1988 Cal. PUC LEXIS 886, *; 30 CPUC2d 189;
99 P.U.R.4th 141

LEXSEE 30 CPUC 2D 189 (1988)

Application of Pacific Gas and Electric Company, for Authorization to Establish a Rate Adjustment Procedure for Its Diablo Canyon Nuclear Power Plant; to Increase Its Electric Rates to Reflect the Costs of Owning, Operating, Maintaining and Eventually Decommissioning Units 1 and 2 of the Plant; and to Reduce Electric Rates Under Its Energy Cost Adjustment Clause and Annual Energy Rate to Reflect Decreased Fuel Expenses; And Related Matter

Decision No. 88-12-083, Application No. 84-06-014 (Filed June 6, 1984; amended December 21, 1984), Application No. 85-08-025 (Filed August 12, 1985)

California Public Utilities Commission

1988 Cal. PUC LEXIS 886; 30 CPUC2d 189; 99 P.U.R.4th 141

December 19, 1988; As Amended June 16, 1989

[*1]

(See Appendix A for appearances.)

OPINION: OPINION

I. Summary of Decision

PG&E seeks to have the $ 5.5 billion cost of constructing its Diablo Canyon nuclear power plant included in rate base. The Commission's Division of Ratepayer Advocates (DRA) asserts that only $ 1.1 billion of those costs were prudently incurred and the balance of $ 4.4 billion should be disallowed. The Attorney General (AG) and others support the DRA. After four years of preparation for trial PG&E, the DRA, and the Attorney General (the proponents) agreed to a settlement under which Diablo Canyon costs are excluded from rate base and are recovered over a period of 28 years under a method called performance based pricing. This decision approves and adopts the settlement. The DRA and the AG estimate that the revenue to be received by PG&E from the settlement over the term of the agreement is equivalent to a $ 2 billion rate base disallowance. The settlement provides that ratepayers pay only for power produced by Diablo Canyon at an escalating price determined by a formula tied to the Consumer Price Index. All costs of the operation of Diablo Canyon are paid by PG&E. The operating risks of the plant are [*2] shifted from the ratepayers to the utility and its shareholders. Opponents of the settlement argue that this shift of risk and pricing give PG&E an incentive to disregard safety to maximize profits. The decision finds the opposite to be more likely because the risks of a safety violation plant shut down are expensive and fall on PG&E, not the ratepayers.

The primary assumption supporting the $ 2 billion equivalent disallowance is that over its term Diablo Canyon will operate at a 58% capacity factor. Although the decision accepts this capacity factor, it does so with reservations, noting that PG&E expects to operate at a much higher capacity factor. Each percentage point change in lifetime capacity factor is equivalent to approximately $ 100 million in equivalent disallowance.

Should the plant perform poorly, under the settlement PG&E is provided a minimum guarantee, known as a floor payment, which assures it will receive revenue based on the prices set in the settlement agreement at a 36% capacity factor. To the extent PG&E receives floor payments it must repay them from 50% of its Diablo Canyon revenue when operating over 60% capacity. Should PG&E fail to repay the floor [*3] payment by the termination of the agreement for whatever cause, the Commission retains the discretion to order a partial refund.

The settlement provides for a three person safety committee to review PG&E's adherence to safety standards at Diablo Canyon to be funded by PG&E and charged to the ratepayers. The initial budget is $ 500,000 a year, which escalates over time in proportion to the escalation of the price of Diablo Canyon electricity. There was strong opposition to the formation of the committee on the grounds that:

i. the NRC preempts safety regulation,

ii. the committee has no enforcement powers and

iii. the committee is a sham and is merely an attempt to appease the public's safety concerns.

The decision finds that PG&E has a strong incentive to operate safely and that the safety committee, when properly staffed, should render worthwhile service.

The decision finds that this Commission cannot fix the price paid for Diablo Canyon power for 28 years and have that price bind future Commissions. However, by finding the settlement to be in the public interest we expect future Commissions to uphold the settlement and implement it. The net change to 1989 revenue requirements [*4] is an increase of $ 284,212,000.

II. Introduction

A. Overview of the Diablo Canyon Nuclear Power Plant Project

The Diablo Canyon Nuclear Power Plant (Diablo Canyon) is located on the California coast in San Luis Obispo County, approximately halfway between San Francisco and Los Angeles. The power plant consists of two nuclear powered pressurized water reactor (PWR) units. Unit 1 is capable of producing 1,084 megawatts of electricity (MWe), and Unit 2 is capable of producing 1,106 MWe.

When Pacific Gas and Electric Company (PG&E) announced the project in February of 1963, Unit 1 was expected to go into commercial operation on May 1, 1972 at a cost of $ 162,270,000. Unit 2 was expected to go into commercial operation in the summer of 1974 at a cost of $ 157,400,000.

Unit 1 began commercial operation on May 7, 1985, followed by Unit 2 on March 13, 1986. The combined cost of both units upon completion was $ 5.518 billion. PG&E filed these applications requesting that the entire $ 5.518 billion be included in its rate base. The DRA opposed on the ground that approximately $ 4.4 billion of those costs were imprudently incurred. The Attorney General of the State of [*5] California (AG) and other intervenors also opposed. After four years of preparation the matter was set for hearing on June 27, 1988; on June 27 PG&E, the DRA, and the AG announced a settlement and sought Commission approval. Public hearings were held before Administrative law Judge (ALJ) Robert Barnett to determine if the settlement is in the public interest. The adequacy of the settlement is the subject of this decision.

PG&E applied to the CPUC in 1966 for a certificate of public convenience and necessity (CPC&N) to build and operate Diablo Canyon. Public hearings were held after which a CPC&N was issued for Unit 1 in November 1967, and for Unit 2 in March 1969. The CPC&N was issued as an interim license pending receipt of a construction permit from the Atomic Energy Commission (AEC). n1

n1 The AEC became the Nuclear Regulatory Commission (NRC) in 1975. The two terms are used interchangeably throughout this decision. The NRC is responsible for regulating the construction and operation of nuclear power plants operated by public utilities. The NRC establishes safety criteria and requirements and reviews proposed plant designs to assess compliance.

PG&E applied to the [*6] AEC for a construction permit for Unit 1 in early 1967. In January 1968, the AEC staff issued its Safety Evaluation Report (SER) n2 concluding that the construction permit should be granted. The Atomic Safety and Licensing Board (ASLB) n3 conducted mandatory hearings on the construction permit application and issued a favorable decision for Unit 1 in April 1968. The plant was designed to withstand a magnitude 6.75 (Richter Scale) earthquake and ground acceleration in excess of the double design acceleration of 0.4g. Construction began on Unit 1 in June 1968.

n2 The SER is the report prepared by the AEC/NRC staff after they have reviewed a utility's application for a construction permit and operating license. This report is usually supplemented by the staff during the review process. The SER reflects the NRC's view of the status of the safety issues.

n3 The ASLB is a three member administrative law judge panel employed by the NRC to hear licensing cases. The ASLB conducts public hearings on all construction permit applications and contested operating license applications.

In mid-1968, PG&E submitted its construction permit application for Unit 2. The application review [*7] process for Unit 2 was somewhat simplified by the resolution of seismic and site suitability issues during the Unit 1 review. The AEC staff issued its SER in November 1969, and hearings were held in January 1970. After the hearings on Unit 2 had concluded, the Scenic Shoreline Preservation Conference, Inc. (SSPCI) moved to reopen the proceedings alleging that new geological, seismological, and seismic design information cast doubt on the suitability of the Diablo Canyon site. n4 SSPCI proposed that the location and orientation of several 1969 earthquake epicenters in the Diablo Canyon area indicated the potential for seismic forces greater than those anticipated by PG&E.

n4 The building of Diablo Canyon was not without critics. Intervenors participated in nearly every step of Diablo Canyon's licensing process. The intervenors contested 76 separate issues in 15 AEC/NRC hearings.

The Unit 2 construction permit proceedings were reopened in August of 1970 to further examine those geological issues. The AEC staff, and the AEC's consultants on geology and seismology, the United States Geological Survey (USGS), and the United States Coast and Geodetic Survey (USC&GS), respectively, [*8] and the ASLB deemed the new information to be insufficient to indicate any problem with the site. In December 1970, the ASLB authorized the issuance of a Construction Permit for Unit 2. Construction began in 1971. When the Preliminary Safety Analysis Report (PSAR) for Unit 2 was submitted to the AEC in 1968, the phasing of Unit 2 was set at 26 months behind the Unit 1 schedule. n5

n5 The PSAR is required to be submitted by the utility to the AEC/NRC as part of the construction permit application process. The PSAR contains, among other things, a description of the plant design criteria and its safety features, and a description of the site suitability for a nuclear power plant.

When Diablo Canyon was chosen as a possible site, PG&E conducted initial geoseismic investigations of the area. This work included preliminary geological studies by PG&E's geologist, Mr. Massimo Micheli, and two consulting geologists, Mr. Elmer Marliave and Dr. Richard Jahns. Dr. Hugo Benioff and Dr. Stewart Smith were hired as consultants by PG&E to evaluate the seismology of the site. Meanwhile others, for other purposes, were also examining the geology near the site. Looking for oil, two Shell [*9] Oil Company geologists discovered fault lines about 2 to 4 miles offshore of Diablo Canyon. The discovery was made in 1969 and came to be known as the Hosgri Fault. The importance of the discovery was critical because it put into question the location of a magnitude 7.3 earthquake which occurred in 1927. Prior to 1970 most scientific literature located the 1927 earthquake some 60 miles southwest of Diablo Canyon, but there were other opinions.

In 1971, the discovery of the Hosgri Fault was made public. PG&E learned of the fault from its consulting geologists in 1972. In time, the AEC and the USGS became concerned about the safety of the plant in the event of a nearby earthquake in excess of the original plant earthquake design basis of magnitude 6.75 and ground acceleration in excess of the double design acceleration of 0.4g. As a result of these seismic concerns, the NRC required PG&E to reanalyze the plant using an earthquake design basis magnitude of 7.5, and a ground acceleration of 0.75g. The seismic redesign of the plant, and the plant modifications took until 1981 to complete.

During this period, there were other changes in regulatory requirements. New regulations [*10] on fire protection were imposed as a result of the 1975 fire at the Tennessee Valley Authority's Browns Ferry Nuclear Power Plant. In addition, in March 1979 the nuclear accident at Three Mile Island (TMI) occurred and caused the NRC to issue a massive number of regulatory requirements. TMI modifications alone caused a two-year licensing delay at Diablo Canyon.

In September of 1981, after the completion of the Hosgri and TMI modifications, the NRC granted PG&E a low power operating license for Unit 1. Shortly thereafter the so-called mirror image error (discussed in Section III.D) was discovered. As a result, the NRC mandated an Independent Design Verification Program (IDVP) for the project, which required PG&E to prove to the NRC that the design of the plant was safe. This program started in 1982 and was substantially completed by the end of 1983.

On November 8, 1983, the NRC partially reinstated the low power operating license to allow fuel loading of Unit 1 and pre-criticality testing. In April 1984, the NRC completed the reinstatement of the low power operating license and allowed PG&E to conduct tests at up to 5% of rated power. In August 1984, the NRC authorized issuance [*11] of a full power operating license for Unit 1. Unit 2 received a low power operating license in April 1985 and a full power operating license in August 1985.

Unit 1 entered commercial operation on May 7, 1985, followed by Unit 2 on March 13, 1986. The combined cost of both units upon completion was $ 5.518 billion.

B. Procedural History

This case is now before us to determine whether the proposed settlement agreement entered into between PG&E, the DRA, and the Attorney General, hereinafter the "proponents", is in the public interest.

PG&E filed these applications to increase rates to reflect the cost of owning, operating, maintaining, and eventually decommissioning Units 1 and 2 of Diablo Canyon in June 1984, and August 1985, respectively. The processing of the applications was to be handled in three phases. The first phase consisted of two parts, Phase 1A and Phase 1B. Phase 1A considered the expenses and investment to be recognized for setting interim rates. Phase 1B called for a more detailed investigation of the appropriate expenses and investment to be recognized for interim rates, as well as alternatives to traditional ratemaking. Phase 2 was to consider the prudence [*12] of the investment in Diablo Canyon that the Commission would allow for ratemaking purposes. Phase 3 was to consider the financial and ratemaking effects of the investment adopted in Phase 2.

Decision (D.) 85-03-021 established an initial accounting rate mechanism for Unit 1, which was to take effect upon the commercial operation of Unit 1. This rate mechanism, which was based upon a stipulation between PG&E and the DRA, established a tariff for recording the costs and fuel savings attributable to Unit 1's commercial operation. This initial tariff was intended to be temporary, and was to remain in effect until the Commission authorized an interim rate mechanism. This initial rate mechanism provided for protection against overcharges to customers, and underrecovery by PG&E. A tariff clause and two accounts were set up: the Diablo Canyon Adjustment Clause (DCAC); the Diablo Canyon Adjustment Account (DCAA), and the Diablo Canyon Interim Adjustment Account (usually termed the DCIA). The DCAC permits an interim rate increase for certain costs, subject to refund. The DCAA is a balancing account which accrues the difference between the costs of Unit 1 and revenues billed under the [*13] DCAC rate. The DCIA is a balancing account which accumulates the interim amount of fuel savings associated with the operation of Unit 1.

Hearings were held in 1985 to determine a permanent interim rate mechanism for Unit 1. In D.85-12-085, we granted PG&E an interim rate increase of $ 54.2 million to cover the operating and maintenance expenses for Unit 1. In addition, we allowed PG&E to retain any net fuel cost savings resulting from the operation of Unit 1. All of the revenues collected and fuel savings realized were subject to refund pending our final decision in connection with these applications. A similar rate mechanism was adopted for Unit 2 by D.86-01-054.

In D.86-06-079, the Diablo Canyon Rate Case Account (DCRCA) was established as a deferred debit account to accrue PG&E's rate case expenditures for these proceedings beginning June 1986 until completion of the case. The reasonableness of such expenditures was to be determined at a later date.

During the summer and fall of 1986, we held the Phase 1B hearings on interim rates for Unit 2 plus hearings on issues of noninvestment related expenses, calculation of fuel cost savings, cogeneration and geothermal fuel savings, [*14] DCAA treatment, and decommissioning expenses. In D.87-03-029, we addressed the issue of decommissioning, and authorized PG&E to increase rates by $ 53.2 million per year to cover the costs of decommissioning Units 1 and 2.

In D.87-10-041, we denied further interim rate relief to PG&E, but authorized booking for later recovery reasonable noninvestment expenses for the plant of up to $ 197 million annually. Further hearings were ordered to review the reasonableness of this amount. Prior to the hearings, PG&E and the DRA stipulated to (1) the reasonableness of the amounts for noninvestment costs that should be booked to the DCAA since the beginning of commercial operation of the plant in May 1985 through December 1987; and (2) an estimate of the noninvestment costs for test year 1988. This stipulation was approved in D.88-03-067.

Subsequently, in D.88-05-027, we ordered that the noninvestment costs of the plant be moved from the DCAA to base rates covering PG&E's electric service operations. We also authorized PG&E to increase rates by $ 147.4 million which, when added to the $ 54.2 million rate increase granted by D.85-12-085, would recover estimated noninvestment

costs for the [*15] Diablo Canyon plant for test year 1988. We also authorized continued booking to the DCAA of $ 472.9 million in interim rates, representing fuel savings attributable to the operation of Diablo Canyon.

When the settlement was announced, we were scheduled to begin the hearings in the reasonableness phase (Phase 2) of the Diablo Canyon rate case. As a result of the proposed settlement, the proponents jointly moved for an indefinite continuance of Phase 2 and for the establishment of a schedule for Commission consideration of the proposed settlement. That motion was granted.

III. Background

In preparation for trial, PG&E filed more than 9,300 pages of testimony and about 150,000 pages of documentary evidence. The DRA filed more than 22,600 pages of testimony and documentary evidence. The facts set forth in this Background section were culled from that testimony and exhibits.

A. PG&E's Decision to Design and Build Diablo Canyon

Some of the factors leading to the development of nuclear power plants in the 1960's and 1970's included the increase in demand for electricity by consumers, the reduction of utility dependence on water runoff to operate hydroelectric power stations, [*16] air pollution control problems associated with coal burning plants, the future availability of natural gas, and rising oil prices. During this period, the AEC and the Congress encouraged the building of nuclear power plants to meet future electricity demands.

Most of the utility industry viewed a nuclear power plant to be very similar in design to a fossil fuel plant with the exception of the equipment needed for the nuclear steam supply system (NSSS). In 1964, seven of the ten largest private utilities in the United States provided their own architect, engineer, and construction manager (AE/CM) services on fossil fuel plants. Before World War II, PG&E had designed and constructed thermal generation stations. From 1955 on, with the exception of the Humboldt Bay Nuclear Power Plant (HBNPP), PG&E performed the role of AE/CM on all 45 of its power plant projects.

PG&E gained nuclear experience through its involvement on other nuclear projects. In 1951, PG&E and Bechtel Corporation were awarded a contract by the AEC to study the potential of using nuclear fuel to generate electricity. In 1955, General Electric and the Nuclear Power Group, Inc. (NPG), of which PG&E was a member, [*17] began work on Dresden 1 near Chicago. Dresden 1 was a 180 MW boiling water reactor. From 1953 to the late 1960's, sixteen PG&E engineers worked at NPG and at Dresden 1 on a rotational basis. In 1956, PG&E announced plans for a 5 MW nuclear plant at Vallecitos in California. The Vallecitos reactor was operated for six years by PG&E. In 1958, PG&E participated with approximately fifty other utilities to design and build a high temperature gas cooled reactor, which became Philadelphia Electric Company's Peach Bottom Unit 1.

