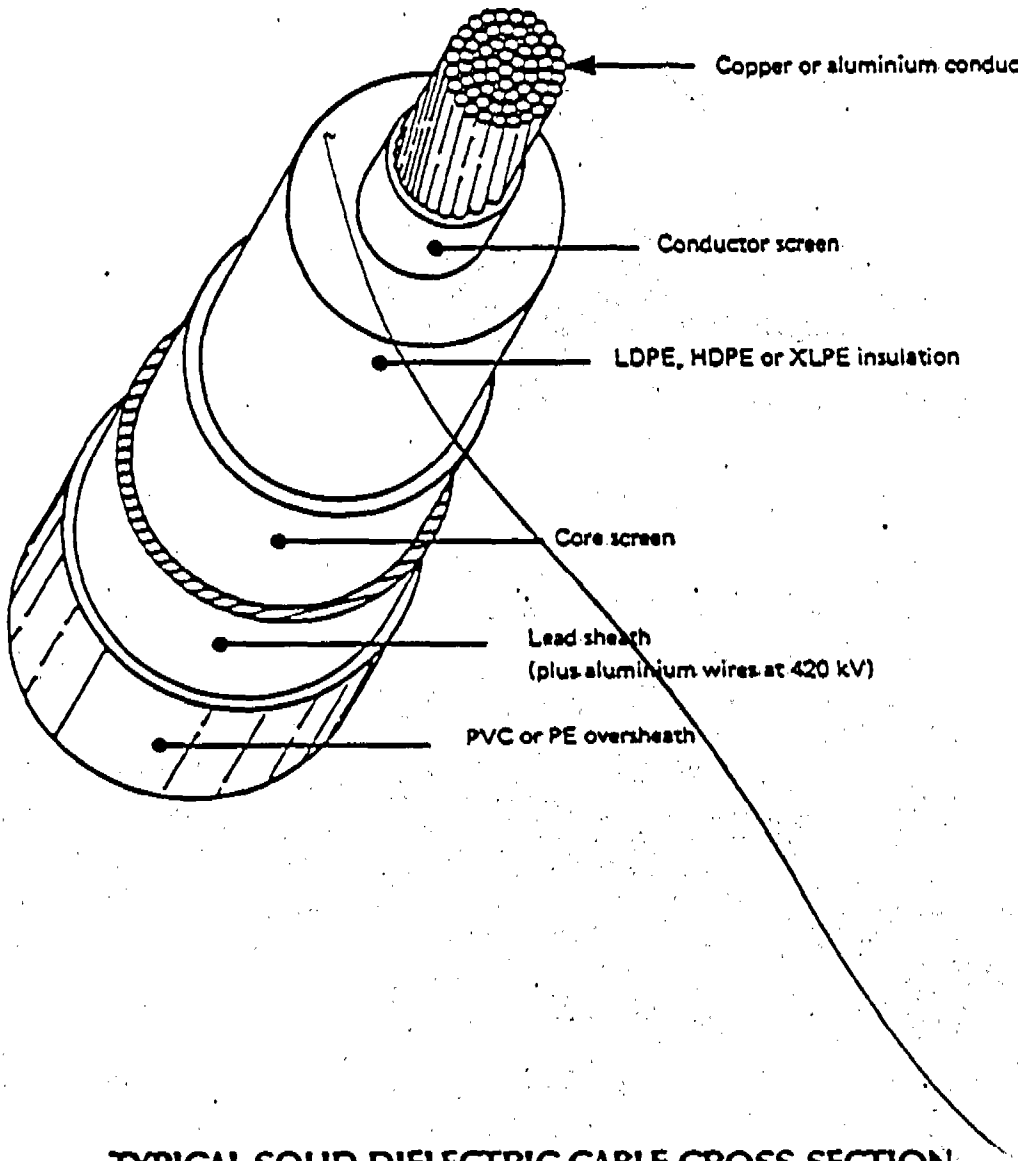
The two circuits for this project will be separated for cooling purposes, requiring separate trenches, usually on both sides of the road, in order to allow adequate thermal separation.

The low-pressure oil-filled (LPOF) system is a self-contained system using a conductor with an interior duct that carries oil at pressures in the range of 25 to 40 psi. Oil serves a function similar to the HPOFPT system; it absorbs gas in the insulation and eliminates void formation and ionization. A typical cross-section follows as Table 8.



TYPICAL SELF-CONTAINED OIL-FILLED (SCOF) CABLE CROSS-SECTION

The solid dielectric system has no oil, rather it is a solid cable system consisting of a central conductor surrounded by insulation and protective sheathing as shown below as Table 9:



TYPICAL SOLID DIELECTRIC CABLE CROSS-SECTION

VII. Evidentiary Hearings

Four days of evidentiary hearings were held in San Francisco on September 28, 29, 30, and October 1, 1987. On the first day of hearing the Administrative Law Judge (ALJ) denied PG&E's motion to limit testimony on alternate U.G technologies and to limit discussion of appointment of a Construction Project Board, so that the record could be developed on this issue.

A. Positions of Parties

The positions of the parties can be summarized as follows:

1. PG&E

Applicant PG&E believes that load growth in the Pleasanton area necessitates increased ability to serve electric demand, and that the proposed project is the preferred means of serving it, that undergrounding is appropriate only for the length proposed. In PG&E's view, undergrounding the entire line is not worth the additional cost in other portions of the proposed alternate since residential development in those areas, i.e. the Ruby Hills development (Wente) is speculative and uncertain. For the same reasons, the all underground Alternate 4 is not appropriate due to its approximately $10 million additional cost, which PG&E believes cannot be justified.

Fear of bypass of PG&E's system by existing or potential PG&E customers is one reason PG&E is interested in keeping costs of the project minimized. PG&E argues that overhead transmission facilities are compatible with residential development and are a fact of life, and that proper subdivision design minimizes the resulting visual and land use impacts.

PG&E witness Maslowski testified that the all-U.G. Alternate 4 may not be an optimal solution even if visual impacts of the proposed project justified full undergrounding. In that case, PG&E would seriously consider alternates to the project, such

as expansion of the San Ramon substation, at a comparable cost to Alternate 4, but with the advantage of spreading the costs over the next 20 years since the substation expansion can be done in increments as load grows. This contrasts with the high initial costs associated with a new transmission project that can't practically be built in increments. However, the substation expansion could result in less reliability than the proposed project.

PG&E witness Kunitake testified on technology selection for the underground sections of the project, relating PG&E's experience and knowledge of other technologies suggested by the DRA consultant's engineering report. PG&E has one 3-1/2 mile section of 115 KV low-pressure oil-filled self-contained system in Oakland in service since 1938. Several sections were replaced in the 1950's due to corrosion of the lead sheath, with several more replaced in 1985 for the same reason. Corrosion of the lead sheath allows intrusion of tree roots which ultimately cause failure.

PG&E also has three 230 KV LPOF circuits installed at the Helms pumped storage plant, which are installed in a vertical shaft, a type of installation that would be difficult or impossible using conventional pipe-type cable due to the need to support the cable in the vertical run. Kunitake believes that LPOF systems should usually be installed in ducts for ease of maintenance, in which case the cost would be comparable to that of the HPOFPT system.

PG&E has in service about 100 circuits of the high-pressure oil-filled and high-pressure gas-filled pipe-types, with an average age of 25 years. Oil-filled pipe-types are normally used except in hilly terrain where gas-filled pipe-types is used to reduce the problem of static head due to elevation differences. There has not been a single failure on these circuits to date.

Exhibit A of Exhibit 8 following as Table 10 indicates trouble rates in cable, joints, and terminations for four types of

installations, i.e. extruded, paper lead, self contained, and pipe cable, as reported in an Edison Electric Institute publication entitled "Transmission Cable Operation-1986" dated May 1987. Extruded refers to extruded solid dielectric type cable, paper lead is not a technology being addressed for this project, self-contained is the LPOF type in use at the vertical run at Helms as described, while pipe cable is the HPOFPT technology proposed by PG&E.