Plans for the 60 MW HBNPP were announced in 1958 by PG&E. The Bechtel Corporation was the AE/CM, and General Electric supplied the NSSS. Construction began in 1960, and the plant began commercial operation in 1963. This was the seventh commercial nuclear power plant to be licensed in the United States. HBNPP operated until 1976.

Also in 1958, PG&E was examining the feasibility of siting a 325 MW nuclear power plant at Bodega Bay. This project was abandoned after the discovery of an earthquake fault underneath the proposed site. In 1963, PG&E announced plans to construct a five unit nuclear power plant on the central California coast in the Santa Maria [*18] Dunes region. The original proposed site of this plant was at Nipomo. The site was soon changed to Diablo Canyon, north of Nipomo, where the environmental impact was less pronounced. PG&E began studying the geology of the Diablo Canyon site in 1965.

B. Management

During the construction of Diablo Canyon, the Board of Directors (Board) of PG&E held regular monthly meetings, and numerous special meetings. Over the course of construction, the Board met nearly 300 times. The Board had an Executive Committee to act on important matters which arose between Board meetings.

PG&E decided to be its AE/CM on the project. Three other utilities had designed and built their own nuclear power plants during this same time period: American Electric Power, Duke Power, and the Tennessee Valley Authority. Some of the other utilities who were involved with nuclear power plants during this time period, chose to do just their own engineering, while others chose only to do their own construction.

PG&E's Engineering and Construction Departments shared the responsibility for managing the design and construction of Diablo Canyon until 1982. These two departments alternated the lead role depending [*19] on the preponderance of the type of work being performed at the time. The Engineering Department was responsible for the design and licensing of Diablo Canyon, while the Construction Department was responsible for the actual construction. This allocation of duties is often called the functional form of organization, which is characterized by a grouping together of all similar and related occupational specialties, and a hierarchy of chain of command. The Engineering Department of PG&E was organized along functional lines during the design and construction of the plant under which the Civil, Electrical, and Mechanical sub departments, working with their counterparts in Design Drafting, prepared and supplied the design for the portions of the plant related to their disciplines. The Construction Department of PG&E was similarly structured.

The responsibility for the design and construction of Diablo Canyon was delegated to the vice presidents of Engineering and General Construction, the Chief Engineers, the Manager of Station Construction, the Project Engineer, and the Construction Superintendent. On a day-to-day basis, the project Engineer and the Construction Superintendent had [*20] the responsibility to coordinate activities, and to report progress to their respective functional vice presidents and to senior management. When the need arose, PG&E also used outside engineering consultants for highly complex engineering issues.

The plant was divided into four systems or areas: the turbine building, the containment building, the auxiliary building, and the intake structure. Each engineering discipline assigned a Responsible Engineer for each system or area.

A number of different mechanisms were used for cost monitoring and control of the project. The primary mechanism was the General Manager Authorization (GM), which is a request for authorization of funds. The GM was used at the inception of the project, and remained in use until 1982 when PG&E adopted a different system for controlling the project's scope, cost, and schedule. An approved GM was the authorization to take the necessary steps to build the project. The initial expenditures for Unit 1 were authorized in November of 1966, and for Unit 2 in January of 1968. The Unit 1 GM originally authorized $ 162,270,000, and for Unit 2, $ 157,400,000. Revised GMs for both units were approved throughout [*21] the project.

When the design of Diablo Canyon was started in the mid-1960's, PG&E had in place engineering design procedures and controls. Industry standards, such as the American Concrete Institute (ACI) Building Code, the Institute of Electrical and Electronics Engineers (IEEE) standards, and the American Institute for Steel Construction (AISC) Code, were adopted and employed where appropriate. With respect to the nuclear safety related components the initial design for Unit 1 was carried out according to procedures prescribed primarily in Section III of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code. These standards were widely accepted by the nuclear industry and by the AEC at that time, and they were incorporated in the PSAR for Unit 1. These technical standards were supplemented over the years by numerous procedural memoranda and directives.

In July 1969, following the publication by the AEC of the proposed 10 CFR 50, Appendix B "Quality Assurance Criteria for Nuclear Power Plants", n6 PG&E amended its Unit 2 PSAR to include a description of the quality assurance program that PG&E had implemented to cover the design, engineering, and [*22] construction activities for Unit 2. In November of 1969, PG&E established a Quality Engineering Department (QED). In 1970, PG&E issued its "Quality Assurance Manual for the Design and Construction of Diablo Canyon Nuclear Power Plant - Unit 2", which was referred to as the Red Book. The Red Book procedures were revised as the design and construction practices evolved over the life of the project. In 1972, the QED became known as the Quality Assurance Department (QAD). In 1978, the Red Book, and other supplemental memoranda became the basis for the issuance of the "Engineering Manual Procedures", also known as the Yellow Book.

n6 The AEC required a description of the quality assurance program that was used in the design, fabrication, construction, and testing of structures, systems, and components of the facility. The criteria for the quality assurance program were set forth in Appendix B of 10 CFR 50 which defines quality assurance as ". . . all those planned and systematic actions necessary to provide adequate confidence that a structure, system, or component will perform satisfactorily in service."

The Construction Department was responsible for the total management [*23] of the construction effort including: (1) determining contract scope; (2) locating qualified contractors; (3) bidding; (4) evaluating, and awarding contracts; and (5) establishing a team of on-site personnel to assist in day-to-day operations. The actual construction activities

were contracted out to several contractors. The construction phase of Diablo Canyon covered the geoseismic exploration and the placement of meteorological monitoring equipment, the preparation of the site, the physical construction of the plant, the setting and installation of the mechanical and electrical equipment, the installation of the wiring and piping systems, and preoperational testing and startup.

C. The Hosgri Fault and TMI Modification Period

PG&E's initial geologic investigation of the Diablo Canyon site was carried out by its Department of Engineering Research between March and June 1965. After it was decided that the site appeared suitable from a geological and marine standpoint PG&E hired a consulting geologist, Mr. Elmer Marliave, formerly the Chief Engineering Geologist for the California Department of Water Resources, to provide preliminary recommendations on the geology of the area, [*24] and to plan a program of geologic exploration. Mr. Marliave's preliminary conclusion was favorable, and he proposed a program of staged exploration to rule out any geologic or seismic hazards. As part of this program, it was suggested that mapping of the geology of the proposed site be undertaken.

From June 1965 to December 1965, Mr. Marliave, along with PG&E's in house geologist, Mr. Micheli, studied the site. PG&E's plan was to have Mr. Micheli produce a geologic map and report of the site, and to have Mr. Marliave evaluate whether or not the site was free of geologic hazards. Mr. Micheli prepared his report and concluded that there were no apparent geological conditions which would preclude the construction of a nuclear reactor at Diablo Canyon. Mr. Marliave, after discussing the results of Mr. Micheli's report with him, stated that he found nothing that would cause him to change his original opinion as to the geologic suitability of the site.

Dr. Richard Jahns, the Dean of the School of Earth Sciences at Stanford University, was retained by PG&E in October of 1965 to conduct an independent investigation of the site and to make recommendations on the site suitability. [*25] After examining the site, he expressed a preliminary opinion that the site could be regarded as feasible for a nuclear plant location, but recommended that there be detailed geologic mapping in order to make a firm judgment. Later, Dr. Jahns recommended a trenching program. These trenches were dug, and after a thorough examination and mapping of the trenches, Dr. Jahns stated that he was satisfied with the site. In his final report dated December 5, 1966, he found the site to be feasible and suitable for the proposed use.

During a site inspection trip in late 1966, a previously mapped fault in the sea cliff area fronting the Diablo Canyon site was of concern to the USGS representative. Dr. Jahns was of the opinion that this fault was inactive and therefore not of any concern. After further investigation, he concluded that the possibility of fault-induced permanent groud displacement beneath the site during the useful life of the plant was sufficiently remote to be safely disregarded.

In September 1966, PG&E submitted a Preliminary Site Report (PSR) to the AEC. This report included a brief description of the geology and seismology of the site, and a discussion of Dr. Jahn's [*26] proposed trenching program for Unit 1. As a result of the AEC's review of the PSR, the AEC arranged for the USGS to observe both the Unit 1 and 2 trenching.

In October 1966, Dr. Hugo Benioff and Dr. Stewart Smith, were retained by PG&E to carry out a seismological study of the site. n7 PG&E's objective was to obtain an historical summary of earthquake activity in the immediate vicinity of the reactor site and in adjacent areas where a distant earthquake might be expected to produce secondary effects at the site, and to obtain an estimate of the size of the earthquakes that might occur in the region during the lifetime of the reactor. Drs. Benioff and Smith's study was included by PG&E in its Diablo Canyon Unit 1 PSAR.

n7 Dr. Benioff was a world renowned seismologist and was a Professor at the California Institute of Technology. Dr. Smith had been a student of Dr. Benioff, and was an Associate Professor of Geophysics at the California Institute of Technology.

The PSAR for Unit 1 was filed with the AEC in January 1967. The PSAR contained PG&E's analysis of its initial geoseismic siting studies, along with descriptions of the various operating systems of the plant. The geology [*27] and seismology portions of the PSAR included a geology report by Dr. Jahns, a geology report by Mr. Marliave, a geology report by Mr. Micheli, and a seismology report by Drs. Benioff and Smith. These reports generally concluded that the plant site was located in an area of low seismicity, and that from the standpoint of geology and seismicity the site was suitable. The geology report concluded that no active faults were present beneath the site. PG&E did not conduct any offshore studies of the area.

In order to design Diablo Canyon, PG&E had to determine the maximum earthquake that could affect the plant. PG&E's evaluation of the maximum earthquake that could cause ground shaking at the plant site was based on two premises: (1) that primary earthquakes could occur on the San Andreas and Nacimiento fault zones with magnitudes of 8.5 and 7.25, respectively; and (2) that an aftershock originating on an existing fault would have magnitudes ranging up to about 7.5 and could produce surface faulting along existing faults. Aftershocks occurring away from existing faults would have magnitudes ranging up to about 6.75. Given the absence of any identified faults in the immediate vicinity [*28] of the Diablo Canyon site, PG&E determined that the maximum ground acceleration would result from a San Andreas aftershock, centered beneath the plant at a depth of 12 miles. The highest potential acceleration under such a scenario would be 0.2g. The design or operating basis earthquake was calculated to be a magnitude of 6.75. Thus, in the PSAR, PG&E proposed a design earthquake acceleration of 0.2g and a double design standard for safety equipment of 0.4g.

PG&E's geologic and seismic package was presented to the Advisory Committee on Reactor Safeguards (ACRS) n8 which recommended final approval of the site. The construction permit for Unit 1 was issued by the AEC on April 23, 1968.

n8 The ACRS is a 15 member committee which advises the NRC Commissioners on licensing and safety matters. The ACRS conducts a mandatory review of each utility application to the NRC for a construction permit and operating license.

The PSAR for the Unit 2 construction permit was filed in June 1968. Except for the data on Unit 2 trenching to evaluate the potential of surface faulting, no additional geological or seismic information was provided. The ACRS issued a favorable report for Unit [*29] 2 and public hearings were held in January 1970 before the ASLB.

In April 1970, the SSPCI filed a request to reopen the hearing record based on new geological and seismological information relating to an apparent offshore earthquake fault trending in a northeasterly direction to the southwest of the Diablo Canyon site. This fault was hypothesized on the basis of an apparent alignment of a series of earthquakes which occurred offshore of the Diablo Canyon site in 1969 and 1970. The Unit 2 hearing was reopened to receive this evidence. The ASLB concluded that the considerations raised by the SSPCI were already accounted for in the original seismic design. The Atomic Safety and Licensing Appeal Board (ASLAB) n9 considered the seismic question on appeal, but rejected the intervenors' evidence of an offshore fault as speculative, and not supported by the record. The AEC issued a construction permit for Unit 2 in December 1970.

n9 The ASLAB is a three member administrative judge panel employed by the NRC to hear appeals from decisions by the ASLB.

In the mid-1960's, two Shell Oil Company geologists, Hoskins and Griffiths, found faulted strata about 2 to 4 miles west of the Diablo [*30] Canyon site based upon offshore seismic reflection profiles. A description of the fault was published in an Association of Petroleum Geologists memoir made public in January of 1971. The so-called Hosgri Fault, named after the two Shell geologists who discovered it, is in excess of 90 miles in length and extends approximately from Point Piedras Blancas south to the vicinity of Point Arguello. The fault trends in a northwest-southeast direction roughly parallel to the central California coastline. Douglas Hamilton, a PG&E geological consultant, became aware of the memoir in October 1972, and notified PG&E of the existence of the fault. Prior to the filing of the Final Safety Analysis Report (FSAR), n10 PG&E did not perform any offshore studies or any other technical work to assess the magnitude of a postulated earthquake that could be generated by the Hosgri Fault. PG&E did, however, include a description of the Hosgri Fault in its July 1973 FSAR. After submission of the FSAR, the NRC requested additional geologic information on the source of a 7.3 magnitude earthquake that occurred offshore of the plant site on November 4, 1927, as well as additional information related to [*31] faulting and seismicity in the area of the plant. Shortly thereafter, the USGS carried out an extensive offshore seismic reflection survey that included the area offshore from Diablo Canyon. In November 1973, the USGS confirmed a northwest trending fault dislocation about two miles offshore from the site.

n10 The FSAR is required to be submitted by the utility to the NRC as part of its operating license application. The FSAR contains, among other things, a description of the facility, its design basis and limits of

operation, and a safety analysis of the structures, systems, and components, and of the facility as a whole. The FSAR also contains a description of the managerial and administrative controls to be used to assure safe operation, including a description of the operational quality assurance program.

In November 1973, PG&E commissioned a limited offshore survey just offshore from the plant site. This survey was conducted in December 1973, and was followed by additional PG&E offshore surveys in May, July, and September of 1974, resulting in amendments to the FSAR. The amendments described the geology of the Hosgri Fault and presented evidence suggesting limited, [*32] local movements along the fault, which within the meaning contained in 10 CFR 100, Appendix A, was a "capable" fault. During this time period, PG&E maintained that its design was adequate despite the Hosgri Fault.

In August 1974, the USGS released its report on the results of its offshore studies. The USGS concluded that the Hosgri Fault was 2 to 4 miles offshore from the site, extended for 90 miles, was active, and showed signs of lateral offset. In November 1974, the NRC requested PG&E to reevaluate the plant's seismic capabilities based on a new maximum ground acceleration of 0.5g. In January 1975, the USGS concluded that an earthquake equal to that of 1927 could occur near Diablo Canyon. Such a quake, with a magnitude exceeding 7.0, would cause the ground motion level used at Diablo Canyon of 0.4g to be inadequate.

Additional uncertainty about the Hosgri Fault was created in April 1975, when a geology student at California Polytechnic University, San Luis Obispo, William Gawthrop, suggested that the 1927 earthquake might have occurred on the southern end of the Hosgri Fault, and that other faulting may have occurred in the recent geological past.

The uncertainty over the [*33] seismic design basis of the plant was resolved in April 1976, when the USGS released a report on the relationship of the Hosgri Fault to past earthquakes and other local faults. This report stated that the Diablo Canyon site was located on the Hosgri Fault zone, and that the design basis earthquake for the reactor site should be a magnitude of 7.5. The NRC accepted the assessment of the USGS. PG&E was told to redesign the plant using a postulated magnitude 7.5 earthquake occurring on the Hosgri Fault, with a ground acceleration of 0.75g. Since this position specified only general regulatory criteria for the postulated earthquake on the Hosgri Fault, a consensus on the detailed criteria to be used to evaluate the structural capability of the plant had to be agreed upon. PG&E began a lengthy exchange with the NRC to arrive at precise criteria and methodologies to be used in evaluating the plant's structures, systems, and components.

PG&E submitted its proposed evaluation criteria to the NRC in July 1976. In September 1976, PG&E met with the NRC and reached initial agreement on some of the criteria. In February 1977, the staff of the NRC accepted the remaining criteria to be [*34] used in the evaluation of all major plant structures. However, the ACRS raised questions about the evaluation criteria. Final agreement on the criteria for the plant's seismic design and evaluation methodology was reached in July 1978 when the ACRS issued a favorable letter of approval.

ASLB hearings were held in late 1978 and early 1979 on the seismic safety issues of credible earthquakes on the Hosgri Fault, ground motion, and the response of the plant to ground motion. These issues were the subject of continuing challenge by intervenors. On September 27, 1979, a favorable decision with respect to seismic issues was issued by the ASLB.

Meanwhile, the accident at TMI occurred on March 28, 1979. At the time of the TMI accident, Unit 1 was essentially complete and awaiting a license. TMI had immediate regulatory repercussions for Diablo Canyon because on May 21, 1979, the NRC imposed a moratorium on the issuance of new operating licenses. Additional delay was caused by intervenors who requested further hearings on issues related to the TMI accident.

Right after the TMI accident, PG&E formed a study group to study the TMI problem and consult with Westinghouse to discuss its [*35] implications. PG&E also met with other utilities who were in the same boat as PG&E, i.e. those utilities who had almost completed their plants but had not received an operating license.

The initial findings from the NRC's investigation into the TMI accident were issued in the form of NRC bulletins which required operating plants to implement procedures to prevent the sequence of events that had occurred at TMI. In July 1979, PG&E submitted a response to the NRC as if Unit 1 was an operating plant which proposed various actions it would undertake to address the concerns raised by the TMI accident. PG&E's management urged the NRC to treat Diablo Canyon as a completed plant so that the new TMI requirements would not delay the startup of the plant. The NRC did not do so.

In September 1979, the NRC decided to resume licensing on a limited basis for plants that did not have contested licensing hearings. The licensing moratorium was fully lifted in February 1980. However, the NRC did not provide any guidance on how and to what extent TMI-related issues could be raised and litigated in the hearing process. Although the ASLB rendered a favorable decision on September 27, 1979, the [*36] non-seismic safety and environmental issues, which were those relative to TMI, were deferred. PG&E, to no avail, petitioned the NRC to authorize Diablo Canyon's license on the grounds that the TMI-related matters were generic safety issues applicable to all plants and that the ASLB's review of the TMI issues was not a prerequisite for licensing.

In January 1980, the NRC staff issued its report on TMI. The NRC staff prepared a revised list of TMI licensing requirements which was issued as NUREG-0694 in June 1980. At the same time, the NRC Commissioners issued their policy statement providing guidance on the litigation of TMI issues. The intervenors were successful in obtaining additional hearings on issues related to the TMI accident which resulted in another review extending to September 1981.

The Commissioners' Statement of Policy that accompanied NUREG-0694 required utilities to file a separate request for a low-power license if they had met only those NUREG-0694 items necessary for fuel loading and low power testing. The effect was that utilities had to submit separate applications for low power and full power licenses. Thus, in July 1980, PG&E filed a motion with the ASLB [*37] requesting a license to load fuel and conduct low power tests. This motion was opposed by then California Governor Jerry Brown and other intervenors.

The NRC staff issued its SER supplement in August 1980, which concluded that PG&E had met the requirements of NUREG-0694. In addition, the staff took the position that the issues raised by the intervenors were not relevant to the low power operation of Diablo Canyon. In July 1981, the ASLB issued a decision in favor of PG&E, which authorized the NRC to issue a license for fuel loading and low power testing up to 5% of rated power. On September 22, 1981, the low power license was issued. Immediately after the low power license was issued, PG&E began final preparations for fuel loading of Unit 1. On September 27, 1981, PG&E discovered a diagram error and voluntarily stopped fuel loading. The discovery of the diagram error raised a new and complex regulatory challenge.

D. The Mirror Image Error, the Design Verification Program, and Project Completion

Shortly after the NRC issued a low power operating license for Unit 1, PG&E discovered an error in the seismic analysis of systems supported from the annulus structure in the [*38] containment building, commonly referred to as the mirror image error or the diagram error. (The annulus structure is a steel frame extending around the inside of the containment shell which supports equipment and piping for the NSSS.)

The mirror image error occurred as a result of PG&E's transmitting a set of unverified and unlabeled drawings of the Unit 2 containment geometry to Blume and Associates for seismic analysis of the response spectra. Although the drawings were not labeled, Blume and Associates correctly interpreted that the drawings were for Unit 2. However, Blume and Associates mistakenly believed that Unit 1 and 2 were aligned in the same way, i.e., they assumed that both units had all components facing in the same direction. Blume and Associates performed its seismic analysis for Unit 1 on this basis, and returned the information from this analysis to PG&E labeled as applicable to Unit 1, when in fact the analysis was really applicable to Unit 2. PG&E accepted the analysis as representing Unit 1, and knowing that the units were mirror image units, flipped the diagrams to be applicable to Unit 2. As a result, the seismic analyses for both units were incorrect. [*39]

The engineer who initially suspected the mirror image error informed his supervisor of his concerns on September 22, 1981. After further investigation, on September 27th the NRC Resident Inspector was advised of the problem and fuel loading was suspended. After notifying the NRC of the error, PG&E hired Robert L. Cloud Associates, Inc. (Cloud) to investigate the error and make recommendations concerning a program to review the design control between PG&E and its seismic consultants, and to provide assurance that there were no safety significant errors in the seismic design of Diablo Canyon. PG&E also initiated its own in house engineering design review.

The initial review of the design error was performed by Cloud. In November 1981, Cloud preliminarily concluded that the safety of the plant had not been compromised by the diagram error, although additional design errors had been discovered as a result of the review. These results were presented to the NRC.

The NRC requested Brookhaven National Laboratories (BNL) to perform a technical audit of the potential impact of the diagram error on the containment annulus area. After reviewing the design process, BNL suggested that [*40] the design audit process should be extended to portions of the plant that were not directly affected by the diagram error. The review was eventually expanded to include the design of all Class I electrical and mechanical equipment,

instrumentation, HVAC systems, and piping and pipe supports. In another BNL report, BNL concluded that various errors had been made as early as the original design analysis, and recommended that all pipe support designs be reevaluated.

Previously, in October of 1981, the NRC had its staff conduct an onsite review of the Diablo Canyon design control process at the offices of both PG&E and Blume and Associates. The NRC staff found that PG&E's quality assurance program (QAP) did not effectively control the review and approval of design information passing between PG&E and Blume and Associates and that the design work by Blume and Associates had not been covered by a QAP prior to July 1978.

The NRC suspended the operating license for Diablo Canyon on November 19, 1981, and mandated that PG&E develop an Independent Design Verification Program to review the design of all safety-related structures, systems, and components. The IDVP was the most comprehensive [*41] verification of a nuclear power plant design ever undertaken in the history of the nuclear power industry.

The IDVP was done in two phases. In December 1981, PG&E proposed to the NRC a review program for Phase 1. Phase 1 was to address what had to be done prior to fuel loading, and required a design verification of all pre-June 1978 seismic related service contracts utilized in the design process for safety related structures, systems, and components. The contractors who would be doing the Phase 1 review were Cloud, Teledyne Engineering Services (Teledyne), and R. F. Reedy, Inc. (Reedy). It was proposed that Cloud was to be the program manager of the IDVP, who was responsible for directing the review effort and reviewing all seismic design activities. Teledyne was to assist in the verification work and to review and audit the program and methodology employed by Cloud. Reedy was to perform the quality assurance audits.

In January 1982, a program description was presented to the NRC for the review work to be completed in Phase 2. Phase 2 was to cover the work that had to be completed prior to operation above 5% power. This entailed a design verification of (1) nonseismic safety [*42] related activities performed by service contractors prior to June 1978; (2) PG&E's internal safety-related design activities; and (3) a sampling of safety-related activities by all service contractors performing work after January 1, 1978. This program proposed that Cloud would manage the program, and that Reedy would be responsible for the review of all quality assurance and design control activities. It was proposed that Stone & Webster Engineering Corporation (Stone) would perform the review of nonseismic safety-related systems and components.

In March 1982, the NRC staff issued their finding that the Phase 1 program was acceptable, but recommended that a contractor with a large, experienced staff and little prior financial involvement with PG&E manage the verification program. PG&E agreed to the condition that Teledyne manage the IDVP instead of Cloud. In December 1982, the entire IDVP was approved by the NRC.

By late February 1982, it became apparent to PG&E that to complete the IDVP in a timely fashion, more resources would be required. An increasing amount of time was being consumed on the growing numbers of technical questions and the uncertain scope of the IDVP. Engineering [*43] personnel were being diverted from their regular design activities so that PG&E could respond to the design review effort.

PG&E decided to retain Bechtel Power Corporation to aid in managing the completion of the project. Bechtel was selected because it had the engineering resources to supplement PG&E's engineering workforce, it had an outstanding reputation in the nuclear industry, and it had previously worked with PG&E on other projects. Bechtel was responsible for completing the remaining work that was necessary to (1) restore PG&E's suspended low power license for the plant; (2) obtain a full power license for the plant; (3) complete construction of Unit 2; and (4) provide start-up engineering and construction support needed to bring both units into commercial operation.

By April 1982, a PG&E/Bechtel project completion team had been formed. A project management organization was instituted and a Bechtel executive was appointed the Project Completion Manager to be responsible for the day-to-day management of the project. The remainder of the team was composed of both PG&E engineers and Bechtel engineers. The project team adopted a QAP based upon the Bechtel program that had [*44] been previously approved by the NRC as satisfying the Appendix B requirements. This modified QAP was submitted to the NRC and approved; it remained in effect throughout the project completion period.

During the course of the verification program, the NRC used 1980's engineering methods and practices in its review of the seismic design of the plant. In August 1982, PG&E announced a new program to review and reanalyze the seismic design of certain safety related structures, systems, and components using updated engineering methods. In

addition, although the NRC did not require that a design verification program be conducted for Unit 2, PG&E established a Unit 2 review program to examine the applicability and impact on Unit 2 of the issues identified from the IDVP.

Despite the discovery of the diagram error, hearings on the full power license were held as scheduled in January of 1982. The issues at this hearing revolved around TMI related issues, in particular, the adequacy of onsite and offsite emergency planning. In August 1982, the ASLB issued a full power license subject to certain conditions. On appeal to the ASLAB, the decision of the ASLB was affirmed.

As a result of [*45] the diagram error, various intervenors and Governor Brown filed motions with the ASLAB to reopen the Diablo Canyon hearing record on construction quality assurance (CQA) and design quality assurance (DQA) issues. Hearings were held and both issues were resolved in PG&E's favor. On November 8, 1983, the NRC authorized fuel loading.

By the beginning of 1984, the IDVP had been completed, and fuel had been loaded into Unit 1. Unit 1 was in the process of pre-criticality testing. PG&E was now working toward additional licensing approvals for low power testing and full power operation for Unit 1, and for full power license authority for Unit 2.

Starting in late 1983, and as Diablo Canyon approached startup, current and former workers raised numerous allegations with the NRC of possible problems with the plant. These allegations took time to investigate and resolve, but eventually all were resolved to the satisfaction of the NRC and on August 10, 1984, the NRC authorized the issuance of a full power license for Unit 1. In August of 1985, a full power license for Unit 2 was issued.

During Unit 1's first year of commercial operation, it set performance records. Its capacity factor [*46] of 88% set a record for Westinghouse reactors of similar size. Unit 1's availability factor for the first year was 93%. Unit 2 had a capacity factor of 85%, and an availability factor of 94% in its first year of operation.

IV. Pre-Settlement Position of the Parties

Prior to the announcement of the settlement, PG&E was prepared to demonstrate that the $ 5.5 billion spent on constructing Diablo Canyon was reasonably and prudently incurred. The DRA and the AG, as well as other parties were prepared to demonstrate that the amounts spent by PG&E were imprudently incurred. The following are their respective positions.

A. Pre-Settlement Position of the DRA

1. Corporate and Project Management

The DRA contends that PG&E's management failures contributed to the cost increases and schedule delays at Diablo Canyon. When PG&E undertook the task of designing and building the plant, it did not realize the management challenges and risks inherent in the project. The senior managers of PG&E failed to take any significant steps to create the type of organization, plan, and controls that such a large project required. Instead, PG&E relied on the traditional informal methods [*47] and approaches that it had used on its much smaller past projects.

Although PG&E had used its traditional functional organization on its previous engineering and construction efforts, PG&E's choice of a functional organization rather than a project management organization was inappropriate for a project of this size and complexity. A functional organization, as used by PG&E, is characterized by a grouping together of all similar and related occupational specialties and a hierarchy of chain of command to direct the work effort.

By the mid-1960's, managers in a variety of industries agreed that the functional organizational structure, with its attendant informal planning and control, was an inappropriate means of managing large projects. These managers believed that a project management organizational structure was needed. A project management organization is characterized by the appointment of a project manager for the project who uses methods, procedures, and staff for the planning, control and execution of the assigned tasks within the parameters established by the project master schedule and budget. PG&E used a project management organizational structure on its Geysers project [*48] in 1978. But it wasn't until 1982, when Bechtel was hired by PG&E, that a project management system was instituted at Diablo Canyon.

The traditional functional organization relies on functional managers, verbal reporting, and project interaction based on past working relationships. The DRA studies indicate that there were failures at all levels of management on

Diablo Canyon, particularly in the areas of scheduling, cost estimating, and controlling. There was no comprehensive overall plan for the project, job responsibilities were poorly defined, management systems were inadequate to measure and control the production and productivity of workers, and there was no system to accurately estimate project scope, budgets, costs, and schedules. These management deficiencies contributed to the unreasonable project costs and delays.

The DRA contends that the choice of management by functional organization heightened the risk that critical decisions would not receive the appropriate attention that they required, and that the various project functions would not interact smoothly. In light of the potential cost and schedule consequences, such a risk was unreasonable, and therefore the [*49] choice of a traditional functional organization rather than a project management organization was imprudent. The DRA is of the opinion that PG&E failed to recognize that for the management of large projects, such as the building of a nuclear power plant, effective project planning and scheduling techniques were needed. Without a comprehensive scheduling system to keep track of the enormous amount of activities and decisions, and their interrelationships, costly schedule slippages could result and did result.

The DRA is critical of PG&E for its failure to timely develop and implement a critical path method (CPM) system for the Diablo Canyon project. CPM refers to a computerized planning, scheduling, and control system used by management to control the construction of a project. CPM is based upon a network which integrates and diagrams the simultaneous project activities that must be carried out. PG&E failed to implement such a system until September 1971 when the PROCON system was initiated. However, the PROCON system fell short of a true CPM system because it focused only on construction aspects, and failed to integrate the schedule the other functional activities that were [*50] taking place. The DRA alleges that the technology existed in the late 1960's to produce a computerized, comprehensive CPM network, and that such a system should have been implemented by April 1968. Without such a tool, PG&E management could not adequately plan, monitor, and control all of the activities. PG&E thereby lost its ability to eliminate or mitigate the various delays that took place at Diablo Canyon.

In addition, the DRA asserts that the actions of the Board of Directors of PG&E were unreasonable in that the Board failed to provide the leadership and direction that a major project like Diablo Canyon needed. The DRA's consultant reviewed all of the materials which the Board received over the course of the project, and concluded that the Board failed to differentiate Diablo Canyon from other less significant projects, and that the Board would not have been able to monitor or evaluate the project in any meaningful way using the information that was supplied to it. The DRA also contends that the corporate records of PG&E establish that the Board did not exercise any noteworthy role in assessing the project's plan or organization, evaluating alternatives for resolving geoseismic [*51] disputes in an expeditious manner, or in addressing the implications of the mirror image error.

2. Seismic Safety and the Hosgri Fault

The DRA contends that PG&E was aware of the NRC's concern over the seismic safety of nuclear plants that were planned for California during the 1960's and early 1970's. Since at least 1959, the NRC siting criteria explicitly required that utilities evaluate geoseismic hazards such as faulting and landslides. The proposed nuclear power plant sites at Bodega Bay, Mendocino, Malibu, and Bolsa Island were all abandoned mainly or partly because of potential onsite or nearby earthquake activity. PG&E had frequent discussions with the NRC about potential offshore faults.

The DRA maintains that PG&E's initial geologic and seismic investigations of the plant site and surrounding area were of limited scope and deficient for several reasons: (1) PG&E failed to evaluate the possibility of nearby offshore faults; (2) PG&E failed to thoroughly investigate the regional geology in the vicinity of the site; (3) PG&E failed to investigate the full extent and implications of historic seismic activity near the site; and (4) PG&E failed to conservatively evaluate [*52] the location and source of the 7.3 magnitude earthquake that occurred southwest of the plant in 1927. A more comprehensive review of the regional geology would have shown that there was evidence of significant active faulting extending offshore from the plant site. As a result of these deficiencies in PG&E's geoseismic studies, the original seismic design of the plant was not conservative enough to assure the safety of the plant in the event of an earthquake in excess of the 6.75 magnitude earthquake for which the plant was originally designed.

When PG&E prepared its PSAR, it only used one published source for its compilation of historic earthquake epicenters in the general vicinity of the proposed Diablo Canyon site, the earthquake and epicenter fault map prepared by the California Department of Water Resources in 1964, which tabulated earthquakes of magnitude 4 or greater to 1961. The DRA asserts that additional data were available to PG&E at this time, including epicenter information from earthquakes occurring during 1961 to 1966, and from earthquakes in the magnitude 3 to 4 range. PG&E assumed in the PSAR that the location of the 1927 earthquake, which was the third largest [*53] recorded earthquake in onshore or

offshore California in this century, was the furthest from Diablo Canyon of the four estimated locations of the epicenter. And PG&E omitted to discuss reports of historic onshore damage resulting from earthquakes that occurred in the area.

The DRA believes that PG&E suspected the existence of major faults offshore of the plant site during the time of its initial siting studies. Scientific techniques for identifying and evaluating offshore faults, such as seismic reflection, were available and were well known during the 1965 - 1968 period that PG&E conducted its initial studies. Seismic reflection studies were widely used by the oil industry for offshore exploration during this period and in several nuclear plant siting cases, including Bodega Bay and Bolsa Island. Aeromagnetic and gravity studies were also capable of indicating the presence of faults, and were routinely conducted in the 1960's to evaluate offshore geology. The DRA estimated that a sufficient offshore survey during this time would have cost PG&E about $ 65,000.

Despite PG&E's responsibility for public health and safety under the NRC's regulations, PG&E failed to conduct these [*54] offshore seismic reflection studies. Reasonable prudence, in light of the circumstances, would have required offshore studies. Thus, the delay resulting from the discovery of the Hosgri Fault, and the need to redesign and reconstruct significant portions of the plant to withstand a large earthquake on the Hosgri Fault, could have been avoided had PG&E conducted adequate initial geoseismic siting studies and interpreted the results in an appropriately conservative manner. The DRA believes that had this approach been followed, the Diablo Canyon plant could have been designed, completed, and in commercial operation in the 1976 to 1977 time period at a cost of approximately $ 1 billion.