TROUBLE RATES, L VOLTAGES

	CABLE				JOINTS				TERMINATIONS			
YEAR	EXTRUDED	PAPER LEAD	SELF CONTAINED	PIPE CABLE	EXTRUDED	PAPER LEAD	SELF CONTAINED	PIPE CABLE	EXTRUDED	PAPER LEAD	SELF CONTAINED	PIPE CABLE
1986	3.42	15.91	0.83	0.04	0	1.31	6.26	0	1.55	0	1.95	0
1985	2.53	11.64	0.41	0.04	0	1.31	1.93	0.15	0	0	0.65	5.16
1984	2.69	14.64	0.41	0.04	2.23	2.67	2.57	0.51	4.68	0	0.65	0
1983	1.74	10.50	1.24	0.04	1.20	1.20	2.20	0	5.29	0	3.27	1.24
1982	3.01	2.97	4.13	0	1.50	1.51	3.24	1.09	9.71	0	2.67	3.72
1981	2.50	10.43	1.04	0.20	3.49	0.91	3.40	0.64	4.36	0	5.35	0.73
1980	4.73	22.41	1.47	0	6.44	1.22	3.31	0.76	2.63	0	6.08	1.86
1979	3.84	10.50	1.28	0.21	7.20	1.22	4.68	0.55	5.19	4.90	4.75	6.60

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Table 10

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The trouble rates for cable are per 100 circuit miles, and for joints and terminations are per 1,000 installations. Clearly the cable and joint failure rates are significantly lower for pipe cable than the other types, while the termination failure rate shows no clear advantage for pipe cable. However, Kunitake testified that terminations are relatively easy to repair.

Kunitake testified that PG&E's experience with solid dielectric cables has not been encouraging due to premature failures in lower voltage distribution systems; such failures are occurring after 15 years, half the design life. However, he believes the quality to be adequate for voltages to 60kV; above that voltage, the insulation is subject to degradation by ionization of gases entrapped in the voids of the insulation. This ionization can degrade the insulation to the point where tree roots can intrude and ultimately cause cable failure. Tests conducted by the Electric Power Research Institute (EPRI) at the Walt's Mill test facility in the 1970's resulted in failure of all cables prematurely. More recently in the early 1980's tests of 138 and 230 kV solid dielectric cables also resulted in premature failures. One conclusion is that American-made solid dielectric cable is not adequate at these voltages, but that some foreign made cables may be adequate; therefore EPRI intends to test them at 230 kV in 1988 at Walt's Mill. The tests are accelerated durability tests that in two years simulate a normal 30-year life cycle, so the results of the 1988 tests should be available in 1990.

PG&E witness McCullough testified regarding land-use impacts, visual effects and costs. His testimony offered examples of development that occurred despite the existence of overhead transmission facilities, a notable example being the Blackhawk subdivision, which has two overhead lines crossing it. McCullough believes that subdivision development is compatible with transmission lines, and that Ruby Hill could be developed reasonably with the proposed project. Since most visual impacts

would be at a distance they would not be significant due to natural shielding and strategic placement of towers. On cross-examination, McCullough stated that he had not talked directly to anyone representing Blackhawk in formulating his conclusion regarding the effects of transmission lines on residential development. Although he testified regarding potential impacts on the Ruby Hills development, "I think that if the towers were in and then this subdivision were constructed , the impact on those would be negligible." (Tr. p. 250), on cross-examination he conceded that "The perception of the vast majority of the people is that they don't like transmission lines, yes." (Tr. p. 251.) Regarding PG&E's decision to not give the Ruby Hills proposal the same treatment as the Kottinger and Lund projects, McCullough stated that Ruby Hills is different because Kottinger Ranch has an approved Planned Unit Development (PUD), and although the Lund project does not yet have a PUD, or at least didn't at the time of PG&E's selection of the proposed project, it is, in his estimation, very close to receiving approval from the county. Ruby Hills, in his opinion, is speculative since approval would require either changes in existing county planning, changes in zoning, or annexation of this area to the City of Pleasanton. He conceded that zoning laws frequently change and that city boundaries of a growing city such as Pleasanton usually grow or extend over time.

Further testimony of McCullough centered on land acquisition costs, visual impacts of tower placement, and the issue of who should pay for the additional costs of undergrounding the entire route, as in all-U.G. Alternate 4, if that is ordered by the Commission. He believes that those parties who benefit from the undergrounding, should pay the added costs, i.e., "...the City of Pleasanton, the City of Livermore, and the portion of the county where property owners live where the transmission line would cross." (Tr. p. 338.)

PG&E witness Jones, PG&E's only routing engineer, testified regarding effects of overhead transmission lines on residential development. Although he was unsuccessful in contacting Blackhawk representatives, he did talk to another developer, Tassajara Development Corporation (Tassajara) who is developing a parcel adjacent to the transmission corridor. Tassajara feels that competent architects and designers have many factors to deal with, and things such as orientation of the house can overcome problems such as immediately adjacent visual impacts. Offsetting advantages in developing a home adjacent to a transmission line are open space or green belt in the transmission corridor. Jones investigated parcels adjacent to and away from the transmission corridor regarding assessor valuation to determine if a difference in value was apparent. He found no such difference.

Jones also testified regarding another developer, Braddock and Logan Associates (B&L), who had been in contact with PG&E concerning the possible purchase of a parcel of property owned by PG&E adjacent to a transmission line. The B&L representative indicated that the presence of two parallel transmission lines bisecting a development would not have a measureable effect on the selling price of homes in the $200,000 to $300,000 price range in this development.

Jones acknowledged that PG&E's preferred route includes an added $9 million for mitigation by undergrounding 1.6 miles of line, as compared to the cost of an all overhead route, but did not agree that the additional $10 million for undergrounding of the DEIR recommended all-U.G. alternate 4 could be justified under any assumptions.

2. Division of Ratepayer Advocates

DRA presented four witnesses, beginning with the panel consisting of witnesses Wood and Pereira. The panel testified to the engineering report and to the report by R. W. Beck and Associates entitled "Technology and Environmental Assessment Guide

on Underground High Voltage Power Transmission". The latter report is intended as a generic reference guide for the CPUC, to be used also for other transmission line proceedings.

Pereira testified that the data used by PG&E in evaluating the reliability of solid dielectric cable is not necessarily the best to use since it covers only recent years when the United States has gone through its learning curve, and therefore the data is not comparable with data for the HPOFPT system. He also believes that the LPOF system should be considered for the project. The panel discovered a number of errors in the failure rate data, some of which were corrected on the stand, and others were corrected in the final report.

Witness Trembley sponsored the DEIR; in response to the many comments in public sessions regarding the relative importance of environmental criteria, he explained that the alternatives were ranked for each category on a best to worst basis. Regarding suggestions that relative weighting be used considering the importance of each category, Trembley suggested that such weighting is not practical. The environmental assessment and rankings of the alternates was done without consideration of costs, since although it is easy to express costs for items such as easements or land, "It is quite another thing to give a quantitative figure for the value of an Alameda striped racer, or give a number for the value of a single visual impact." (Tr. p. 447.)

Trembley explained that considering all aspects, the all-U.G. Alternate 4 is preferred and that many of the impacts associated with it are very short term, such as construction, traffic, and noise. All other alternatives have significant unmitigatable visual impacts that occur at the crossings of county designated scenic corridors, i.e., at Vineyard Avenue and at Vallecitos Road.

Witness Russell testified regarding the recommendation of a cost cap based on PG&E's cost estimate for the HPOFPT system.

Her recommendation is that if a lower cost alternate is selected, the cost saved can be set aside for contingency in case added maintenance costs result from the alternative undergrounding technology.

She explained that the role of DRA in evaluating an application for CPCN is to evaluate four major factors; need for the project, economics of the project, engineering feasibility, and environmental impacts. Russell also explained that additional impetus for the all-U.G. Alternate 4 is provided by the stated intent of some of the local representatives to encourage development of a tourist attraction centered on the region's wine growing.