The DRA also contends that PG&E's response to the discovery of the Hosgri Fault was unreasonable. The Shell Oil Company geologists published their article on the Hosgri Fault in January of 1971. It wasn't until October 1972 that PG&E was made aware of the fault. In 1973, one of PG&E's consulting geologists, Douglas Hamilton, estimated that the Hosgri Fault might be capable of a 7.5 magnitude earthquake, and suggested that PG&E conduct offshore studies. The discovery of the fault offshore of the [*55] plant site should have provided PG&E with the necessary impetus to conduct additional offshore studies to determine the full extent and significance of the fault, and to reevaluate the source of the 1927 quake.

PG&E instead chose to minimize the significance of the Hosgri Fault to the NRC and the USGS. Further, offshore studies for proposed Diablo Canyon Units 3 and 4 which were planned for the site in late 1972 and early 1973, were cancelled despite the discovery of the fault. The DRA argues that when the Hosgri Fault was discovered, those studies should have been conducted to determine whether Units 1 and 2 were adequately designed. In the DRA's opinion, PG&E's failure to promptly conduct such studies following the discovery of the Hosgri Fault was clearly imprudent.

This imprudent behavior caused the delay in the completion of the project from 1976 to 1981. That is, from the time PG&E learned of the Hosgri Fault in October 1972, and until May 1976, when the NRC staff required PG&E to redesign the plant to withstand a 7.5 magnitude quake, PG&E continued to build the plant essentially to completion using the original, but by then obsolete, seismic design criteria. Before the [*56] NRC ordered PG&E to meet the new design criteria, the plant was nearly completed at a cost of about $ 1 billion. After the NRC ordered PG&E to meet the 7.5 design magnitude, an additional three years elapsed in which time the essentially completed plant was redesigned and reconstructed. Had PG&E undertaken prompt studies to examine the Hosgri Fault and its risks, and retrofitted the plant to meet a higher design criteria, the delays from 1976 to 1981 could have been avoided. The plant would then have been operating prior to the Three Mile Island accident, and the NRC licensing moratorium which followed would not have delayed the commercial operation of the plant.

3. Design Verification Program

Shortly after the NRC granted a low power operating license for Unit 1 on September 21, 1981, a PG&E engineer discovered the mirror image error that had occurred during the Hosgri modifications in 1977. In addition to the discovery of the mirror image error, more design errors were uncovered such as (1) parallel piping lines designed from a single set of assumptions which were found to actually require separate analyses; and (2) small bore piping shock absorbers which were needed [*57] but were never designed or built. As a result, the DRA maintains that the NRC lost confidence in PG&E, and in the adequacy of the design of Diablo Canyon. On November 19, 1981, the NRC suspended the Unit 1 low power operating license and ordered PG&E to conduct an Independent Design Verification Program to assure the NRC that the design of Diablo Canyon met the applicable licensing requirements. This NRC action was unprecedented. At the time the suspension occurred, the plant was close to completion for a second time.

The DRA states that the IDVP incurred an additional cost of approximately $ 2.5 billion and was directly attributable to PG&E's deficient engineering controls and quality assurance program. The IDVP required PG&E to

demonstrate that the safety-related structures, systems, and components of the plant were properly designed and met all applicable licensing criteria. At first it was thought that the IDVP would only take a few months. Instead, it took several years to complete because (1) PG&E was unable to produce the design documentation necessary to justify its earlier work; (2) the verification process uncovered errors which had to be corrected; and (3) PG&E had [*58] made a misleading statement to the NRC about the independence of the consultants during the early phases of the verification process, which resulted in the institution of strict and time consuming procedures to assure the independence of those undertaking the verification effort.

In order to fulfill the IDVP requirements in a timely manner, PG&E hired Bechtel in 1982 to help PG&E resolve the IDVP, and to complete the plant and make it operational. PG&E and Bechtel hired thousands of engineering and construction workers to correct the design errors and to obtain NRC approval to restart Unit 1 and to start Unit 2.

The DRA asserts that the root cause of the design errors can be traced to PG&E's deficient quality assurance program. The deficiencies included the failure by PG&E to require quality assurance controls prior to 1978, its failure to control information transmitted to its consultants, its failure to control the design interfaces between the various functional groups, its failure to adequately control design documents, and its inadequate control of design inputs. The DRA contends that had PG&E's management appreciated the task presented to them during the Hosgri redesign, [*59] and taken the necessary steps to institute engineering controls during the seismic redesign, the errors and cost of the IDVP could have been avoided.

4. Other Major Construction Problems

Although the Hosgri Fault and the IDVP accounted for the majority of avoidable costs and schedule increases, there were other deficiencies in the construction of the plant, including (1) during the original construction phase, engineering related construction delays of 459 days for Unit 1 and 206 days for Unit 2 were caused by late or unclear engineering information; (2) large bore pipe installation was delayed by 9 months for Unit 1 due to inadequate response to industry and professional guidance, and lack of control over the contractor; (3) piping and pipe support installation during the design verification program was delayed 176 days in the containment building and 235 days in the auxiliary building for Unit 1, and additional costs of $ 230 million were incurred due to inadequate control of the design process and inadequate field inspection; (4) the additional costs of $ 26 million for Unit 1 and $ 6 million for Unit 2 for pipe rupture restraints were caused by failure to monitor the contractor, [*60] failure to properly follow the established design, manufacturing, and installation standards, and the failure to verify the design; (5) $ 31 million in added costs associated with the breakwater were caused by deficiencies in the initial design and construction which led to reanalysis, redesign, and repeated repairs in 1975, 1981, and 1983; and (6) startup testing prior to commercial operation was delayed 80 days for Unit 1 and 77 days for Unit 2 due to avoidable startup problems and the late completion of construction activities which should have been performed earlier to avoid interference with testing.

5. Quantification

In summary, the DRA contends that approximately $ 4.4 billion in project costs were imprudently incurred on the Diablo Canyon project due to PG&E's failure to conduct the necessary offshore studies, its failure to timely address the discovery of the Hosgri Fault, and its failure to adequately implement and update the company's engineering management and quality assurance procedures. Because of these shortcomings on the part of PG&E, it took 16 years to construct the plant at a cost of $ 5.518 billion. Without those errors and omissions, the DRA says that [*61] the plant could have gone into commercial operation within a time frame approximating plants whose construction started in the same era, and avoided the billions of dollars in additional construction and financial costs in an era of double digit inflation, and the cost of hundreds of millions of barrels of fuel oil that were used in PG&E's oil-fired power plants during the critical years of the energy crisis. Accordingly, the DRA recommends that PG&E be permitted to recover $ 791 million, the estimated cost to design and build the plant to safely withstand a major earthquake on the Hosgri Fault and to have it operational by 1976, plus $ 359 million for plant upgrades due to the NRC requirements for safety improvements following the Three Mile Island accident; a total of $ 1.150 billion.

B. Pre-Settlement Position of PG&E

1. Corporate and Project Management

PG&E contends that the Board and senior management of PG&E were involved in all important aspects of the project, that the Board discussed the Diablo Canyon project at virtually every Board meeting, and that the Board was well informed of the project's progress and problems. In addition, PG&E contends that its reliance [*62] on the functional form of organization for the management of the project was reasonable and prudent, and that it would have

been imprudent to adopt the project management organization which was not widely used in the utility industry during this period.

PG&E argues that the DRA's analytical process for its conclusion that the Board members were not informed and did not actively participate in the management of the project was flawed. That is, it appeared to PG&E that the DRA simply reviewed the minutes of the PG&E Board meetings and counted the number of references to Diablo Canyon, and concluded that the Board was not informed and did not actively participate in the direction of the project. PG&E contends that simply because the minutes did not refer to or mention the Diablo Canyon project does not mean that these discussions did not take place. The minutes only reflect the formal actions that the Board took, and do not purport to be a record of the questions, answers, and discussions that took place at the various meetings. PG&E asserts that there were numerous formal Board and Executive Committee actions pertaining to Diablo Canyon, including the approval of GMs, and the approval [*63] of public documents such as Annual Reports, and Form 10-K Reports filed with the Securities and Exchange Commission. The Board set the overall policy of the company, approved major expenditures, selected senior officers and monitored their performance, reviewed short and long term plans, monitored efforts to achieve them, and provided advice and counsel to the senior officers of the company.

Senior management served as a link with the Board to advise on the progress of the project and obtain necessary approvals. A senior or executive vice president, either directly or through the president and chief operating officer, always had primary responsibility for the management of the engineering and construction activities on Diablo Canyon.

PG&E contends that its decision to be its own architect, engineer, and construction manager on the project was prudent because by the time Diablo Canyon was started the experience of the PG&E engineering staff was commensurate with many of the architect/engineering companies engaged in nuclear power plant design and construction. PG&E had developed years of experience with nuclear power while working on other nuclear projects. Other utilities that [*64] made the same decision as PG&E to design and build their own nuclear power plants were American Electric Power, Duke Power, and the Tennessee Valley Authority.

PG&E also relied upon the expertise of its NSSS supplier, Westinghouse. As part of its contract, Westinghouse furnished PG&E with the documents, drawings, and specifications of the Indian Point 2 project, whose reactor was virtually identical to the reactors used at Diablo Canyon. The AEC staff, in their SER during the construction permit proceeding for Diablo Canyon Unit 1, concluded that PG&E was qualified to design and construct the proposed facility since PG&E had extensive experience in the design, construction, and operation of electric generating plants, and because PG&E personnel had been involved with nuclear power generation for a number of years. In addition, Westinghouse had designed and constructed a number of PWRs which had been licensed by the AEC.

PG&E asserts that the functional organization method of management was appropriate on the Diablo Canyon project until the project completion team was formed with Bechtel in 1982. The functional organization had been successfully used by PG&E on many other projects [*65] in the past. Furthermore, the idea of a project management system was still a new idea in the utility industry during the 1960's and 1970's. Any substitution of a successful management system with an unproven system could have created problems, and could have led to delays and cost overruns. PG&E argues that new systems are inherently experimental until they are tested and debugged, a process which can take months or years. Had the management organization been changed during the project, it might have drawn criticism by the DRA and project opponents as an unreasonable decision.

As a yardstick of comparison, PG&E points out that functional organizational structures were used on the nuclear power plants which the DRA referred to in its prepared testimony as successful projects. American Electric Power, Duke Power Company, and Florida Power and Light's St. Lucie Unit 1 used a functional organizational structure rather than a project management organization on their respective nuclear power plant projects. Although Florida Power and Light used a project management organization on its St. Lucie Unit 2, construction of this unit did not start until 1977, and therefore is not comparable [*66] to Diablo Canyon. PG&E's approach to management was entirely consistent with industry practice. When faced with the significantly changed circumstances of the IDVP in 1982, the new organizational structure of the project completion team was appropiate.

The shortcomings of PG&E's management of the project, as alleged by the DRA, were refuted by PG&E which asserts that the DRA did not spend sufficient time with PG&E managers to fully understand the corporate culture of PG&E and the formal and informal management systems used on Diablo Canyon. PG&E contends that the keys to understanding the way in which PG&E managed its projects were the long standing working relationships that had developed between its employees and the team responsibility which PG&E fostered. Contrary to what the DRA asserts, the management group assigned to Diablo Canyon were capable individuals and had highly refined methods for

scheduling work, planning, rendering decisions, resolving problems, reporting and controlling costs, and meeting objectives in a timely fashion.

The PG&E working environment stressed the following values to its employees: a company-wide perspective of PG&E's goal of providing reliable, [*67] affordable service to its customers; lifelong career commitment; training and professional development opportunities; open and effective communication; and individual responsibility so as to imbue employees with a sense of accomplishment when their part of the work was successfully completed.

Under the direction and supervision of PG&E's senior officers, the PG&E Engineering and Construction Departments managed the design and construction of Diablo Canyon until 1982. These two departments shared the responsibility for managing the project, and alternated the lead role depending on the type of work being performed at the time. The Engineering Department was responsible for the design and licensing of Diablo Canyon, while the Construction Department was responsible for the actual construction.

The chief engineers of each department were directly responsible for the timely completion of the engineering work assigned to their discipline, and for assuring that such work met appropriate quality standards. They were also responsible for developing man-hour estimates and meeting staffing commitments to accomplish the work schedule. The senior or supervising engineers were responsible [*68] for monitoring the progress of the engineering activities within their disciplines, and overseeing the engineering design, and the design process approval procedure. The design work was assigned to qualified and trained senior and responsible engineers. The responsible engineer (1) established and ensured that all design criteria were met; (2) prepared or signed off on material/equipment specifications; (3) participated in the selection of suppliers; (4) evaluated equipment purchase bids and approved vendor drawings and other documents for which they were responsible; (5) gave technical direction to the design drafting group; (6) provided design parameters; (7) commented on work product; (8) performed or assured performance and accuracy of calculations within their disciplines; and (9) participated in the preparation of specifications, drawings, and other documents that served as the basis for construction contract bids.

The decentralized responsibility and authority was most apparent at the resident engineer and field engineer/inspector level. The resident engineer ran the job for each contract that was assigned to him. The contractors viewed the resident engineer to be the [*69] key onsite representative of PG&E. The field engineers and inspectors were well known to the construction contractors. They were assigned a specific portion of the work, and it was their responsibility to monitor, manage, and provide assistance on all activities affecting safety, quality, costs, productivity, and schedule, in their areas of responsibility. Observations about the contractor's shortcomings in quality, supervision, productivity or production would normally be communicated to the contractor at the working level. If necessary, the problem would be reported upward in the chain of command.

Contrary to what the DRA contends, the schedule tools and reports that were used by PG&E's management to keep track of the schedule at Diablo Canyon were highly refined. The following are brief descriptions of some of the schedule tools and reports that were used.

The Project Schedule: PG&E used critical path method (CPM) techniques for the DCP. The project schedule was an intermediate level schedule and integrated engineering, procurement, construction, and startup activities. The project schedule provided an up-to-date picture of the entire schedule and status of the project. [*70]

Summary of Specifications Schedule: this schedule contained a brief description of the contract and the name of the manufacturer or contractor. This schedule was used for ordering, monitoring, and controlling the work of General Construction and Engineering.

PROCON Computer Scheduling: this computerized scheduling process was implemented in 1971. The PROCON system produced a printed or plotted CPM schedule for Diablo Canyon that listed for each construction activity the earliest and latest possible start and finish dates, the amount of scheduling float, evaluation of alternative schedules, and the effects of schedule changes on project completion.

Management also met frequently to discuss the Diablo Canyon schedules. These meetings included the Chief Executive Officer's Advisory Committee, and the Schedule Review Committee meetings. Other tools included the General Construction Weekly Progress Report, and the Project Engineer's Weekly Progress Report. In addition, whenever schedule changes required senior management approval, specialized written reports were prepared.

Cost control tools used by PG&E's management included the General Construction Quarterly Progress Report [*71] which was designed to provide senior management with a comprehensive and continuous look at the status of the

project, including cost trends, on a regular basis; the Capital Budget and Gross Construction Expenditures Estimate which was a semi-annual report that projected the total costs of Diablo Canyon in relation to other projects; Expenditures on Construction Projects Authorized for $ 1 Million or More which was a monthly report listing expenditures and variances from authorized amounts for all projects authorized for $ 1 million or more; and the Record of Bids which was circulated for each purchase to explain recommended awards and to obtain management approvals as necessary.

As part of the control and management of the design effort, there had to be coordination of the drawings and written design. This was accomplished by a checking, review, verification, and coordination procedure. The signatures on the design documents acknowledged the signatory's participation in, and management of that particular design.

2. Seismic Safety and the Hosgri Fault

PG&E contends that its initial seismic safety studies met or exceeded the standard of practice in effect at the time. Such [*72] standards did not include offshore seismic profiling. Additionally, PG&E's studies were conservative enough to account for any unknowns within the contemplation of contemporary scientific knowledge. Had the Hosgri Fault and the postulated 7.5 magnitude earthquake been known at the time of the original design, this knowledge would not have increased the seismic design of Diablo Canyon. It wasn't until the aftermath of the San Fernando earthquake of 1971 and the resulting scientific knowledge which followed, that the Hosgri Fault took on a significance that it never could have had earlier.

The foundation for PG&E's conservative seismic safety studies was fourfold: (1) PG&E retained the advice of the most highly qualified independent experts in seismology and earthquake engineering, who were recognized worldwide as experts in their fields; (2) these experts were engaged to do whatever investigations they considered necessary; (3) these experts understood that they were to take as conservative a course as they considered reasonable in determining whether a nuclear plant should be built at Diablo Canyon, and if the site were appropriate, how the plant should be designed to withstand [*73] any earthquake which might reasonably be expected to occur in the area; and (4) that when these experts gave PG&E their advice, the company took it.

The experts built in multiple layers of conservatism. First, an extensive network of trenches were dug across the Diablo Canyon site to hunt for evidence of potentially active faults that might be capable of generating a rupture of the earth at the plant site. Second, Dr. Benioff and Dr. Smith reviewed the seismic history of California for faults that they believed could generate earthquakes that would have the maximum effect on structures at Diablo Canyon. They hypothesized the occurrence of a hypothetical 6.75 magnitude earthquake directly beneath the site. Third, Dr. Blume added an additional layer of conservatism by determining the response spectra that the structures, systems, components, and equipment might experience. For the critical plant structures, systems, and components, Blume and Associates used the double design earthquake concept, i.e., the plant was designed to withstand earthquake motions twice as strong as those reasonably expected.

These multiple layers of conservatism made Diablo Canyon the most conservatively [*74] designed plant in the United States when it was licensed for construction by the AEC in 1968. Diablo Canyon was built to a seismic standard with a peak ground acceleration of 0.4g and a maximum spectral acceleration of 1.48g. n11 Construction continued on the plant during the evaluation of the Hosgri Fault because PG&E did not believe that the fault would change the maximum design earthquake magnitude for the plant.

n11 The San Onofre Nuclear Generating Station Unit 1 was designed to a nominally higher ground acceleration. However, the seismic response spectra adopted at Diablo Canyon were considerably higher and more conservative.

The geology and seismology investigations of the Diablo Canyon site met or exceeded the standards of practice in existence at the time. PG&E contends that offshore seismic profiling did not become a part of nuclear power plant siting studies until 1970. By then, construction of Diablo Canyon Unit 1 was well underway, and Unit 2 was about to receive a construction permit. Additionally, neither the AEC nor its consultants, the USGS and the USC&GS, thought that offshore seismic profiling was necessary.

As for the epicenter of the 1927 earthquake, [*75] PG&E states that Drs. Benioff and Smith's reliance upon the earthquake and epicenter map prepared by the California Department of Water Resources in determining the location of the 1927 magnitude 7.3 quake was reasonable. This map followed the accepted finding of Dr. Perry Byerly about the

source of the 1927 quake. Although it is now recognized that the 1927 earthquake did not occur at the Byerly location, most seismologists today place the 1927 earthquake away from the Hosgri Fault and 25 to 45 miles from Diablo Canyon.

PG&E maintains that even if the Hosgri Fault had been identified in the 1960's through offshore seismic profiling, and through a reevaluation of the location of the 1927 earthquake, as capable of causing a 7.5 magnitude earthquake, it would not have changed the original seismic design of the plant. Prior to the occurrence of the 1971 San Fernando earthquake, seismologists and earthquake engineers believed that 0.5g was the highest peak ground acceleration that even an earthquake of 8.5 magnitude could produce. Under accepted principles of the pre-San Fernando earthquake era, a magnitude 7.5 Hosgri earthquake would not have been thought capable of generating a [*76] peak ground acceleration of more than 0.45g, which was very close to Diablo Canyon's actual design of 0.4g and quite a difference from the 0.75g adopted by the NRC in 1976.

The 1971 San Fernando earthquake was a 6.6 magnitude earthquake, and recorded a peak ground acceleration of 1.25g, which was double the maximum acceleration ever previously recorded. By the mid-1970's, the data from the San Fernando earthquake began to change the way in which critical facilities were designed. It was in this light that the NRC determined in 1976 that Diablo Canyon should be evaluated for the higher 0.75g standard. Thus, PG&E submits that it is unreasonable to expect that PG&E should have known in 1966 what the experts and government safety regulators did not know and had no reason to believe at the time.

PG&E contends that its response to the identification of the Hosgri Fault was reasonable and responsive to the NRC's needs. When the Hosgri Fault was initially identified, neither the AEC nor PG&E's experts believed that it was an active fault that was capable of producing a significant earthquake. PG&E's geology and seismic consultants advised PG&E that any earthquake potential postulated [*77] for the Hosgri Fault was covered by the original seismic design of the plant. The NRC on two occasions in 1974 publicly opposed efforts to halt Diablo Canyon construction because of the discovery of the fault. The offshore seismic studies that were planned for proposed Units 3 and 4 in late 1972 and early 1973 were cancelled, not because PG&E was afraid to learn the truth about the Hosgri Fault, but because the California Coastal Zone Conservation Act was passed which would have necessitated an additional permit for Units 3 and 4, which PG&E expected would be difficult to obtain, and which ultimately led to the cancellation of proposed Units 3 and 4.

When later work suggested that the Hosgri Fault was an active fault, PG&E's experts concluded that it was capable of no more than a 6.5 magnitude earthquake. The NRC geologists and seismologists initially agreed with PG&E, but the USGS did not. At the end of 1975 and the beginning of 1976, the USGS postulated a 7.5 magnitude earthquake. In April of 1976, the NRC decided to adopt the USGS position and required PG&E to evaluate the Diablo Canyon plant using an effective horizontal ground acceleration of 0.75g. PG&E contends that [*78] the NRC agreed to adopt the position of the USGS because the NRC did not want a confrontation between the two agencies at a contested hearing.

After long and complicated discussions with the NRC's experts, in early 1977 PG&E reached agreement with the NRC on criteria for the seismic modifications of Diablo Canyon's major structures. By March 1979, the seismic analyses and the necessary modifications were completed, and the plant was close to completion for a second time. However, on March 28, 1979, the TMI accident occurred. In its aftermath of a licensing moratorium and TMI modifications, Diablo Canyon Unit 1 received a low power license on September 22, 1981.

3. Design Verification Program

PG&E contends that its own quality assurance program was effective and proper, that the mirror image error and the other design errors discovered as a result of the IDVP were minor and had no safety significance, and that the modifications to the plant during the IDVP period were the result of technological upgrading due to the use of 1980's engineering methodology to a plant designed using 1960's and 1970's engineering methodology.

After the mirror image error was reported to the NRC, [*79] subsequent investigations by PG&E, its independent reviewers, and the NRC, led to the discovery of other minor design errors, none of which PG&E contends were safety significant. During this time the NRC was in the midst of intense scrutiny by Congress and the NRC's credibility as a safety regulator had been seriously eroded. PG&E asserts that it was in this backdrop of politics that the NRC decided to restore its credibility as a tough and competent safety regulator by making an example out of PG&E by suspending its low power operating license. PG&E decided not to contest the suspension of the license because it felt this would further delay fuel loading.

Contrary to the DRA's assertions, PG&E contends that the NRC had consistently given good marks to PG&E's QAP. In periodic reviews over the course of the project, the NRC staff always found the Diablo Canyon QAP to be in overall compliance with NRC regulations. There were occasional lapses in PG&E's QAP, but the NRC never found anything that would cause it to lose confidence in PG&E. PG&E contends that a QAP cannot catch every single error. PG&E further contends that the relatively small number of errors found during the [*80] IDVP review, and the randomness of those errors, is further proof that PG&E was in overall compliance with the NRC's quality assurance regulations.

As the IDVP got underway, the undertaking became complicated for several reasons. First, virtually all of the communication between the outside reviewers and PG&E had to be in writing or reduced to writing, which required more time. Second, the NRC required PG&E to submit a semi-monthly status report for as long as the license suspension was in effect. Third, the outside reviewers were making increasing numbers of requests for highly technical information to which PG&E had to respond. Compounding this was an NRC staff request to report any potential concerns with plant design as a formal error or open item. Fourth, the outside reviewers were using sophisticated 1980's engineering methodologies in their design verification activities and were beginning to request information on design concerns that could only be provided by applying that type of methodology. As a result, the design and construction began to slip behind schedule.

The increase in these activities resulted in some changes to the organizational structure of PG&E. In [*81] January 1982 the position of Project Manager was created because the activities were significantly different from typical engineering and construction activities. The combined effect of the verification work and the project completion work created a need for more centralized management control than had previously existed on the project.

Certain modifications were also made to the information and reporting systems, and to the schedule and cost control procedures. These changes included the preparation of a weekly status report by the project team for senior management. More specific and detailed scheduling mechanisms, apart from the weekly and monthly status reports, were also developed. These included integrated project completion schedules, and a schedule revision review and approval process. Scope and cost control tools were modified. New methods were used to develop schedules, forecast costs, and to track and manage the work. As the work continued to expand during the design verification program, additional procedures were devised to track and control changes to the design.

PG&E maintains that because of the highly charged political atmosphere, the IDVP was going to be [*82] intensely scrutinized by the NRC Commissioners, from the intervenors in the Diablo Canyon licensing proceedings, from the Congress, and from the press. Because of the likelihood of intense scrutiny, PG&E believes that the NRC staff conducted the review of the IDVP using state of the art analysis to judge the design of Diablo Canyon instead of using the design techniques and methods employed when the plant was first designed.

The NRC retained the services of the Brookhaven National Laboratory, who were experts in state of the art seismic analysis, to analyze the design. Thus, the IDVP examined the Diablo Canyon design through 1980's eyes, discounting the fact that the design was based on early 1970's technology and disregarding the fact that the models used in the original Diablo Canyon design had been specifically reviewed and approved by the NRC staff at the time they were submitted. Advances in computer technology and modelling techniques made for more sophisticated analyses than were available when the design was originally done.

When PG&E saw that the NRC staff and the IDVP reviewers were going to use state of the art engineering analysis and evaluation methods, PG&E decided [*83] to institute a program which systematically reviewed the design of the plant using state of the art techniques, and made modifications to the completed plant to make it comply with current analytical techniques. PG&E viewed the resulting modifications to be technological upgrades resulting from the application of techniques that were not available at the time of the original design. The fact that these changes were made had nothing to do with the adequacy of either PG&E's prior quality assurance program or plant design. Indeed, PG&E contends that even if the modifications were not done, the Diablo Canyon systems, structures, and components would have performed their safety functions in the event there was a 7.5 magnitude Hosgri earthquake.

4. Quantification

PG&E concludes that the first year results of both units demonstrate the quality of the system design and the reliability of the systems and equipment. PG&E believes that Diablo Canyon's safe operation and high operating ratios attest to the quality of PG&E's management efforts, and that the overall cost of Diablo Canyon is in line with those of other plants that went into commercial operation at the same time. In PG&E's [*84] opinion, the entire $ 5.518 billion

that was spent on the project was reasonably and prudently incurred. Accordingly, the DRA disallowance is not warranted.

V. Policy and Legal Issues

A. Standards Used in Review of the Proposed Settlement

This Commission has the authority under Public Utilities Code § § 451, 454, 457, 463, and 728 to determine and fix just and reasonable rates for electric service. The CPUC can also establish rates for an electrical corporation on a basis other than the traditional method of allowed rate of return on undepreciated capital costs. (Public Utilities (PU) Code § 463(a); Re Palo Verde Nuclear Power Plant D.87-04-034, p. 17.)

To expedite the hearing process, we had been considering the adoption of settlement procedure rules as set forth in Rulemaking proceedings R.84-12-028. By ALJ Ruling of June 27, 1988, the presiding ALJ ruled that the reasonableness of the proposed settlement would be reviewed according to the proposed settlement procedures in R.84-12-028. n12

n12 A copy of the proposed settlement procedures is set forth in Appendix B. Those procedures were adopted by the Commission, with minor modifications, in D.88-09-060. [*85]

A settlement which proposes an alternative form of ratemaking is not a case of first impression for us. We have previously adopted ratemaking treatment based upon a stipulation between the CPUC staff and a utility. In D.86-10-023, as modified by D.87-04-034, we adopted the stipulation which set forth the ratemaking treatment proposed by the staff and Southern California Edison Company (SCE) for SCE's share of investment-related costs of the Palo Verde nuclear power plant. In that case, we concluded, inter alia, that the methodology set forth in the stipulation was an appropriate method of alternative ratemaking, and that, on balance, the alternative ratemaking protected both ratepayer and shareholder interests and resulted in just and reasonable rates. (D.87-04-034, p. 17.)

There is a strong public policy favoring the settlement of disputes to avoid costly and protracted litigation. (Datatronic Systems Corp. v. Speron, Inc. (1986) 176 Cal. App. 3d 1168, 1173-74.) The cases discussed in the sections below on binding future commissions and interpreting the settlement documents all acknowledge the propriety of settlement in utility matters. n13 The settlement procedures [*86] that are under consideration are similar to the settlement procedures that exist in class action litigation. Although the settlement of a utility rate case is not a class action, the settlement principles that apply in class actions are analogous to the proposed settlement in this case in that it settles numerous similar claims of similarly situated protestants, and, of course, all of PG&E's customers. As the appellate court noted in Janus Films, Inc. v. Miller (2d Cir. 1986) 801 F. 2d 578, at 582, the role of the court is greatly expanded when a consent judgment or settlement judgment resolves class actions, shareholder derivative suits, bankruptcy claims, antitrust suits brought by the United States, and any suits affecting the public interest. In the Diablo Canyon case, the settlement affects the interests of all PG&E customers. In such a case, the factors which the courts use in approving class action settlements provide the appropriate criteria for evaluating the fairness of this settlement.

n13 Public utility commissions in other jurisdictions have also approved of the use of stipulations or settlements to set just and reasonable rates. (Re Nine Mile Point 2 Nuclear Generating Facility (N.Y. 1986) 78 PUR 4th 23, appeal pending sub. nom. Kessel v. Public Service Commission (N.Y. April 15, 1987.); Re Potomac Electric Power Co. (D.C. 1987) 81 PUR 4th 587; Re Public Service Company of Indiana, Inc. (Ind. 1986) 72 PUR 4th 660; Re Cincinnati Gas and Electric Co. (Ohio 1985) 71 PUR 4th 140; United States v. Public Service Commission of the District of Columbia (D.C. 1983) 465 A.2d 829.) In addition, the Federal Energy Regulatory Commission (FERC) has its own set of settlement procedures which is contained in 18 C.F.R. § 385.602. [*87]

In class actions, both federal and in California, the judge must approve the class action settlement. (Ficalora v. Lockheed California Company (9th Cir. 1985) 751 F. 2d 995, 996; Officers for Justice v. Civil Service Commission of the City and County of San Francisco (9th Cir. 1982) 688 F. 2d 615, 623-624; Fed. Rules of Civil Procedure, Rule 23(e); La Sala v. American Savings and Loan Association (1971) 5 Cal. 3d 864, 872; Trotsky v. Los Angeles Federal Savings and Loan Association (1975) 48 Cal. App. 3d 134, 149.)

When a class action settlement is submitted for approval, the role of the court is to hold a hearing on the fairness of the proposed settlement. Proposed Rule 51.6 provides that if there are contested material issues in a proposed settlement, a hearing will be scheduled. However, the fairness hearing is not to be turned into a trial or rehearsal for trial on the merits. (Officers for Justice v. Civil Service Commission of the City and County of San Francisco, supra, 688 F. 2d at p. 625.) n14 The court must stop short of the detailed and thorough investigation that it would undertake if it were actually trying the case. (Carson v. American [*88] Brands, Inc. (1981) 450 U.S. 79, 88, fn. 14 [67 L. Ed. 2d 59, 101 S.Ct. 993.]; Parker v. Anderson (5th Cir. 1982) 667 F. 2d 1204, 1209; Armstrong v. Board of School Directors (7th Cir. 1980) 616 F. 2d 305, 314-315; Cotton v. Hinton (5th Cir. 1977) 559 F. 2d 1326, 1330.)

The standard used by the courts in their review of proposed settlements is whether the class action settlement is fundamentally fair, adequate, and reasonable. (Officers for Justice v. Civil Service Commission of the City and County of San Francisco, supra, 688 F. 2d at p. 625.) The burden of proving that the settlement is fair is on the proponents of the settlement. (Grunin v. International House of Pancakes (8th Cir. 1975) 513 F. 2d 114, 123; Norman v. McKee (N.D. Cal. 1968) 290 F. Supp. 29, 32.) Proposed Rule 51.1(e) provides that this Commission will not approve a settlement unless the ". . . settlement is reasonable in light of the whole record, consistent with law, and in the public interest."

In order to determine whether the settlement is fair, adequate, and reasonable, the court will balance various factors which may include some or all of the following: the strength of the [*89] applicant's case; the risk, expense, complexity, and likely duration of further litigation; the amount offered in settlement; the extent to which discovery has been completed so that the opposing parties can gauge the strength and weakness of all parties; the stage of the proceedings; the experience and views of counsel; the presence of a governmental participant; and the reaction of the class members to the proposed settlement. (Officers for Justice v. Civil Service Commission of the City and County of San francisco, supra, 688 F. 2d at p. 625.)

In addition, other factors to consider are whether the settlement negotiations were at arm's length and without collusion; whether the major issues are addressed in the settlement; whether segments of the class are treated differently in the settlement; and the adequacy of representation. (Parker v. Anderson, supra, 667 F. 2d at p. 1209; Armstrong v. Board of School Directors, supra, 616 F. 2d at p. 314; M. Berenson Company v. Faneuil Hall Marketplace (D. Mass. 1987) 671 F. Supp. 819, 823.)

In California trial courts, the court has broad powers in determining whether a proposed class action settlement is fair. (Mallick [*90] v. Superior Court (1979) 89 Cal. App. 3d 434, 438; Trotsky v. Los Angeles Federal Savings and Loan Association, supra, 48 Cal. App. 3d at 150.) The California courts have looked to federal class action procedures and federal case law when there is no controlling California authority. (State of California v. Levi Strauss & Company (1986) 41 Cal. 3d 460, 481, concurring opinion of Bird, C. J. fn. 2; La Sala v. American Savings and Loan Association, supra, 5 Cal. 3d at 872.) Thus, in determining whether the proposed settlement in this case is reasonable, consistent with the law, and in the public interest, we will balance the factors that the federal and California courts have adopted in determining the reasonableness of proposed class action settlements.