Regarding the issue of who should be responsible for the extra costs of undergrounding, Russell testified that if the all-U.G. Alternate 4 is selected, all PG&E ratepayers should share the cost. She testified that DRA gave considerable thought to the issue, but couldn't determine a rational means for any other allocation; "...it would be very difficult to draw an exact line around those people that have a direct benefit from this line going underground. ...you could probably expand it a little beyond the Livermore Valley and the direct communities and in the Bay Area region,...maybe a little beyond that. . . . We did consider earlier in the process trying to find a mechanism of setting up some regional assessment district or something, but we felt that there was no way to determine who those direct beneficiaries were and to try to assign those costs, you know, given the other situations where undergrounding has taken place, that it is just too difficult to do that." (Tr. p. 501, 502.)

3. Wente Brothers Winery, Signature Homes or Signature Properties, and certain Vineyard Avenue Property Owners (Wente)

Wente witness Weissman testified regarding visual impacts and that Alternates 1 and 3 will interfere with development of residential housing. Although the Wente project (Ruby Hills) is not as far along as the two along Route 1, it is being actively developed at this time. In her view, the only environmental difference between the routes is that the timing of development along Alternate 3 is slightly behind Route 1, but the visual and land use impacts are comparable. Weissman pointed out that the photographs with superimposed transmission towers leave out a major feature of the proposal, i.e., access roads necessary to construct and maintain the towers and line.

Weissman believes that the proper way to do a view-shed analysis is to take photos from every point along the line; the assumption in visual analysis is that if you can see something, it can see you. Furthermore, the photos furnished by PG&E are about a mile away from the transmission line and therefore don't show the impact on possible residents of Ruby Hills who would be much closer.

Weissman testified that she talked to the President of Blackhawk Properties and the Executive Vice-President of Blackhawk Corporation regarding impacts on development and property values of the transmission line crossing that area. They felt that the impact was greatest during the initial sales of the properties, and also indicated the need for substantial changes to the project as a result of the transmission line. Homes adjacent to the transmission line initially sold for 20 to 30% less than comparable homes away from the it, while resales were less affected in price.

Weissman contacted several vineyards, Chateau Souverain, and Wente, who she is representing, on the impact of overhead transmission lines on viticulture. A number of concerns were

expressed including conflict with farm machinery especially when vines are replaced, hazard of electrocution of workers, aerial spraying difficulty, effect of herbicides used to control growth in the transmission line corridor, and aesthetics. Aesthetics affects marketability and pricing of varietal wines since the price people are willing to pay for a bottle of wine depends on their perception of the winery itself. Additionally, as related by Mr. Wente to Weissman, publicity by wine journals and magazines is adversely affected due to visual effects of overhead transmission lines.

Weissman believes that the visual impact of the proposed project would be as great on Ruby Hills as it would be on Pleasanton if PG&E were to build the transmission line overhead through Pleasanton, because much of the alignment through Ruby Hills would be part way up the hillside and thus be more visible from the surrounding area.

Wente witness Howerton, a landscape architect and planner, testified that in his experience there would be no reason to spend the time and money that's been spent on the Ruby Hills project if it were not a viable, marketable project. In his view the project should be considered likely to be consumated.

Witness Cavagnaro testified that the cost estimates by PG&E for the underground portion are questionable since they vary substantially from the estimates by Beck. For Alternate 4, PG&E estimates labor at $4,001,591, compared to Beck at $6,699,000; material is estimated by PG&E at $8,240,695 compared to Beck's estimate at $4,858,000. Cavagnaro recommends intensive investigation of the rationale and numbers used by PG&E.

4. Signature Properties, Inc., Jack Nicklaus Golf Services, and Wente

Witness Ghielmetti testified that the proposed project would have very significant effects on the proposed development of the Wente properties and surroundings. He believes that the additional $10 million cost for the all U.G. Alternate 4 is justified for the long-term benefit of the Livermore Valley. Ghielmetti doesn't see undergrounding as a benefit to the Wente property since it would not improve the existing condition, but would merely maintain approximately the status quo. Wente is not interested in sharing the added $10 million cost of undergrounding. The witness indicated a willingness to negotiate underground easements, possibly at no cost to PG&E, and added that if overhead were pursued, potentially costly condemnation procedures could be required.

5. Individuals Representing Themselves

Mr. Lund testified regarding the effect of alternate 1, on the Lund Ranch, a planned residential development located within the City of Pleasanton. The planned development is in conformance with the City's general plan. Alternate 1 lies within the Lund Ranch along its northwestern border. Lund supports all-U.G. alternate 4 as an environmentally acceptable alternate benefitting the area and those passing through it.

Mr. Hahner owns 37 acres that he anticipates developing at some time in the future. The PG&E proposed project goes through his property with the transition station located in his front yard. He supports all-U.G. Alternate 4, and believes that traffic and noise impacts of it are overstated in the DEIR as they are short term in nature, compared to the 40- or 50-year life of an overhead transmission line.

Ms. Heinz owns a parcel of 21+ acres and likewise intends to develop it at some future time; her concern regards the

preferred alternate. Heinz would be willing to dedicate rights of way for either Alternate 3 or Alternate 4.

6. Kottinger Ranch

Mr. Fairfield, a consulting civil engineer for Kottinger Ranch, with considerable experience in CEQA and environmental impact reports, testified concerning visual impacts of Alternate 2. He believes that the top half of the tower exiting the transition station would be visible from many lots of the Kottinger project. He emphasized that the impacts of underground construction are much greater when the construction is done after completion of a residential development project, as compared to before.

Fairfield also testified that he talked to a principal of the Blackhawk Company and was told that lots in close proximity to the transmission line had to be discounted by 20 to 40% to the original builder or homeowner because of negative feelings about transmission lines. He believes that the visual impact of overhead transmission lines would be comparable for the Kottinger as for the Ruby Hills developments, assuming the latter developed in a definable period of time.

7. The City of Pleasanton

Peter MacDonald, City Attorney for the City of Pleasanton, testified regarding the official position of Pleasanton, i.e., that all-U.G. Alternate 4 is the environmentally superior alternative, that 60% U.G. Alternate 3 is marginally acceptable, and the other three alternates are unacceptable in varying degrees. The city is most concerned with the Fertile Crescent as a tourist attraction, and is concerned that overhead transmission lines may disturb the unique setting the area offers.

8. Alameda County

Campbell, an Alameda County Supervisor, was unable to attend the hearings, but filed a late-filed exhibit stating the concerns of the county regarding the Fertile Crescent. Alameda County's constituents clearly favor the all-U.G Alternate 4, feeling that overhead towers would have a great negative impact on the natural beauty of the area.

9. Alameda County Flood Control and Water Conservation District

The Alameda Flood Control District did not attend the hearings but sent letters stating concerns about the effect of all-U.G. Alternate 4 on plans to construct a 36-inch water line along the same portion of Vineyard Avenue.

VIII. Final Environmental Impact Report

The final Environmental Impact Report (FEIR) was issued on October 15, 1987. This document includes a summary of the draft EIR, comments received during the draft review period and public hearings, as well as responses to all comments. Incorporated by reference in the final EIR are the draft EIR, the R. W. Beck Engineering Report, and the R. W. Beck preliminary report "Technology and Environmental Assessment Guide on Underground High-Voltage Power Transmission" of September, 1987.

The conclusion is the same as in the draft EIR, that significant unavoidable impacts that cannot be mitigated are associated with all DEIR alternates except all-U.G. Alternate 4. Those impacts are visual impacts of transmission lines crossing over scenic roads (Vineyard Avenue and Vallecitos Road). All other impacts can be reduced to moderate, low, or insignificant ratings through mitigation measures. Alternate 4 is the environmentally superior alternative, Alternate 3 is second best, followed by the other three alternates.

Comments on the FEIR were received from several parties who repeat the comments they furnished on the DEIR, that the categories of impacts should be weighed. We conclude that the explanation of relative importance of the categories adequately considers that issue. The other major comment on the FEIR is from the Alameda County Flood Control and Water Conservation District (Flood Control) repeating the concern they expressed by letter about the impact the Alternate 4 route would have on construction of the Zone 7 proposed 36-inch Vineyard Pipeline, a water line. Flood Control is concerned that the route and construction of the pipeline may be severely hampered by the location of the underground transmission line, resulting in potential substantial cost escalation.