B. Binding Future Commissions

A major concern in this case is whether a future Commission will adhere to the terms of a settlement agreement which fixes the price to be paid for Diablo Canyon electricity for the next 28 years. The parties agree that we cannot bind future Commissions. PG&E: "Since ratemaking is quasi-legislative in nature, it is a general principle that a commission cannot bind the actions [*91] of a future commission" (Brief, p. 71); AG: "As a legal matter, the Commission cannot bind its successors as to policy matters" (Brief, p. 5); the DRA: "No order of the Commission is binding on future Commissions" (Brief, p. 7); TURN: "It is well-established that a decision made by the current Commission cannot bind a future Commission" (Brief, p. 15). And we have specifically held that we cannot bind the actions of a future Commission. (Re PG&E (1981) 6 CPUC 2d 739 (abstract), D.93497 in A.59537.) Because this settlement is intended to be operative for 28 years, we feel it necessary to reaffirm the settled principle and to discuss the legal effect of our approval.

We have found no California Supreme Court case on point. An analagous case is United States v. Public Utilities Commission of the State of California (N.D. Cal. 1956) 141 F. Supp. 168, which involved the constitutionality of PU Code § 530, as amended in 1955. In that case, the United States sought a declaratory judgment as to the constitutionality of § 530 which empowered the CPUC to permit common carriers to transport property at reduced rates for federal, state, and local governments, to such extent and [*92] subject to such conditions as the CPUC might consider just and reasonable. At the trial, the CPUC, both in its testimony and by stipulation by its chief counsel, stated that it would apply § 530 in a manner that would not impede the United State's defense measures. In finding that § 530

was unconstitutional, the court held that neither the Commission nor its chief counsel could bind their successors through such testimony or stipulation.

Other California agencies and boards have followed the general rule of law that no legislative body can limit or restrict its own power or that of subsequent legislatures, and that the act of one legislature does not bind its successors. (See Thompson v. Board of Trustees (1904) 144 Cal. 281, 283; McNeil v. City of South Pasadena (1913) 166 Cal. 153, 155-156; In re Collie (1952) 38 Cal. 2d 396, 398; City and County of San Francisco v. Cooper (1975) 13 Cal. 3d 898, 929; Campen v. Greiner (1971) 15 Cal. App. 3d 836, 843; City and County of San Francisco v. Patterson (1988) 202 Cal. App. 3d 95, 105.)

The CPUC is both a court and an administrative tribunal. It exercises both judicial and legislative powers. (Re L. A. [*93] Metro. Transit Auth. (1962) 60 CPUC 125, 127.) The fixing of rates of public utilities is an example of its legislative powers. (People v. Western Air Lines, Inc. (1954) 42 Cal. 2d 621, 630.) Thus, since the CPUC exercises legislative powers when it sets rates, it appears that any Commission decision which attempts to fix prices that are automatically incorporated into rates over the next 28 years would not bind successor Commissions.

The Federal Energy Regulatory Commission (FERC) cases hold that a present commission cannot bind a future commission's discretionary act. (43 FERC P61,201; 41 FERC P61,405; 34 FERC P61,356; 29 FERC P61,291; 23 FERC P61,012; 9 FERC P63,004; 54 FPC 138.)

In 54 FPC 138, the Federal Power Commission (FPC), the predecessor to the FERC, approved a proposed settlement fixing rates for natural gas. As part of the FPC order, it stated the following:

"While unable to bind future Commissions it is our intention that rate increases and reductions made pursuant to this Agreement as to rates shall be permitted to become effective as of the time provided for without suspension and without conditions other than those specified in the Agreement." (54 [*94] FPC 138, 143.)

In 41 FERC P61,405, the FERC approved a settlement, but disapproved language in the settlement binding the FERC to the use of a specific cost of service methodology for future ratemaking. Subsequently, in a rehearing the parties to the settlement proposed some alternative language as a solution to the language that was previously disapproved. This revised language stated that the settlement would be subject to change by the FERC ". . . only under the Commission's indefeasible authority to order changes in rates, terms and conditions of service and other provisions that are fixed by contract if they are contrary to the public interest." This revision allowed the FERC to accept the settlement without binding the FERC to the use of a specific cost of service methodology for future ratemaking. (43 FERC P61,201.)

In 34 FERC P61,356, a proposed settlement, which included a provision for the levelization of the capacity cost component of the purchased power costs associated with the buy back of power, was amended to clarify the FERC's right to order changes in certain aspects of the levelization plan. The settlement was approved with the express understanding that the [*95] parties to a settlement agreement may agree on certain duties and rights, as well as on the elements of the cost of service methodology to be employed in the development of future rates, but that the FERC could not be bound in that way.

To avoid the problem of not being able to bind future commissions and at the same time to provide a basis for long term stability of settlements, the FERC states in its decisions that it "intends" that the future rate increases and methodology that have been agreed to in a settlement will become effective on the dates provided for. This intention is expected to be honored by later commissions. (29 FERC P61,291; 55 FPC 630, 633; 54 FPC 138, 143.)

The Public Utilities Code strengthens the proposition that we cannot bind future Commissions. Section 1708 provides: "The commission may at any time . . . rescind, alter, or amend any order or decision made by it." Section 457 permits utilities to enter into an agreement for a fixed period for the automatic adjustment of charges for electricity with the caveat "Nothing in this section shall prevent the commission from revoking its approval at any time and fixing other rates and charges. . . ." Finally, [*96] Section 451 provides that "All charges demanded or received by any public utility . . . shall be just and reasonable" and Section 728 provides that if the Commission finds rates are unreasonable, "the commission shall . . . fix . . . the just, reasonable . . . rates . . . to be thereafter observed and in force." We have reviewed these statutes, which are familiar to all practitioners of public utility law in California, to impress upon the proponents of the settlement the limitations under which we act today. (cf. FPC v. Sierra Pac. Power Co. (1956) 350 US 348, 100 L. Ed. 388.) And we deliberately refrain from commenting on the consequences of a future Commission's changing of the terms of the settlement. We believe the settlement is a fair compromise of a difficult, costly controversy and we intend that the terms and conditions of the Settlement Agreement and the Implementing Agreement shall be

effective on the dates specified in the agreements. The proponents have prepared the following language to propitiate future Commissions, which we adopt.

To the extent permitted by law, the Commission intends that this decision be binding upon future Commissions. In approving this [*97] settlement, based on our determination that taken as a whole its terms produce a just and reasonable result, this Commission intends that all future Commissions should recognize and give all possible consideration and weight to the fact that this settlement has been approved based upon the expectations and reasonable reliance of the parties and this Commission that all of its terms and conditions will remain in effect for the full term of the agreement and be implemented by future Commissions.

We have engaged in this extended analysis of our power - or lack of power - to approve settlements and to bind future Commissions both to answer the opponents of the settlement who argue that we have no authority to approve the settlement and to remind the proponents that the terms of the settlement are not set in concrete.

C. Interpretation of the Settlement Agreement and the Implementing Agreement

An agreement operative for 28 years will be interpreted frequently. In each PG&E rate case, there will be questions regarding the effect of the settlement on cost allocations, rate of return, decommissioning expenses. In ECAC hearings the settlement issues of capacity factor and inflation [*98] rates will occur. There could be hearings on requests for floor payments and if PG&E abandons the plant there will certainly be a hearing on PG&E's abandonment rights. Should questions regarding safety arise, we can expect public inquiry of the Safety Committee. And, should PG&E earn extraordinary profits from Diablo Canyon, we have been warned by some parties that complaints will be filed to reduce unreasonable rates. All of these challenges will come before this Commission.

The settlement, when approved and adopted by us, becomes an order of the Commission, subject to PU Code Section 1759:

"No court of this State, except the Supreme Court to the extent specified in this article, shall have jurisdiction to review, reverse, correct, or annul any order or decision of the commission or to suspend or delay the execution or operation thereof, or to enjoin, restrain, or interfere with the commission in the performance of its official duties, except that the writ of mandamus shall lie from the Supreme Court to the commission in all proper cases.

We are not approving a contract where the intent of the parties is paramount. "Settlement" carries a different connotation in administrative [*99] law and practice from the meaning usually ascribed to the settlement of civil actions in a court. (Penn. Gas & Water Co. v. FPC (1972) 463 F. 2d 1242, 1246.) We are not resolving a dispute between two parties. Our decision is a facet of our duty to fix just and reasonable rates, which requires that the final responsibility to support and interpret the decision rests with us. Therefore, when interpreting the Settlement Agreement and the Implementing Agreement it is not enough to know the meaning that the proponents put on each paragraph, it is important that future Commissions are apprised of our understanding of the agreements. To the extent that our interpretation differs from that of the proponents, or any of them, it is our interpretation that is definitive. To that end, in our discussion of the various paragraphs in the Settlement Agreement, we are careful to spell out our interpretation of the paragraph. We especially refer to the discussion on decommissioning costs, rate of return, the Safety Committee, floor payments and the return of floor payments, and abandonment rights.

For us to find the settlement to be in the public interest we must know at the time we make [*100] the finding, to the extent possible, the ramifications of the settlement. In some areas it is easy, e.g., the price for electricity through 1994; in other areas it is highly speculative, e.g., determining the effect of Diablo Canyon on PG&E's rate of return. But in many areas where precision is impossible, we can at least recount the factors that we have considered in our public interest determination. For instance, Paragraph 10, Decommissioning, is only one broadly written sentence, but which involves the ratepayers in billions of dollars of costs. If we thought a future Commission could authorize a change in Diablo Canyon which would cause PG&E to lose its decommissioning tax benefits, yet under Paragraph 10, require that ratepayers continue liable for decommissioning costs, we would not approve the settlement; it would not be in the public interest. Similarly, if the Commission did not have the authority to order PG&E to refund the amount of money it receives in floor payments in excess of the abandonment price of Diablo Canyon or which is unrefunded upon termination of the agreement, we would not approve the settlement. It is not enough to say, as some parties do, "Let future [*101] Commissions decide." We must make the decision now in order to make the finding that the settlement is in the public interest; and so that the parties understand their rights and obligations. We do not want to hear PG&E arguing 10 years from now that the settlement provides that the ratepayers must pay for decommissioning costs regardless of PG&E's activities concerning Diablo Canyon or that the Commission has no authority to order refunds in

the floor payment account. If PG&E does not agree with our interpretation of the settlement, then it must withdraw from the settlement and prepare for trial on the reasonableness issues of the construction of Diablo Canyon.

This discussion of our authority to interpret the settlement finds support in court cases and decisions of other Commissions. A settlement, when adopted by us, is not a contract between parties but a decision of the Commission. (Mobil Oil Corporation v. FPC (1974) 417 US 283, 313-314, 41 L. Ed. 2d 72; Placid Oil Co. v. FPC (5th Cir. 1973) 483 F. 2d 880, 893; Re Chesapeake & P. Tel. Co. (1982) 3 DC PSC 182, Annotated 1983-1986 PUR Digest, Procedure, § 31.) And it is binding on all the parties even though [*102] some parties are not in accord with the result (Penn. Gas & Water Co. v. FPC (D.C. Cir. 1972) 463 F. 2d 1242, 1246.) When a public utilities commission adopts a settlement it does so on its understanding of the terms of the settlement. (Re Hope Natural Gas Co. (1983) 51 PUR 4th 431, 441.) We evaluate the settlement, the evidence presented in support and against, and the plain meaning of the language. But to the extent the settlement requires interpretation after it is adopted in a Commission decision, it is the Commission's interpretation that prevails. (Re Public Service Co. of Indiana (1986) 72 PUR 4th 660; See Brown v. Neeb (6th Cir. 1981) 644 F. 2d 551, 558.)

The Settlement Agreement provides that any change in the agreement renders it null and void. We believe the Settlement Agreement and the Implementing Agreement as written, and as interpreted by us in this decision, are fair and in the public interest; the Settlement Agreement and the Implementing Agreement need not be changed.

We cannot anticipate every issue that might arise over the years of the settlement so our discussion, of necessity, is limited. To the extent that issues arise which are [*103] not dealt with in this decision we would expect the parties to refer to the Answers to Questions Raised in ALJ Ruling Dated July 21, 1988 (Exh. 513); Additional Answers (Exh. 514); Joint Answers to Questions Raised in Settlement Workshops (Exh. 515); Supplemental Joint Answers (Exh. 516); Joint Answers to Questions Raised by the ALJ September 15, 1988 (Exh. 517); as well as to the testimony of the proponent's witnesses and their briefs and oral argument.

D. Antitrust Allegations

During the hearings on the settlement, a request was made to examine ". . . the antitrust factors inherent in the settlement agreement. . . ." It was alleged that the proponents and their agents had met during the past thirteen months in secret sessions and negotiated a settlement agreement in which the price for the power produced by Diablo Canyon was fixed.

The Commission, in reaching a decision on whether to grant or deny a certificate of public convenience and necessity, is required to consider the antitrust implications of the matter before it. (Northern California Power Agency v. Public Utilities Commission (1971) 5 Cal.3d 370, 377; Re PT&T Co. General Rate Increase (1979) 2 CPUC 2d [*104] 89, 193; Re PT&T Co. granting partial rehearing (1979) 2 CPUC 2d 434, 448.) And this principle would apply to any decision of the Commission. In the Northern California Power Agency case, the California Supreme Court annulled a Commission decision granting a certificate to construct and operate a geothermal steam generating plant because the Commission had failed to give adequate consideration to, and make appropriate findings on, the allegations that the steam purchase contracts violated state and federal antitrust laws. (Northern California Power Agency v. Public Utilities Commission, supra, 5 Cal.3d at p. 380.)

Competition is a relevant factor in weighing the public interest. Antitrust considerations, if they were present, would be relevant to the issues before us. (Northern California Power Agency v. Public Utilities Commission, supra, 5 Cal.3d at p. 377.) This is not to suggest, however, that the regulatory agency is bound by the antitrust laws. As the court pointed out in the Northern California Power Agency case at page 377, regulatory agencies such as the Commission:

". . . can and do approve actions which violate antitrust policies where other [*105] economic, social and political considerations are found to be of overriding importance. In short, the antitrust laws are merely another tool which a regulatory agency employs to a greater or lesser degree to give 'understandable content to the broad statutory concept of the "public interest."'"

Thus, the Commission can, after due consideration and in the exercise of its authority, approve an agreement despite its monopolistic features. The antitrust prohibitions do not extend to trade-restraining acts which are done pursuant to state regulation. (Parker v. Brown (1943) 317 U.S. 341, 350-351 [63 S.Ct. 307, 87 L.Ed. 315]; Gas Light Company of Columbus v. Georgia Power Company (5th Cir. 1971) 440 F.2d 1135, 1140; Re Southern California Water Company (1980) 3 CPUC 2d 379, 386.) That is, even if the rates and practices complained of originate with the regulated utility, if the ". . . rates and practices are subjected to meaningful regulation and supervision by the state to the end that they are the result of the considered judgment of the state regulatory authority . . .," it is immune from the

operation of the antitrust laws. (Gas Light Company of Columbus v. Georgia [*106] Power Company, supra, 440 F.2d at p. 1140.) Similarly, we note that the California Unfair Practices Act, Business & Professions Code § 17000 et. seq., which prohibits anticompetitive behavior, does not apply:

"(1) To any service, article or product for which rates are established under the jurisdiction of the Public Utilities Commission of this State and sold or furnished by any public utility corporation, or installation and repair services rendered in connection with any services, articles or products." (Business & Professions Code § 17024, emphasis added.)

The proponents all testified that the price structure of the settlement was a negotiated and agreed upon price. If such a price were set by the proponents without the Commission's review and approval an antitrust violation might be the result, but here the settlement, which includes the performance based pricing structure, is subject to the review and approval of this Commission. As discussed earlier, the purpose of this decision and the hearings that we held on the settlement are for determining whether the settlement is reasonable, consistent with the law, and in the public interest. Any antitrust implications [*107] of the settlement are therefore just another factor in determining whether the settlement is in the public interest. The settlement prices, when approved by us, are no more in restraint of trade than any other Commission approved price or rate.

We do not see any anticompetitive implications in the settlement. The DRA, PG&E, and the AG may meet, negotiate, and propose a price or rate to the Commission; that is not anticompetitive, nor is it an agreement to fix prices between competitors. One alternative to the settlement is to include the cost of Diablo Canyon in rate base where PG&E could recover its reasonable costs for the plant regardless of the cost of alternative sources of energy. That, too, is not anticompetitive. We find that the Settlement Agreement is not anticompetitive, but should others see it differently we find that the economic considerations embodied in the settlement are of overriding importance.

E. Objections Raised by Opponents to Certain Procedures

TURN, William Bennett and Robert Teets, the Redwood Alliance, the San Luis Obispo Mothers for Peace (SLOMP), Consumers Organized for the Defense of Environmental Safety, Life on Planet Earth, and Rochelle [*108] Becker allege that the settlement proceedings did not give them adequate time to prepare and therefore violated due process.

The following is a brief summary of the settlement proceedings. On June 27, 1988 the proponents announced that a settlement had been reached among the proponents. In his ALJ Ruling of June 27, the presiding ALJ adopted a hearing schedule for the proposed settlement, and adopted the settlement procedures proposed in R.84-12-028 (see Appendix B) as the procedure for determining the reasonableness of the proposed settlement. On July 6, an informal settlement conference was held to discuss the proposed settlement. On July 8, the date set for the filing of the Settlement Agreement and Implementing Agreement, the proponents notified the ALJ that the papers would not be filed until July 15. Subsequently, in the ALJ's Ruling of July 21, the schedule of June 27 was rescinded, and the time in which opponents could file comments on the settlement was extended one week to August 15.