We find that the FEIR will not be a complete document that complies with applicable statutes until it is supplemented with a study of all-U.G. Alternate 4 including the effect on the Flood Control water line. The mitigation measures described in the FEIR are reasonable and will be adopted. We will further consider the supplemental EIR and its mitigation measures in a later order.

IX. Discussion

A. Need for the Project

The applicant, DEIR, and parties agree that there is a need for additional electrical capacity to serve this growing area. No party offered reasonable alternates to expanding the transmission capacity except for the PG&E alternate of expanding the San Ramon substation, which could be more cost-effective but might offer less reliability than the proposed transmission line.

The Pleasanton area is situated strategically both as a bedroom community and as a hub for commercial and business park development due to its location near the junction of two major freeways, Interstate Routes 580 and 680. Growth in electrical load has been 9 MW per year recently, and that trend is expected to continue in the foreseeable future. Concern has been expressed by the cities about reliability of electric service, an important consideration for commercial and business park development.

We conclude that an upgrade of electrical capability to Pleasanton is needed, but of the several options available we cannot determine which is best to meet this need without additional study comparing the costs and benefits between all-U.G. Alternate 4 and upgrading the San Ramon substation. We will order PG&E to submit such a report to the Commission.

B. CEQA

The California Environmental Quality Act requires in Section 21081 that "no public agency shall approve or carry out a project for which an environmental impact report has been completed which identifies one or more significant effects thereof unless such public agency makes one, or more, of the following findings:

> "(a) Changes or alterations have been required in, or incorporated into, such project which mitigate or avoid the significant environmental effects thereof as identified in the completed environmental impact report..."

* * *

"(c) Specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives identified in the environmental impact report." (Emphasis added.)

C. Selection of Route Alternate

The five alternates to the proposed project considered in the draft EIR and final EIR include the two Route 1 options in the PEA, Alternates 1 and 2. Two additional alternates are a variation of the Route 3 option having additional undergrounding (60%), the all-U.G. Route 4, and the no project alternate. Those five alternates are:

Proposed project: Route 3, Option 1
Alternate 1: Route 1, Option 1
Alternate 2: Route 1, Option 2
Alternate 3: Route 3, Option 2 (60% U.G.)
Alternate 4: Route 4 (all-U.G.)
Alternate 5: no project

1. The proposed project, Route 3, Option 1, generated significant controversy regarding the two environmental areas of greatest concern, visual quality and land use, with visual quality as the predominant consideration. Extensive testimony of DRA and consultants, property owners, public officials, developers, planners and other experts, and local citizens all express considerable concern about the impact of overhead transmission towers and lines on this unique area referred to as the Fertile Crescent. The cities of Pleasanton and Livermore, Wente, and other parties mention potential plans for development of a tourist attraction similar to Silverado in the Napa Valley. The attraction would likely consist of hotel(s), golf course, tennis facilities, wine tasting, active vineyards and small wineries, as well as other suitable facilities. In their view, overhead transmission

facilities are not compatible or desirable with such uses. Property owners who have either begun planning development as Wente has with Ruby Hills, or who are considering development of their land at some later date, fear that overhead transmission lines will reduce the desirability of their property and development, both by rendering some portion unusable for development and by degradation of the natural beauty of this unique area. Concern was expressed by many parties over the visual impact of transmission lines crossing County designated scenic roads.

PG&E defends the preferred alternate as adequately protecting the environment by undergrounding the 1.6 miles proposed, and believes that any further undergrounding is not justified unless the affected or benefited parties are willing to pay the added costs.

We don't agree that Ruby Hills is a speculative or unlikely development even though some changes in zoning or city boundaries are required before it can be approved. Changes of this type are not unusual, especially in rapidly growing areas, and there has been no indication in this proceeding of any attempt to slow or stop growth in the Pleasanton area. The changes could delay the development, but the intent and commitment by Wente to developing the project would indicate probable success of Ruby Hills or a similar development, by Wente or others. We strongly disagree with PG&E's decision to treat the Wente potential development as unlikely and unworthy of the same consideration granted the Kottinger and Lund Ranches. In our view, the fact that Ruby Hills is behind the schedule of development for the Lund Ranch and Kottinger Ranch is not significant when compared to the visual impact (and land use impact) of transmission towers and lines with an expected life of 50 years. PG&E's arguments that overhead transmission lines and residential development are not only compatible but a fact of life are not convincing. The example of the Blackhawk project merely shows that if an overhead transmission

line is already in place, development can still occur, but not necessarily as well as if the line were underground. If PG&E's contention is valid, seemingly most of the undergrounding in PG&E's proposed project could have been avoided. However, PG&E doesn't see an all-overhead alternate as viable, and proposes a project that includes $9 million added costs for undergrounding. We agree that all-overhead is not viable for this project. We similarly don't see overhead as viable in the vicinity of the Wente property and at the two crossings of County designated Scenic Roads.

2. Alternate 1: Route 1, Option 1 has a number of environmental impacts that are greater than the proposed project, although most others are the same or similar to it. The greater impacts are included in all the general environmental categories: land use compatibility, visual quality, biotic factors, geology, and traffic and construction. It ranks worst of the alternates in the first two categories, and inferior to the proposed project in all categories. Some of the reasons for higher impacts are the amount of access roads required, 27,000 feet, causing damage to marsh and potential loss of trees, local adverse impacts on land use planning, visual impacts of the transition station and five towers on the Kottinger Ranch and existing homes to the northwest. Additional impacts are the effects on development of some of the Lund Ranch lots, towers visible from the Alameda County fairgrounds and the Pleasanton Ridge, and some southerly towers are skylighted, i.e., are silhouetted against the sky and as a result are clearly visible even at a distance. The transition station is visible from portions of the Lund property. Because of all these impacts, and since other alternates have reduced impacts, we conclude that this alternate does not warrant further consideration for this project.

3. Alternate 2: Route 1, Option 2 was developed in the DEIR as an attempt to mitigate the visual impacts of Alternate 1, through additional undergrounding and relocation of the transition station, at an additional cost of $2 million. Although significant

improvements resulted, this alternate is still rated worse than the preferred project in all five major categories. Compared to Alternate 1, Alternate 2 has less impact in land use compatibility and visual quality, but greater impact in biotic factors, geology, and traffic and construction. Some of the areas of concern are loss of woodland, visibility of the transition station and a tower from the Kottinger Ranch, and some skylighted towers. Skylighting is a particular concern to the City of Pleasanton, as it wishes to maintain an uncluttered skyline view. For this reason it required Kottinger Ranch to revise its development to eliminate lots where homes could be built on the skyline.

The results of Alternate 2 seem to indicate that the improvements achieved were at the expense of other environmental considerations. The net result is an alternate with significant impacts, very similar to Alternate 1; we therefore conclude that this alternate also does not warrant further consideration.

4. Alternate 3 (60% U.G.) is a variation of PG&E's preferred route with two miles of additional undergrounding and an added cost of $5 million. It has less impact than the preferred project in three categories, land use, visual quality, and biotic factors while it has a greater impact only in traffic and construction. Among the alternatives it ranks second to the all-U.G. Alternate 4 in the categories deemed most important by the participants in this proceeding, i. e., land use and visual quality. The added undergrounding eliminates the overhead crossing of Vineyard Avenue, but the overhead section still crosses Vallecitos Road. Transition Station T5A would have visual impact on existing rural residential and possible future Wente homes, and the overhead towers would have the same impact as this section of the proposed project. The additional undergrounding to the southwest of the Ruby Hill winery site might eliminate the need for Federal Aviation Administration (FAA) referral and attendant potential for significant adverse impacts on air navigation and safety. The segment of the alternate

south of the transition station could cause significant adverse impacts on the City of Pleasanton General Plan Conservation and Open Space Element Programs due to the amount of land needed for overhead rights of way and access roads.

Although Alternate 3 has the least impacts of all alternates having overhead portions, this alternate with 60% U.G. has greater impacts than the all-U.G. Alternate 4. However, it cannot be dismissed as a potentially viable alternate until other aspects as cost and mitigation of impacts are considered further, especially in view of PG&E's strong contention that the extra cost of all-U.G. Alternate 4 is not justified and can't be sustained by PG&E's ratepayers as a whole in this period of competition in supplying electricity.

5. All-U.G. Alternate 4 is the all underground route that costs about $10 million more than the proposed project and eliminates the land use and visual impacts that are associated in varying degrees with all the other alternates. It was developed by DRA as a means of alleviating public concerns over those impacts. Since this alternate was selected after environmental field work was underway on the other alternates, it was not possible in the time available to conduct a complete environmental review. Additional environmental work resulting in a supplemental EIR will be required, if this alternate is selected. Of the five broad environmental categories, all-U.G. Alternate 4 has the least impacts in land use, visual quality, and geology, the greatest impact in traffic and construction, and middle impact in biotic. Since traffic and construction is a short-term impact and it is not a major concern to the parties in this proceeding, it is not a major shortcoming.

As the only all-U.G. alternate, it is also the only one eliminating potential concerns about electric and magnetic fields that can induce voltage and currents in objects in proximity to the transmission line. Additionally, ozone and nitrogen oxides are

generated. At 230 kilovolts many of the problems associated with higher voltages become insignificant, but the guidelines issued by the State of California, Environmental Protection Agency, and the National Electric Safety Code need to be considered with regard to overhead transmission lines. The DEIR recommends testing after construction to insure compliance.

6. Alternate 5 is the no-project alternate. PG&E dismissed this as not viable given the load growth experienced and expected to continue in the Pleasanton area. The DEIR reached the same conclusion, that the electric distribution system serving the area would be deficient by 1990, so that deferral of the project and without reinforcement of the San Ramon substation, overloading would occur, ultimately causing brownouts, load shedding or other loss of service. Section 451 of the California Public Utilities Code states "Every Public Utility shall furnish and maintain such adequate, efficient, just, and reasonable service, instrumentalities, equipment, and facilities...as are necessary to promote the safety, health, comfort, and convenience of its patrons, employees, and the public." We conclude that a no-project alternate is not viable and will not further consider Alternate 5.

We now focus on all-U.G. Alternate 4 recommended in the FEIR and the 60% U.G. Alternate 3. The area of controversy is whether Alternate 4 is required or justified considering the additional cost of about $10 million more than the proposed project, and $5 million more than 60% U.G. Alternate 3. All parties except PG&E believe that the added cost is either warranted or required under CEQA. PG&E strongly supports its preferred project, stating that added undergrounding is not justified given the speculative or uncertain nature of the potential Ruby Hills development. Additionally, PG&E is concerned with minimizing costs in order to keep rates as low as possible to minimize the threat of bypass by existing or potential PG&E customers.

The impacts caused by the proposed project and 60% U.G. Alternate 3 are similar except that the former has additional impacts in the area where it is overhead and the latter is underground. If we were to approve an alternate containing an overhead portion it would be Alternate 3, assuming the additional $5 million over the proposed project were justified or necessary under CEQA.

Next we compare 60% U.G. Alternate 3 to all-U.G. Alternate 4. The major impacts caused by Alternate 3 that are substantially eliminated or reduced to acceptable levels in Alternate 4 are:

a. Land use impacts are associated with new residential development and with regional development plans. Residential development is affected by land needed for the overhead transmission line corridor, the resulting views from residences, the access roads required for maintenance, and the broad public perception that nearby overhead transmission lines are not desirable. The latter causes a probable reduction in property values, especially in original sales, a primary concern of developers considering feasibility of development.

   We are convinced that in the foreseeable future development will occur at a steady pace in the Pleasanton area. Testimony about development pressures due to the proximity of Interstate Freeways 580 and 680, and the recent history of growth convince us that the Wente property is likely to develop, whether by Wente or others. Equally important is the fact that development underway or planned for this area is being done in an environmentally sensitive manner emphasizing the picturesque rural nature of the area. This leads into the next concern.

b. Visual impacts are a concern of substantially all parties to the proceeding, relating to planned new development, existing homes, scenic roads,

> and the general character of the Fertile Crescent area. From the standpoint of regional development an overhead transmission line detracts from the picturesque nature of the area, and would make development of a tourist attraction similar to Silverado in the Napa valley a more difficult and probably less successful venture. Even without that type of development the proposed project would visually impact people visiting the area as well as those residing there. This application for CPCN is an opportunity to protect a unique area from avoidable significant environmental impacts. Although we applaud PG&E for its concern with minimizing costs in general, in this proceeding the added costs must be weighed against the relevant environmental factors.

The California Environmental Quality Act requires, among other things, in Section 21081 that "no public agency shall approve or carry out a project for which an environmental impact report has been completed which identifies one or more significant effects thereof unless such public agency makes one, or more, of the following findings:

> "(a) Changes or alterations have been required in, or incorporated into, such project which mitigate or avoid the significant environmental effects thereof as identified in the completed environmental impact report..."
>
> * * *
>
> "(c) Specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives identified in the environmental impact report." (Emphasis added.)

Saving $5 million in our view does not satisfy the CEQA requirements that would allow significant environmental impacts to remain because of specific economic factors making mitigation

infeasible. PG&E has not made an adequate showing that the $10 million additional cost of all-U.G. Alternate 4 over the proposed project would cause such effects; we conclude that the $5 million additional cost of all-U.G. Alternate 4 over 60% U.G. Alternate 3 would cause even less significant economic effects. The final EIR clearly indicates that total undergrounding is required to mitigate significant unavoidable impacts. Therefore, Alternate 4 is the environmentally superior alternate and as lead agency under CEQA is the only alternate that we can certify. However, as we indicated earlier, PG&E stated that upgrading the San Ramon substation might be preferrable to all-U.G. Alternate 4 with its added $10 million cost compared to the proposed project. We will order PG&E to provide a cost-benefit analysis comparing the upgrade of the substation to Alternate 4.

D. Responsibility for the Additional Cost of the Undergrounding

We now deal with the issue of financial responsibility for the added cost of all-U.G. Alternate 4. PG&E argues that the local cities and benefited residents along the route should pay the added cost. DRA attempted to devise an equitable means of assigning cost responsibility but decided that it was not practical, due largely to the difficulty in determining who benefits from the additional undergrounding. DRA therefore recommends that this cost be shared by all PG&E ratepayers as has been done in the past on similar CPCN applications. The other parties who addressed the issue also recommend that all the ratepayers should share the cost.

The issue of responsibility for added costs of undergrounding is a complex one with potential inequities. For example, is it reasonable to charge Wente for a portion of the extra $5 million cost of undergrounding in Alternate 4 compared to Alternate 3? Should Kottinger Ranch and Lund Ranch share in the added $9 million cost of PG&E's preferred project over an all

overhead alternate? How much of either or both of these costs should the cities of Pleasanton and Livermore share? How should the County of Alameda share, i.e. all the county, or only that portion in reasonable proximity to the project? How will future developments and residents share these added costs that will environmentally benefit the area for perhaps 50 years? Should visitors and tourists share directly or indirectly in these costs?

Although the Commission will consider methods for equitable sharing of added costs of undergrounding in the future, we are convinced that at this time no such method has been developed. We therefore will treat the added undergrounding costs the same as other reasonable project costs, to be ultimately shared by all ratepayers.

In order to properly consider the issues raised in this proceeding on responsibility for additional costs of undergrounding and the related issue of the proper and desired level of reliability and service quality, the Commission believes it necessary to commence an Order Instituting Investigation (OII). The two central issues are:

- How should the Commission more specifically define reliability and service quality as related to electric transmission and distribution projects in order to more closely meet customer preferences regarding cost and service level?

- How should the costs of reliability requirements and environmental mitigation be allocated among customers?

The result of the OII should be a detailed set of rules or guidelines that will clarify the Commission's intent on these issues.