Prior to and at the prehearing conference of August 18, 1988, the opponents moved for an extension of time in which to file comments in opposition to the proposed settlement. This motion [*109] was denied and the following hearing schedule was adopted:

(a) August 22 - proponents' testimony to be filed.

(b) August 30 - all parties may submit comments regarding the proposed settlement.

(c) September 12 - all parties other than the proponents shall file testimony.

(d) September 19 - proponents' rebuttal testimony filed.

(e) September 19 - hearings begin.

(f) September 30 - hearings end (hearings actually ended on October 3).

During this period, workshops were conducted by the Commission Advisory and Compliance Division (CACD) to which all parties were invited. Answers to questions raised at the workshops were filed, as were answers to questions raised by the presiding ALJ.

The above schedule is consistent with the proposed settlement rules which we used in this case, which provide that all parties receive 7 days' notice that a settlement will be filed and that a pre-filing settlement conference will be held; that all parties be served with the settlement; that objecting parties have 30 days in which to file comments and 15 days to file reply comments; and that a hearing be held as soon after the close of the comment period as reasonably possible. All parties [*110] received advance copies of the Settlement Agreement on June 27 with formal service on July 15; a settlement conference was held on July 6; parties had until August 30 to file comments and opponents had until the day their witnesses testified to file prepared testimony. And prepared testimony is the best commentary. We find that the presiding ALJ acted reasonably in setting the comment and hearing schedule.

Prior to the prehearing conference of September 15, 1988, the opponents moved for additional time in which to file prepared testimony. In addition, TURN requested that the CACD perform computer runs using the DRA's model to calculate the effects of using alternate assumptions. The Redwood Alliance moved to compel compliance by the DRA with certain discovery requests, which it alleged were essential for its case in opposition to the proposed settlement, and for a modification of the briefing and hearing schedule. In denying the Redwood Alliance's discovery motion and for modification of the hearing schedule, the presiding ALJ stated:

"[T]his case is too large for any one person or organization outside of an organization as large as the Public Utilities Commission to adequately [*111] prepare within the time limits. . . .

"The case cannot be operated on the basis of any one person being fully advised in all phases of this case. That is why we have a staff. That is why we have an attorney general. . . .

"In the San Luis Obispo Mothers' letter, it says . . . our witness is employed full time and only able to meet on weekends. And the [California Polytechnic] library is closed on weekends.

"Well, that kind of assistance to the Commission, while welcomed to the extent that it is available, cannot be used to say we have to delay a proceeding like this.

"These people are not equipped to participate fully. And I can't allow that to run the hearing.

"In the other area of the Redwood Alliance's motion, the discovery request on cost-effectiveness, I am not sure that that is relevant to the settlement. And if it is relevant to the settlement, it should have been relevant to the main case. . . .

"And if it was relevant to the main case, you [Redwood Alliance] should have been here a year ago. Yet, you weren't."

The ALJ also denied TURN's motion for the CACD to run alternate analyses, but permitted TURN and the SLOMP to file testimony on the day their witnesses [*112] testified.

At the start of the hearings, and following the testimony of Dr. Bernow, the Redwood Alliance renewed its motion for discovery on the cost effectiveness issue. Both of these motions were denied.

Mr. Bennett complains that he was denied cross examination of critical witnesses, and was not permitted to inquire about the negotiations surrounding the settlement.

1. Objections to the Schedule

The opponents to the settlement complain that the schedule adopted by the presiding ALJ ". . . imposed an arbitrary and short schedule" (Bennett and Teets, Brief in Opposition to Settlement Agreement, p. 7.), which is unfair to those opposing the settlement. (Concurrent Brief of the Redwood Alliance, p. 4; SLOMP et. al., Closing Arguments, p. 15.)

The courts have recognized that to adequately represent a group of persons, such as in a class action lawsuit, substantial resources are necessary to support what is likely to be costly and protracted litigation. (Smith v. Josten's American Yearbook Co. (D. Kansas 1978) 78 F.R.D. 154, 163; Cullen v. New York State Civil Service Commission (E.D.N.Y. 1977) 435 F. Supp. 546, 563; Amos v. Board of Directors of City of Milwaukee [*113] (E.D. Wisconsin 1976) 408 F. Supp. 765, 774; Jeffery v. Malcolm (S.D.N.Y. 1973) 353 F. Supp. 395, 397.) "The ordinary layman will generally not possess the requisite training, expertise, and experience to be able to adequately serve the interests of a proposed class." (Jeffery v. Malcolm, supra, 353 F. Supp. at p. 397.) Even an attorney or attorneys who have shown the utmost competence in conducting traditional, two party litigation may lack the time, ability, and resources to adequately prosecute a large case. (Smith v. Josten's American Yearbook Co., supra, 78 F.R.D. at p. 163; Cullen v. New York State Civil Service Commission, supra, 435 F. Supp. at p. 563; Amos v. Board of Directors of City of Milwaukee,

supra, 408 F. Supp. at p. 774.) Unless there is a valid reason, the lack of preparation is not a grounds for obtaining a continuance. (United States v. Pacific Fruit & Produce Co. (9th Cir. 1943) 138 F. 2d 367, 372.)

The case before this Commission is of unprecedented size, in terms of cost and filings. Over 150,000 pages of prepared testimony and exhibits were filed for the reasonableness phase alone. In addition, depositions were taken, and [*114] numerous data requests were exchanged between the interested parties. The amount of material in this case is staggering. The material filed in support of the settlement was much less voluminous, but still required expert analysis by persons experienced in public utility law. The presiding ALJ has stated on the record that an individual or organization may be hard pressed to deal with such an enormous record.

Ms. Becker and the San Luis Obispo Mothers for Peace have acknowledged both in the hearings and in their filed papers that they do not have the financial resources and personnel for a case of this magnitude. Ms. Becker stated that the cost of mailing their papers to all parties was a concern. In addition, the SLOMP is a "volunteer group", and "The witnesses, the people who are working in this case are employed full time. They only have evenings and weekends to get [their opposition to the settlement] ready." The hearing schedule in San Luis Obispo was adjusted to accommodate the SLOMP witness because of the witness' full time job.

TURN also lacked adequate resources as evidenced by its request that the CACD run the DRA's computer model using alternate assumptions. The [*115] Redwood Alliance noted that it is a "nonprofit membership association", and "Its participation in these proceedings and the ECAC proceedings have exhausted all available funds."

The presiding ALJ has the authority to control the course of the proceedings, and may take such other action as may be necessary and appropriate. (Rule 63.) He had authority to adopt the proposed settlement rules for use in this proceeding, and we affirm his ruling. The purpose behind the settlement rules is to encourage agreement between some or all of the parties to a Commission proceeding. Implicit in this purpose is the speedy resolution of contested issues. The period between the announcement and service of the settlement documents and the start and conclusion of the hearings was reasonable. The participation of the interested parties in this case is commendable. However, when an individual or organization does not have the necessary resources, that lack cannot control the pace of the proceedings. To allow the opponents in this case additional time to prepare would have, in effect, pushed the settlement timetable further back, thus eliminating one of the features of a settlement, to save hearing [*116] time and reduce the cost of litigation.

2. Motion to Compel Compliance With Discovery Request

The Redwood Alliance sent data requests to the DRA and PG&E concerning certain cost information. Some of the requested information was received in six large cartons containing an estimated 20,000 pages of analysis and documents, while other information was not received. According to the Redwood Alliance, the information received generated the need for an additional data request. When the motion for a continuance and compliance was brought by the Redwood Alliance, its experts had "only partially analyzed this information. . . ." The Redwood Alliance in its closing brief contends that the ALJ's denial of its motions for more time to prepare and for compliance with its discovery request was a "fundamental denial of the opportunity to present the opposition's side of the Settlement story."

The hearing schedule cannot be regulated by a party which lacks sufficient resources to manage the enormous amount of information associated with this case. Dr. Bernow testified that if he obtained the additional information that the Redwood Alliance requested, it would still take him between 30 [*117] and 60 days to complete what is essentially a preliminary analysis of his cost effectiveness study of Diablo Canyon.

3. Cross Examination of Witnesses

Mr. Bennett contends that he was denied the right to cross examine Mr. Ahern and Mr. Maneatis and that his subpoena to Attorney General Van de Kamp was improperly quashed.

It is well recognized that irrelevant, harassing, cumulative, and repetitive questions have no place in judicial or administrative proceedings. (Evidence Code § § 210, 352; Government Code § 11513; People v. Burgener (1986) 41 Cal. 3d 505, 525; Horn v. General Motors Corporation (1976) 17 Cal. 3d 359, 371.) The objections to Mr. Bennett's line of questions were sustained by the presiding ALJ as irrelevant, repetitive, and cumulative. He was given the opportunity to make an offer of proof as to why Mr. Ahern and Mr. Maneatis should be subjected to further cross examination; he did not do so for Mr. Ahern and refused to do so for Mr. Maneatis. We note that Mr. Bennett was not present during the cross examination of many witnesses. In light of the record, Mr. Bennett's right to cross examine was not denied.

The motion to quash the subpoena issued [*118] to the Attorney General was properly granted. A high public official should not be required to respond to a personal subpoena absent a showing of prejudice or injustice, and no such showing was made.

(Deukmejian v. Superior Court (1983) 143 Cal. App. 3d 632, 633.)

4. Settlement Negotiations

The opponents to the settlement contend that questions should have been permitted regarding the negotiations of the settlement. We are of the opinion that those questions were properly excluded. (See Evidence Code § § 1152, 1152.5, 1154.) Proposed settlement rule 51.9 provides in pertinent part:

"No statements, admissions, or offers to stipulate or settle, whether oral or written, made in preparation for, or during negotiations of stipulations or settlements shall be subject to discovery, or admissible in any evidentiary hearing unless agreed to by all parties participating in the negotiation.

"All information obtained during the course of negotiations shall be treated as confidential among the participating parties and their clients and shall not otherwise be disclosed outside the negotiations without the consent of the parties. . . ."

The same argument was raised in the Nine [*119] Mile Point 2 settlement hearing. (Re Nine Mile Point 2 Nuclear Generating Facility, supra, 78 Pub. Util. Rep. 4th at p. 46.) The New York Public Service Commission stated:

"Though the negotiations between staff and the company were confidential, we find that, in the circumstances of this case, such confidentiality may have been necessary to the development of a settlement proposal. Furthermore, the proceedings in this case afforded all parties an opportunity to assess the reasonableness of the proposed settlement, to comment, to cross-examine, and to introduce opposing evidence. We considered that evidence carefully and, indeed, revised the proposed settlement to reflect the arguments we found persuasive. Thus, the procedures in this case have provided the parties with numerous opportunities to test the reasonableness of the settlement and to influence our ultimate determination." (Id. at pp. 46-47.)

In this case, all of the interested parties had the opportunity to attend an informal settlement conference, file comments, file testimony, attend workshops, present witnesses, cross examine witnesses, file closing briefs, and argue before the Commission. The procedures [*120] adopted in this case have provided ample opportunity for opponents to persuade us that the settlement is not in the public interest. Thus, although the negotiations surrounding the settlement were privileged, procedures were in place that allowed all interested parties to be heard.

VI. Summary of the Settlement

On June 27, 1988 a Settlement Agreement (in Appendix C) was filed by the proponents which covers the operation and CPUC jurisdictional revenue requirements associated with each unit of Diablo Canyon. Subsequently, an Implementing Agreement (in Appendix D) was entered into by the proponents and filed with the Commission on July 15, 1988. The Implementing Agreement supplemented and clarified portions of the Settlement Agreement. The Settlement Agreement and the Implementing Agreement are intended to be interpreted as a single, integrated agreement, and in the event of any conflict between the terms of the two agreements, the Implementing Agreement is to govern. Rather than putting Diablo Canyon in rate base less a disallowance of plant costs determined after hearing, the settlement provides an alternative method of recovering Diablo Canyon costs. The proponents assert [*121] that this alternative method provides revenue to PG&E equivalent to a $ 2 billion rate base disallowance.

The presiding ALJ asked numerous questions regarding the interpretation of the settlement documents and workshops were conducted for the purpose of discussing and interpreting how the day to day mechanics of the settlement would work. As a result of the workshops, the proponents filed their joint responses to the questions raised by the ALJ and at the workshops.

In traditional ratemaking, the utility is entitled to an allowed rate of return on undepreciated capital costs. Under traditional ratemaking, the utility has the burden of proving to the CPUC that the amounts spent in constructing the plant were prudently incurred. The proposed settlement represents a departure from traditional ratemaking. Under the proposed settlement, the higher the capacity factor of the plant, the more revenue PG&E will generate. The proponents refer to this new pricing structure as "performance based pricing". However, this is somewhat of a misnomer because the prices to which PG&E is entitled under the settlement are fixed and do not vary based on performance. Instead, it is the revenue [*122] that PG&E receives that varies proportionally as performance varies. A better descriptive term

would have been performance based revenue. Nevertheless, as all parties have used performance based pricing as the descriptive designation so shall we.

To understand the testimony and the positions of the proponents and opponents to the settlement, we set forth a brief summary of the settlement in this section. An analysis of the terms of the Settlement Agreement and the Implementing Agreement is presented later in this decision.

The proposed settlement is the exclusive procedure for the rate treatment of all of the costs of constructing, owning, and operating Diablo Canyon for the first 30 years of the commercial operation for each unit of the plant. Under the settlement, except for floor payments and the basic revenue requirement, ratepayers will pay only for the power that is actually produced by Diablo Canyon.

PG&E has agreed to waive all rights to collect in rates the uncollected balance that has accrued in the DCAA, which as of June 30, 1988 amounted to almost $ 2 billion. PG&E has also agreed to waive its rights to seek recovery of any litigation expenses in connection with [*123] this case. The interim rate revenues that PG&E received from 1985 through June 30, 1988 will be the sole compensation to PG&E for that time period.

The price for Diablo Canyon power over the next 28 years is composed of a fixed price, an escalating price component tied to an inflation factor, and a peak period price differentiation. If the plant operates well, the owner is rewarded with higher revenues. However, if the plant operates poorly, the owner receives less revenue. Out of these revenues PG&E must cover all of the costs of owning and operating the plant, including all future capital additions. Thus, under performance based pricing, the operating risks are shifted from the ratepayers to the utility and its shareholders.

To provide some protection against the adverse financial impact of a prolonged outage, PG&E is entitled to floor payments (a minimum revenue guarantee) under two limited circumstances: (1) floor payments automatically apply when performance based pricing fails to produce enough revenue to cover the basic revenue requirement of the two utility assets; or (2) PG&E may opt for floor payments when the annual capacity factor of Diablo Canyon falls below a [*124] certain specified level.

The abandonment provision of the settlement limits the amount that PG&E can request in the event of an abandonment. Any rate request related to abandonment is subject to Commission approval. In addition, there is nothing to preclude the DRA or the AG or any other party from challenging the abandonment request.

The settlement also calls for the establishment of a three member Independent Safety Committee for Diablo Canyon to review its operations for the purpose of assessing the safety of operations and suggesting any recommendations for safe operation. The cost of the safety committee is to be included as part of PG&E's ordinary fuel related operating expenses.

Decommissioning costs are not covered by the settlement, and will continue to be governed in accordance with Commission policies for decommissioning nuclear plants.

VII. Testimony of Parties in Favor of the Settlement

A. Testimony of PG&E Witnesses

The following witnesses testified for PG&E in favor of the settlement: Richard A. Clarke, the Chairman of the Board and Chief Executive Officer of PG&E; George A. Maneatis, the President, and a Director of PG&E and various subsidiary companies; [*125] Thomas C. Long, the Manager of the Revenue Requirements Department of PG&E; and Peter D. Hindley, a Supervising Power System Engineer.

1. Testimony of Richard A. Clarke

Mr. Clarke testified that there were several reasons for PG&E's decision to reach a settlement. First, the settlement will resolve, in the quickest possible manner, when and how PG&E will receive revenues from its investment in Diablo Canyon. Prior to the announcement of the settlement, there was substantial uncertainty about the amount and timing of PG&E's recovery of revenues from Diablo Canyon. In addition, the interim rate relief was inadequate, which in Mr. Clarke's opinion, seriously eroded the company's financial integrity.

Although PG&E felt that it had compiled a strong case for the full recovery of Diablo Canyon's costs, PG&E was also realistic in that it knew the Commission might evaluate the evidence to the detriment of PG&E. As for the length of the proceedings, at the time the settlement was announced a Commission decision was still a year or more away, and

the likelihood of judicial review was likely to add years before the outcome was finally decided. Thus, the benefit of a speedy end [*126] to the uncertainty was one of the key reasons for PG&E's agreement to settle.

The second reason for settling the case is that the settlement will make PG&E's financial future dependent upon how well PG&E manages Diablo Canyon in the future. If PG&E operates the plant at a higher than average capacity over the next 28 years, as it believes it can based on Diablo Canyon's past performance, the company and its shareholders will be rewarded.

The third reason for settling the case is that the settlement will save millions of dollars in litigation expenses because the prudence portion of the rate case is avoided. In addition, the intangible costs of PG&E's management having to focus its attention and energy attending to the hearings and related activities is also a cost that PG&E can now avoid.

Mr. Clarke further testified that the settlement balances ratepayer and utility interests by shifting most of the financial risk of owning and operating Diablo Canyon from the ratepayers to PG&E and its shareholders, while in turn, the settlement gives PG&E the opportunity to benefit monetarily if the plant performs well over the next 28 years.