E. Technologies for Undergrounding

DRA recommendation that a Project Construction Board (Board) be appointed by the Commission to evaluate the alternate underground technologies possible for the Vineyard project deserves

consideration along with the information presented on those technologies. The information indicates a significant level of uncertainty regarding the reliability and durability of the alternate underground technologies, as shown on the Trouble Rate table above.

Testimony by DRA consultants Pereira and Wood attempts to minimize the importance of the comparative data, but they offer no better means of comparison. Pereira's contention is that utilities were going through a learning curve, with alternate technologies and whether they now may be comparably reliable is speculative and without foundation in test results or in actual field experience in the United States. Reliability data from other countries is difficult to compare to that of the U.S. since outage criteria are not identical, and language barriers add a level of uncertainty in understanding the data and underlying assumptions.

PG&E witness Kunitake presented the most up-to-date information on testing of solid dielectric cable conducted by EPRI at the Walt's Mill test facility. Tests to date have resulted in consistently premature failures; another set of tests are scheduled to be started in 1988 and will conclude in 1990. Those tests will evaluate foreign manufactured cable, since other countries such as France and Japan appear to have better experience with this technology, indicating that they may have better mastered the manufacturing and, or, quality control processes. We are convinced that at the present time solid dielectric cable is not a viable technology for this project, and that further evaluation of the technology is not warranted at this time. PG&E is encouraged to continue to monitor test results and evaluate the feasibility of solid dielectric cable for new installations.

The other alternate technology proposed in the DEIR to be considered is low-pressure oil-filled cable, which has potential advantages of lower initial cost and less oil spill volume in the event of a rupture or leak. Regarding cost, testimony by Kunitake

points out that a major element of cost saving for this technology results from not using pipe as is used for the high-pressure oil-filled pipe-type system. Kunitake recommends that if the LPOF system is used, it be installed in pipe for increased reliability since the oil would otherwise be contained in a lead sheath which is weak and subject to fatigue failure. Additionally, the pipe provides better protection against damage from digging, backhoes, etc. Although Kunitake had no detailed, accurate cost information, his opinion is that costs would be close between HPOFPT and LPOF if the low-pressure system were installed in pipe. The additional cost of installing the LPOF system in pipe appears justified given the consequences of outages of underground transmission lines, especially with regard to the length of time needed to repair it. Although such an outage doesn't necessarily imply a service outage, at times an outage could result, especially if problems occurred concurrently on other systems supplying the electricity.

The R. W. Beck report on alternate underground technologies also indicates that compressed gas insulated transmission lines are available, but that they don't appear feasible here at this time, due to higher cost. The report states that this system has been used mostly for short distances due to cost.

Testimony by both DRA and PG&E convinces us that we can depend on the excellent service reliability of the system most used by PG&E, the HPOFPT system. Kunitake testified that the company has not experienced a single failure of this technology which is in very widespread use (Tr. p. 199). The average age of the HPOFPT system in service on the PG&E system is 25 years. The LPOF is an older technology than HPOFPT, so it is not likely that we will have enough added experience with it in the near future to determine comparative reliability.

Also worth noting is that PG&E is totally familiar with all aspects of installation and maintenance of the high-pressure

system. We see no probable advantage to the ratepayer in further considering the LPOF system for this project. Perhaps in the future other technologies may offer potentially worthwhile savings or other advantages, but at present we will not risk compromising service reliability for questionable benefits.

In summary, since solid dielectric, gas filled, and low-pressure oil-filled technologies do not offer advantages over the high-pressure oil-filled pipe-type system proposed for underground use by PG&E, we conclude that there is no need to employ the Board recommended by DRA to evaluate alternate underground technologies for this project.

Findings of Fact

1. PG&E filed an application for a certificate of public convenience and necessity on October 1, 1986 for authority to construct, operate, and maintain a 230 kV transmission line from PG&E's Tesla-Newark 230 kV transmission line to the proposed Vineyard substation in Alameda County.

2. Load growth in the Pleasanton area recently has been and is expected to continue at the rate of approximately 9.0 MW per year.

3. The present transmission system serving the Pleasanton area will be deficient by around 1990.

4. The proposed project will upgrade the present transmission system adequately to serve the expected maximum future load of the Pleasanton area.

5. The proposed project consists of four main parts:

- Vineyard substation on Stanley Boulevard near the Valley Avenue extension in Pleasanton.
- 1.6 miles of underground 230 kV transmission line from Vineyard substation to a transition station.
- A transition station to convert from underground to overhead located near the Arroyo del Valle gravel quarry.

- 3.7 miles of overhead 230 kV transmission line from the transition station to a junction with the existing Tesla-Newark transmission line south of Vallecitos Road.

6. PG&E proposes to use conventional technologies including high-pressure oil-filled pipe-type cable for the underground section, and steel lattice type towers for the overhead section.

7. PG&E indicated that it may consider expanding the San Ramon substation instead of constructing the all-U.G. Alternate 4 transmission system.

8. Expanding the San Ramon substation may offer benefits or shortcomings as compared to constructing the all-U.G. Alternate 4 transmission system.

9. DRA recommends that a Project Construction Board be appointed by the Commission to evaluate alternate underground technologies.

10. PG&E has not experienced any failures in its high-pressure oil-filled system which is in widespread use.

11. The two major concerns of the parties regarding the proposed project are visual impact and land use impact.

12. The Commission issued a draft Environmental Impact Report (DEIR) on July 20, 1987 as lead agency under CEQA.

13. The DEIR recommended all-U.G. Alternate 4 for the project.

14. At the public hearings, all parties except PG&E supported the all-U.G. Alternate 4.

15. Four days of evidentiary hearings were held in San Francisco on September 28, 29, 30 and October 1, 1987.

16. At the evidentiary hearings all witnesses except for PG&E supported all-U.G. Alternate 4 as appropriate to mitigate visual and land use impacts.

17. PG&E opposes undergrounding beyond the 1.6 miles recommended to be undergrounded in the proposed project, as not being justified considering the additional cost.

18. All DEIR alternates except all-U.G. Alternate 4 have one or more significant environmental effects that can't be mitigated to lesser levels.

19. The Commission issued a final environmental impact report (FEIR) on October 15, 1987 as lead agency under CEQA. The FEIR adopted the conclusions of the DEIR.

20. A number of parties indicated potential plans for a tourist attraction in the Fertile Crescent of the Pleasanton-Livermore area of Alameda County.

21. PG&E recommends that if all-U.G. Alternate 4 is certificated, the local parties who benefit from the added undergrounding pay the added costs of it.

22. The Commission intends to open an OII on the issues of reliability and service quality related to electric transmission projects, and allocation of costs of reliability requirements and environmental mitigation among customers.

23. All-U.G. Alternate 4 may conflict with potential plans by the Alameda County Flood Control and Water Conservation District to construct a 36-inch water line in the vicinity of a portion of Alternate 4 along Vineyard Avenue.

Conclusions of Law

1. The Pleasanton area requires upgraded electrical facilities by 1990 to meet growth in electrical demand.

2. PG&E should evaluate the costs and benefits of the approved project compared to expansion of the San Ramon substation alternate before commencing construction.

3. A supplemental EIR is required for all-U.G. Alternate 4 before it can be given final certification approval.

4. Alternate technologies for underground transmission do not at this time offer potential for significant advantages over the high-pressure oil-filled pipe-type cable system proposed by PG&E for underground use.

5. The high-pressure oil-filled pipe-type cable proposed by applicant for the underground section has proven extremely reliable and is the appropriate technology for this project.

6. It is not appropriate to appoint a Project Construction Board to evaluate alternate underground technologies for this project.

7. The economics of all-U.G. Alternate 4 do not make it infeasible under the California Environmental Quality Act (CEQA).

INTERIM ORDER

IT IS ORDERED that:

1. A certificate of public convenience and necessity (CPCN) is granted to Pacific Gas and Electric Company (PG&E) to construct, operate, and maintain the all-U.G. Alternate 4 variation of the proposed project, subject to the following conditions:

   a. PG&E is ordered to prepare a study comparing the economics and operational considerations of all-U.G. Alternate 4 with the expansion of the San Ramon substation alternate and serve it on the Commission and all parties to the proceeding within 90 days of the effective date of this order.

   b. PG&E is ordered to comply with the mitigation measures contained in the Final Environmental Impact Report and in this opinion.

   c. PG&E is ordered to comply with the mitigation measures contained in the Supplemental Environmental Impact Report that will be prepared on the approved all-U.G. Alternate 4.

2. The Commission's Division of Ratepayer Advocates (DRA) shall prepare and submit to all parties of record in this proceeding a supplemental environmental impact report (EIR) on Alternate 4 within 60 days of the effective date of this order.

APPENDIX A
NOTICE OF DETERMINATION

TO: Secretary for Resources
1416 9th St., Room 1312
Sacramento, CA 95814

FROM: Calif. Public Utilities Comm.
350 McAllister Street
San Francisco, CA 94102

SUBJECT: Filing of Notice of Determination in compliance with Section 21008 or 21152 of the Public Resources Code.

PROJECT TITLE: 230 KV Transmission Line from Vineyard Substation to the PG&E Tesla-Newark 230 KV Transmission Line

STATE CLEARINGHOUSE NUMBER: N/A

CONTACT PERSON: Elaine Russell

PROJECT LOCATION: City of Pleasanton and Alameda County, California.

PROJECT DESCRIPTION: Vineyard Substation, 5.6 miles of underground 230 kV transmission line, and an underground to overhead transition station, and an overhead connection to the Tesla-Newark 230 kV transmission line.

This is to advise that the California Public Utilities Commission, as Lead Agency, has approved the above-mentioned project and has made the following determinations regarding the above-mentioned project:

1. The project <u>will not</u> have a significant effect on the environment.

2. A Final Environmental (Impact Report) was prepared for this project pursuant to the provisions of CEQA. A copy of the Final Environmental may be obtained at 1107 9th Street, Suite 710, Sacramento, CA 95814.

3. Mitigation measures <u>were</u> made a condition of the approval of this project.

4. A Statement of Overriding Consideration <u>was not</u> adopted for this project.

DATE RECEIVED FOR FILING _____

PROPOSED APPROVAL

_____
EXECUTIVE DIRECTOR

Date: _____

The supplemental EIR shall include consideration of impacts on the Alameda County Flood Control and Water Conservation District plans to construct a new water line along a portion of this project.

3. PG&E shall submit an updated cost estimate for all-U.G. Alternate 4 reflecting the supplemental EIR mitigation measures, final design criteria, and any revisions to project costs resulting from the conditions in this order, within 90 days of the effective date of this order.

4. DRA shall evaluate and recommend to the Commission on the reasonableness of the PG&E updated cost estimate within 150 days of the effective date of this order.

5. The authorization granted in this decision shall expire if construction is not commenced within one year of the effective date of this order.

6. The Executive Director of the Commission shall file a Notice of Determination for the project as set forth in Appendix A to this decision with the Secretary for Resources.

7. The application is granted as set forth above.

This order is effective today.

Dated _____, at San Francisco, California.

State of California — Public Utilities Commission
San Francisco

M E M O R A N D U M

4a

Date : 27 January 1988

To : The Commission

From : Commissioner Frederick R. Duda

File No.:

Subject : Alternate to Agenda Item No. 4 of January 28th -- The 230 Kv PG&E Line to the Vineyard Substation

The proposed alternate clarifies the Commission's concerns regarding the following matters:

1. That the relative environmental benefits/costs of each of the alternative routes was not well defined by PG&E;

2. That, given the cost of the all underground alternative, PG&E did not define additional alternatives to the project adequately (such as the San Ramon substation);

3. That we are not completely convinced that the crossing of Vallecitos Road is in fact a "significant" visual/enviromental impact given the large towers for the Tesla/Newark line on the adjoining ridge;

4. That PG&E may proceed to introduce additional evidence on environmental mitigation measures, project costs, and other project alternatives;

5. That CACD will provide advice to the Commission on issues related to allocation of costs for undergrounding and environmental mitigation; and,

5. That transmission reliability and quality of service issues should be addressed in future proceedings of the Commission (instead of in an OIR).

Overall, this will put PG&E in a position of supporting alternatives to the all underground alternative if they chose to do so.

"(c) Specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives identified in the environmental impact report." (Emphasis added.)

C. Selection of Route Alternate

The five alternates to the proposed project considered in the draft EIR and final EIR include the two Route 1 options in the PEA, Alternates 1 and 2. Two additional alternates are a variation of the Route 3 option having additional undergrounding (60%), the all-U.G. Route 4, and the no project alternate. Those five alternates are:

Proposed project: Route 3, Option 1
Alternate 1: Route 1, Option 1
Alternate 2: Route 1, Option 2
Alternate 3: Route 3, Option 2 (60% U.G.)
Alternate 4: Route 4 (all-U.G.)
Alternate 5: no project

We note at the outset that PG&E could have provided more sufficient justification for choosing between the various alternatives in this case on environmental grounds and has not adequately defined other alternatives to the proposed project which are comparable in cost to Alternatives 2, 3, and 4.

1. The proposed project, Route 3, Option 1, generated significant controversy regarding the two environmental areas of greatest concern, visual quality and land use, with visual quality as the predominant consideration. Extensive testimony of DRA and consultants, property owners, public officials, developers, planners and other experts, and local citizens all express considerable concern about the impact of overhead transmission towers and lines on this unique area referred to as the Fertile Crescent. The cities of Pleasanton and Livermore, Wente, and other parties mention potential plans for development of a tourist

attraction similar to Silverado in the Napa Valley. In their view, overhead transmission facilities are not compatible or desirable with such uses. Property owners and developers fear that overhead transmission lines will reduce the desirability of their property and development, both by rendering some portion unusable for

Testimony about development pressures due to the proximity of Interstate Freeways 580 and 680, and the recent history of growth convince us that the Wente property is likely to develop, whether by Wente or others. Equally important is the fact that development underway or planned for this area is being done in an environmentally sensitive manner emphasizing the picturesque rural nature of the area. This leads into the next concern.

Visual impacts are a concern of substantially all parties to the proceeding, relating to planned new development, existing homes, scenic roads, and the general character of the "fertile crescent" area.

From the standpoint of regional development an overhead transmission line detracts from the picturesque nature of the area, and would make development of a tourist attraction similar to Silverado in the Napa valley a more difficult and probably less successful venture. Even without that type of development the proposed project would visually impact people visiting the area as well as those residing there. This application for CPCN is an opportunity to protect a unique area from avoidable significant environmental impacts. On the other hand, given the large towers and high voltage lines (Tesla-Newark) on the ridge over Vallecitos Road, we are not entirely convinced that in fact the overhead section resulting from construction of the 60% Alternate 3 creates an additional "significant" visual/environmental impact. In this regard, we believe that PG&E has not provided sufficient evidence to make better comparisons between alternative routes. Although we applaud PG&E for its concern with minimizing costs in general, we must rely upon the record in this proceeding in weighing the added costs against the relevant environmental factors.

All-U.G. Alternate 4 has a cost approximately $5 million greater than 60% U.G. Alternate 3 and $10 million greater than the PG&E proposed project. Saving $5 million in our view does not satisfy the CEQA requirements that would allow significant

environmental impacts to remain because of specific economic factors making mitigation infeasible. PG&E has not made an adequate showing that the $10 million additional cost of all-U.G. Alternate 4 over its proposed project would cause such effects; we conclude that the $5 million additional cost of all-U.G. Alternate 4 over 60% U.G. Alternate 3 would cause even less significant economic effects. The final EIR clearly indicates that total undergrounding is required to mitigate significant unavoidable impacts. Therefore, all-U.G. Alternate 4 is the environmentally superior alternate, given the record in this case.

As we indicated earlier, PG&E stated that upgrading the San Ramon substation might be preferrable to all-U.G. Alternate 4 with its added $10 million cost compared to the proposed project. We will order PG&E to provide a cost-benefit analysis comparing the upgrade of the substation to all-U.G. Alternate 4. PG&E may petition the Commission to modify this decision and reopen this proceeding if they so chose to provide additional evidence on the relative environmental merits of alternative routes and on other alternatives to this transmission project.

D. Mitigation Measures for All-U.G. Alternate 4

Mitigation measures are identified in the DEIR and adopted in the FEIR to reduce or avoid significant impacts in the environmental categories that follow:

Wildlife

A preconstruction survey is needed to determine presence and location of nesting raptors, nesting burrowing owls, active kit fox dens, and coastal sage scrub.

If raptors nest in the area route the line to avoid the nest sites and seasonal restrictions placed on construction to minimize interference with courtship, nest building and incubation.

Route to avoid riparian areas and coastal sage scrub, and make maximum use of existing roads and trails.

If burrowing owls nest in the area, PG&E should avoid the nest sites, and should leave mounds of dirt from construction and maintenance in the areas if doing so doesn't cause maintenance or health hazards.

Seasonal restriction on construction in Arroya del Valle Creek are needed to minimize interference with migration of fish and breeding of fish and wildlife. Revegetate of disturbed areas in consultation with the California Department of Fish and Game. Revegetate disturbed vegetation sites with native plant species that have value as food and cover for wildlife.

example, is it reasonable to charge Wente for a portion of the extra $5 million cost of undergrounding in all-U.G. Alternate 4 compared to Alternate 3? Should Kottinger Ranch and Lund Ranch share in the added $9 million cost of PG&E's proposed project over an all overhead alternate? How much of either or both of these costs should the cities of Pleasanton and Livermore share? How should the County of Alameda share, i.e. all the county, or only that portion in reasonable proximity to the project? How will future developments and residents share these added costs that will environmentally benefit the area for perhaps 50 years? Should visitors and tourists share directly or indirectly in these costs?

Although the Commission will consider methods for equitable sharing of added costs of undergrounding in the future, we are convinced that at this time no such method has been developed. We invite the Commission Advisory and Compliance Division to advise us by memorandum of the scope of this issue, including other options for having certain additional costs borne by local entities directly benefitting. We especially seek advice on the how we might address the local option issue and how it may be raised in the future. In the instant proceeding, we will treat the added undergrounding costs the same as other reasonable project costs, to be ultimately shared by all ratepayers.

F. Cost-Effectiveness, Cost Allocation, and Reliability Determinations

This proceeding has presented the Commission with a number of very difficult issues related to the level of reliability needed, the cost-effectiveness of the project given the cost of undergrounding, the benefits which flow to surrounding landowners from undergrounding, the alternative routes and options proposed, and the allocation of costs for additional undergrounding. We believe that PG&E could have defined other less expensive alternatives to the All U.G. Alternate 4, but did not do so.

The issues raised in this proceeding on responsibility for additional costs of undergrounding and the related issue of the proper and desired level of reliability and service quality are of great interest to the Commission. We expect to address these issues more fully in specific applications involving the major electric utilities. We expect the parties, including DRA, to address the following two issues:

- How should the Commission more specifically define reliability and service quality as related to electric transmission and

distribution projects in order to more closely meet customer preferences regarding cost and service level?

- How should the costs of reliability requirements and environmental mitigation be allocated among customers?

In the context of specific applications we hope to develop guidelines for future application to proceedings such as this.

G. Technologies for Undergrounding

DRA recommendation that a Project Construction Board be appointed by the Commission to evaluate the alternate underground technologies possible for the Vineyard project deserves consideration along with the information presented on those technologies. The information indicates a significant level of uncertainty regarding the reliability and durability of the alternate underground technologies, as shown on the Trouble Rate Table 10 above.

Testimony by DRA consultants Pereira and Wood attempts to minimize the importance of the comparative data, but they offer no better means of comparison. Pereira's contention is that utilities were going through a learning curve with alternate technologies which now may be comparably reliable is speculative and without foundation in test results or in actual field experience in the United States. Reliability data from other countries is difficult to compare to that of the United States since outage criteria are not identical, and language barriers add a level of uncertainty in understanding the data and underlying assumptions.

PG&E witness Kunitake presented the most up-to-date information on testing of solid dielectric cable conducted by EPRI at the Waltz Mill test facility. Tests to date have resulted in consistently premature failures; another set of tests are scheduled to be started in 1988 and will conclude in 1990. Those tests will

6. PG&E proposes to use conventional technologies including HPOFPT cable for the underground section, and steel lattice type towers for the overhead section.

7. PG&E indicated that it may consider expanding the San Ramon substation instead of constructing the all-U.G. Alternate 4 transmission system.

8. Expanding the San Ramon substation or other project alternatives may offer benefits or shortcomings as compared to constructing the all-U.G. Alternate 4 transmission system.

9. DRA recommends that a Project Construction Board be appointed by the Commission to evaluate alternate underground technologies.

10. PG&E has not experienced any failures in its high-pressure oil-filled system which is in widespread use.

11. The two major concerns of the parties regarding the proposed project are visual impact and land use impact.

12. The Commission issued a draft Environmental Impact Report (DEIR) on July 20, 1987 as lead agency under CEQA.

13. The DEIR determined all-U.G. Alternate 4 to be the environmentally superior alternate for the project.

14. At the public hearings, all parties except PG&E supported the all-U.G. Alternate 4.

15. Four days of evidentiary hearings were held in San Francisco on September 28, 29, 30 and October 1, 1987.

16. At the evidentiary hearings all witnesses except for PG&E supported all-U.G. Alternate 4 as appropriate to mitigate visual and land use impacts.

17. PG&E opposes undergrounding beyond the 1.6 miles recommended to be undergrounded in the proposed project, as not being justified considering the additional cost.

18. All DEIR alternates except all-U.G. Alternate 4 have one or more significant environmental effects that can't be mitigated to lesser levels.

19. The Commission's DRA issued a final environmental impact report (FEIR) on October 15, 1987 as lead agency under CEQA. The FEIR adopted the conclusions of the DEIR.

20. A number of parties indicated potential plans for a tourist attraction in the "fertile crescent" of the Pleasanton-Livermore area of Alameda County.

21. PG&E recommends that if all-U.G. Alternate 4 is certificated, the local parties who benefit from the added undergrounding pay the added costs of it.

22. The Commission intends to include in future proceedings the issues of reliability and service quality related to electric transmission projects, and asks for advice from CACD on allocation of costs of reliability requirements and environmental mitigation among customers.

23. PG&E may petition to modify and reopen this proceeding.

Conclusions of Law

1. The Pleasanton area requires upgraded electrical facilities by 1990 to meet growth in electrical demand.

2. PG&E should evaluate the costs and benefits of the approved project compared to expansion of the San Ramon substation and other project alternates before commencing construction.

3. A supplemental EIR is required for all-U.G. Alternate 4.

4. Alternate technologies for underground transmission do not at this time offer potential for significant advantages over the HPOFPT cable system proposed by PG&E for underground use.

5. The HPOFPT cable system proposed by applicant for the underground section has proven extremely reliable and is the appropriate technology for this project.

6. It is not appropriate to appoint a Project Construction Board to evaluate alternate underground technologies for this project.

7. The economics of all-U.G. Alternate 4 do not make it infeasible under the CEQA.

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from the conditions in this order, within 90 days of receipt of the supplemental EIR.

5. DRA shall evaluate and recommend to the Commission on the reasonableness of the PG&E updated cost estimate within 60 days of receipt of the estimate.

6. The authorization granted in this decision shall expire if construction is not commenced within two years of the effective date of this order.

7. The Executive Director of the Commission shall file a Notice of Determination for the project as set forth in Appendix A to this decision with the Secretary for Resources.

8. The application is granted as set forth above.

This order is effective today.

Dated JAN 28 1988, at San Francisco, California.

STANLEY W. HULETT
President
DONALD VIAL
FREDERICK R. DUDA
G. MITCHELL WILK
JOHN B. OHANIAN
Commissioners