Under traditional ratemaking, the risk of plant [*127] operation is usually borne by the ratepayers. That is, the ratepayers pay for the cost of the plant and a return on that investment, plus the cost of operations, maintenance, administrative and general expenses, and capital additions. The risk of reduced plant performance, and/or the growth in operating expenses or capital additions can result in future rate increases or reduced energy production without a corresponding rate reduction.

Under the settlement, PG&E bears the risks of reduced plant performance and cost growth. Although the floor payment provision provides PG&E with some protection against the possibility of a prolonged outage, a shutdown of Diablo Canyon would be very costly. At most, the floor would only provide revenues equivalent to those earned by operating the plant at a 36% capacity factor, well below the industry average capacity factor of 58% used by the DRA and the AG in their equivalent disallowance calculations. In addition to the lost plant revenue, the repairs required during the shutdown are likely to be quite expensive. Under the settlement, these are risks that PG&E will bear.

The growth in operating and maintenance expenses, and the cost of future [*128] capital additions for Diablo Canyon over the next 28 years cannot be predicted with accuracy. It is likely that future regulatory requirements will require capital additions or maintenance expenses in excess of those currently contemplated. Under traditional ratemaking, PG&E would be entitled to seek recovery of these costs from the ratepayers. However, under the settlement, PG&E is responsible for these costs.

In balancing the risks to the ratepayers and PG&E, if Diablo Canyon performs well, PG&E will receive greater compensation. PG&E believes that the plant is well constructed, and that long term operational problems will not occur. PG&E therefore believes that it can maintain a higher than average level of performance for the plant over the next 28 years.

Mr. Clarke also testified that a "safety net" was provided for in the settlement in recognition of the shifting of risks to PG&E, and to provide some protection against the adverse financial impact of a prolonged outage. The settlement provides for potential floor payments, which would apply under two limited circumstances: (1) the floor payment would automatically apply when the operation of the plant failed to produce [*129] enough revenue to cover the basic revenue requirement of the utility assets; and (2) the floor payment would apply, at PG&E's option, when the annual capacity factor of the plant falls below the level specified in the agreement, initially set at 36%. The floor payments must be repaid with interest from one half of the revenues received from subsequent year operations above a 60% capacity factor.

PG&E believes that another advantage to the settlement is that it more equitably allocates costs between present and future ratepayers. Under traditional ratemaking, because plants in rate base are depreciated, rates tend to be front-end loaded. Ratepayers pay more for electricity generated in early years than they do in later years because the utility's return on its plant investment declines each year. However, under the settlement, the amount ratepayers pay is determined by the amount of Diablo Canyon's output, and the ratepayers who use the electricity are the same ones who pay for it.

Mr. Clarke testified that under the settlement the starting price for Diablo Canyon energy is 7.8 cents/kWh. However, if the Commission allowed the entire $ 5.5 billion into rate base, and the Diablo [*130] Canyon Adjustment

Account was amortized over 10 years, the starting price for Diablo Canyon electricity would exceed 15 cents/kWh. This would result in an average increase in electric rates of approximately 25%.

The starting price of Diablo Canyon power under the settlement is also lower than the prices customers of other California utilities are paying for power from nuclear plants. The Commission priced electric power from the San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 at about 9.5 to 10 cents/kWh. In determining rates for the Palo Verde nuclear power plant, the Commission allowed Southern California Edison to recover the equivalent of up to 8.6 cents/kWh, with about half of the capital investment to be put into rates at a later time. Thus, the price of Diablo Canyon electricity compares favorably to other alternate scenarios.

Mr. Clarke also testified about the importance of the stability that the settlement brings to PG&E and its shareholders. Over the past 19 months, the market price of PG&E's stock has fallen. This is due in part to the delay and uncertainty in recovering the costs of Diablo Canyon. On the same day the settlement was announced, the [*131] PG&E Board of Directors also reduced the annual common stock dividend by 27%, from $ 1.92 per share to $ 1.40 per share. This reduction represented $ 200 million per year in reduced income for PG&E shareholders.

In answer to the ALJ's question about what happens if there is a balance in the floor payment memorandum account upon expiration of the settlement, Mr. Clarke testified that the "slate is wiped clean," meaning that PG&E keeps the money. He said that in the event that Diablo Canyon is performing very poorly, or has to be shut down, and the Commission was setting the rate of return, the Commission should assume that Diablo Canyon is in fact operating as well as all other nuclear plants. As for PG&E's expectations about the capacity factor, Mr. Clarke expects Diablo Canyon to operate in a range of 65 to 70 percent over the life of the plant. His expectation is based on the assumption that there will not be any major NRC mandated changes or requirements. He pointed out that the capacity limit of Diablo Canyon precludes unreasonable profits, but he conceded that if there are circumstances in operating Diablo Canyon that are so severe that it jeopardizes PG&E's ability to serve [*132] its customers, PG&E might apply to the Commission for emergency rate relief notwithstanding the settlement.

2. Testimony of George A. Maneatis

Mr. Maneatis' testimony focused on the effects of the settlement on Diablo Canyon plant operations.

Mr. Maneatis addressed the opponents' concerns that PG&E's performance based revenues will come at the expense of plant safety. He pointed out that Diablo Canyon was recognized by the Institute of Nuclear Power Operations (INPO) in 1986 for superior operation and management, and that it is PG&E's intention to continue to operate the plant to ensure the public health and safety.

PG&E is of the belief that there is no conflict between operating the plant well and operating the plant safely. Reliability and safety are interconnected because the continued operation of Diablo Canyon is always contingent upon meeting the stringent operating requirements of the NRC.

It is in PG&E's best interest to continue to make those capital additions that are necessary to improve operations and to keep the plant in a safe, reliable, and efficient operating condition. Although the costs of capital additions are the responsibility of PG&E under the settlement, [*133] those additions which improve Diablo Canyon's operating capacity will also provide increased returns under performance based pricing. Thus, it would be "penny wise and pound foolish" for PG&E to forgo making expenditures that will ensure that Diablo Canyon will continue to be operated in a safe and reliable manner.

Mr. Maneatis testified that the safety committee provides an added level of assurance to the public that Diablo Canyon will continue to operate safely. The safety committee will be made up of individuals who have the appropriate knowledge, background, and experience in the field of nuclear power facilities so as to be able to make any recommendations they feel are appropriate to enhance safety in the operation of Diablo Canyon. A wide range of records and reports will be made available to the safety committee, including confidential business information. In addition, the safety committee will have the right to conduct an annual examination of Diablo Canyon, as well as to conduct additional site visits.

The safety committee will report on its findings and make recommendations for improved safety measures on an annual basis. PG&E is required to respond to the report, [*134] which will be distributed to the Governor, the Attorney General, the CPUC and the California Energy Commission. The safety committee will be adequately funded with an initial annual budget of half a million dollars. This budget will attract qualified experts and allow the safety committee to seek any assistance that it may require.

On cross examination, Mr. Maneatis testified that he had met with some of the NRC Commissioners and their staff on an informal basis in June 1988 to notify them that PG&E was considering settling the Diablo Canyon case using an alternative form of ratemaking. The NRC did not convey any concerns to him about performance based pricing. He also stated that if there is some extraordinary event in the future that is beyond PG&E's control, and it impairs PG&E from discharging its utility obligations, PG&E would come to the Commission and request relief.

3. Testimony of Thomas C. Long

Mr. Long explained the terms of the settlement and how the settlement will be implemented by PG&E over the short term and the long term.

For the most part, Mr. Long's testimony was a technical exposition of the various accounting changes necessary to implement the settlement [*135] and need not be recounted. What is important to ratepayers, however, is his recommendation for spreading the rate increase which will follow this decision. The amount of the rate increase is $ 284 million, or 5.2% of presently authorized revenues.

PG&E recommends that rate design for the Diablo Canyon revenue increase be considered in PG&E's current ECAC case, where the Equal Percent of Marginal Cost (EPMC) method will be used.

The settlement covers all Diablo Canyon power sold to CPUC jurisdictional customers. The amounts included in ECAC and ERAM rates will be based on forecasts of CPUC jurisdictional sales adopted by the Commission in ECAC and general rate case applications. The amount recorded monthly as a debit to the ECAC balancing account will be based on the CPUC jurisdictional sales recorded each month in the ECAC applied to total plant output at the applicable price. The ECAC balancing account will thus accrue the difference between rates set on forecast jurisdictional sales and costs based on recorded jurisdictional sales.

4. Testimony of Peter D. Hindley

Peter Hindley testified in rebuttal to the Redwood Alliance's witness, Dr. Stephen Bernow, on the cost [*136] effectiveness of Diablo Canyon under the settlement. He testified about the benefit/cost analysis that PG&E prepared for Diablo Canyon, and pointed out what he believed to be major shortcomings with Dr. Bernow's analysis.

Mr. Hindley testified that PG&E's benefit/cost analysis measured the costs to ratepayers of operating Diablo Canyon, as compared to the benefits ratepayers receive from such operation. The benefits from Diablo Canyon are calculated from a comparison of system costs with and without Diablo Canyon in the resource mix. That is, the benefits of Diablo Canyon are those costs that otherwise would have been incurred, but that are avoided by having the plant operate.

In calculating PG&E's costs for the benefit/cost analysis, two assumed lifetime capacity factors were used: 58% and 65%. The calculation of the cost to ratepayers of operating Diablo Canyon is based on the performance based price multiplied by the assumed Diablo Canyon generation.

PG&E defined the Diablo Canyon benefits to be the reduction in costs of other generation types when Diablo Canyon is an available resource, i.e., when Diablo Canyon is in the resource mix. There are four general categories [*137] of savings: (1) savings from the reduced use of fossil fuel and other fuels, and other reduced purchases; (2) savings from reduced prices paid for geothermal steam; (3) savings from reduced prices paid to QFs; and (4) capacity savings. The latest calculation of the Diablo Canyon benefits was done mid-1988 using a production simulation model.

Mr. Hindley's analysis projects that at a 58% lifetime capacity factor, ratepayers will save approximately $ 265 million because of the operation of Diablo Canyon, and at a 65% lifetime capacity factor, ratepayers will save about $ 67 million. n15 When the savings are considered in conjunction with the unquantified social benefits derived from the operation of Diablo Canyon, such as a reduction in air emissions due to reduced fossil fuel plant operation, fuel diversity, and the shifting of operational risk, PG&E believes that the settlement represents a cost effective method of electricity generation for ratepayers.

n15 Due to the apparent use of different assumptions, Mr. Hindley's analysis on the cost effectiveness of Diablo Canyon differs from the analysis that the DRA and the AG performed in calculating the equivalent disallowance. Since the purpose behind each analysis was different, we do not concern ourselves here with the discrepancies between the cost effectiveness analysis and the equivalent disallowance analysis. [*138]

PG&E also measured the cost effectiveness of Diablo Canyon under the settlement by comparing the costs to ratepayers under traditional ratemaking with full recovery, to the costs to ratepayers under performance based pricing. The costs to ratepayers under traditional ratemaking amounts to $ 12.305 billion at a 58% capacity factor, and $ 12.361 billion at a 65% capacity factor. When compared to the costs under the settlement, ratepayers save $ 2.9 billion at a 58% capacity factor, and $ 2.1 billion at a 65% capacity factor. n16

n16 Ibid.

Mr. Hindley criticized the analysis of Dr. Bernow for understating certain benefits when he concluded that it might be economical to shut down Diablo Canyon at the present time. Mr. Hindley stated that Dr. Bernow omitted from his calculation of benefits the savings from reduced prices paid for geothermal steam and to QFs. He said that in the absence of Diablo Canyon, the prices paid for geothermal steam and QFs would be higher. PG&E believes that Dr. Bernow undervalued those replacement energy costs by $ 3.428 billion.

Mr. Hindley disagrees with Dr. Bernow's replacement of Diablo Canyon's 2,160 MW with 1,392 MW of combined cycle capacity [*139] for three reasons. One, Dr. Bernow's analysis improperly relates a capacity factor to an availability factor. Two, Dr. Bernow uses inappropriate data in determining the combined cycle availability. And three, Dr. Bernow ignores the impact of the timing of planned outages, which are planned for periods of the year when capacity has little or no value. In Mr. Hindley's view, one would need 2,160 MW of combined cycle to replace Diablo Canyon.

Mr. Hindley testified that Mr. Kinosian's analysis of the cost effectiveness of Diablo Canyon is only good for the forecast period of August 1988 to July 1989. It is not a meaningful analysis for the cost effectiveness of Diablo Canyon over the plant's lifetime. In addition, he pointed out that Mr. Kinosian's analysis without Diablo Canyon should have included decommissioning costs of $ 55 million, thereby reducing the savings to $ 4 million.

B. Testimony of DRA Witnesses

The following witnesses testified for the DRA in favor of the settlement: William R. Ahern, Bruce DeBerry, Lee-Whei Tan, Truman Burns, Raymond Czahar, Richard Meyers, Charles Komanoff, and Scott Cauchois.

1. Testimony of William R. Ahern

Mr. Ahern, the Director [*140] of the DRA, supports the settlement. He testified that, unlike traditional cost of service ratemaking, the settlement allows PG&E to receive from its customers a price based upon the actual electricity produced by Diablo Canyon. According to Mr. Ahern, the advantages to ratepayers of performance based pricing have been widely recognized in the federal Public Utilities Regulatory Policy Act of 1978 and in the CPUC's alternative generation program. Under those programs, as well as the settlement in this case, if the plant operates poorly the owner suffers. If it operates well, the owner is rewarded with higher revenues. The operating risks are shifted from the ratepayers to the utility and its shareholders.

Mr. Ahern testified that given the examples of poor nuclear plant performance and the high risks associated with nuclear plants, the shifting of the operating risk from the ratepayers to the utilities is of real value to the ratepayers. He referred to the Rancho Seco, San Onofre Unit 1, and Humboldt Bay nuclear power plants which incurred extraordinarily high costs coupled with low production. Under traditional cost of service ratemaking, these burdens were borne solely by [*141] the ratepayers. Nuclear plants can experience recurring needs for new additions and high costs any time after initial construction is finished. The NRC may require new programs and facilities to promote safety. Under the settlement, the costs for plant modifications, operations, maintenance, insurance, security, and other plant activities are shifted from the customers to the utility.

He stated that, contrary to the assertions of the opponents of the settlement, with the shifting of the operating risks PG&E has a strong incentive to operate Diablo Canyon efficiently, carefully, and safely. Since plant outages and degraded performance will cause revenues to drop in proportion to the decrease in plant electricity production, PG&E's plant management will be even more attentive to factors that affect plant performance, or that have the possibility of shutting down the plant.

The settlement's peak period price differentiation reduces the risk to customers that Diablo Canyon will not be available during the months of peak electricity demand. PG&E has a price incentive to operate the plant when it is most needed by ratepayers, because the price is higher during peak period hours than [*142] during off peak hours. Thus,

PG&E is more likely to schedule maintenance and refueling during periods of low demand rather than at peak demand periods.

Another advantage to the settlement is that it protects ratepayers from the risks of world oil price increases. Under the settlement, the price that PG&E receives for Diablo Canyon power is not related to utility oil and gas prices. Instead, the escalating price provision is tied to the CPI, which is more stable than fuel prices. In addition, the settlement's price formula is both stable and lower than expected inflation rates after 1994.

Mr. Ahern discussed the magnitude of the equivalent rate base disallowance in determining the reasonableness of the settlement. Using a set of what the DRA believes to be reasonable or conservative assumptions about future Diablo Canyon operation and costs, the DRA estimates that the settlement provides for an equivalent rate base disallowance of slightly more than $ 2 billion. That is, under the settlement, it is as though the Commission disallowed $ 2 billion of Diablo Canyon's construction costs from PG&E's rate base. This estimate of a $ 2 billion equivalent rate base disallowance assumes [*143] that PG&E will operate Diablo Canyon at a capacity factor of 58% over the next 28 years.

He said that if different assumptions about future plant operation and costs were used, the resulting equivalent rate base disallowance could be materially different. For example, the DRA estimates that if the plant is operated at a 70% capacity factor for the next 28 years, the result would be an equivalent rate base disallowance of less than $ 800 million. On the other hand, an assumption of a capacity factor of 40%, which is Rancho Seco's average capacity factor, results in an equivalent disallowance of nearly $ 4 billion.

In the DRA's estimation, one of the major advantages to the settlement is that PG&E will immediately forego recovery of about $ 2 billion in Diablo Canyon costs now undercollected in the DCAA that PG&E could recover, with interest, if the CPUC were to allow the full $ 5.5 billion construction cost into PG&E's rate base. This waiver of $ 2 billion makes up approximately $ 1.2 billion of the $ 2 billion equivalent rate base disallowance.

Another way of judging the reasonableness of the settlement is to compare the rate base disallowances that were made on other high cost [*144] operating nuclear power plants. The $ 2 billion equivalent disallowance in this case exceeds any other state's rate base disallowance adopted for a high cost operating nuclear power plant. Mr. DeBerry's testimony provides more details.

The fixed and variable prices in the settlement were negotiated and are not related to any specific forecast. Mr. Ahern states that the pricing structure should be viewed in the context of the whole settlement package, including the waiver of the $ 2 billion in the DCAA balancing account and the waiver of litigation costs.

The prices for Diablo Canyon power consist of a fixed price and an escalating price. The fixed price shall be 31.5 mills/kWhr. The escalating price shall be as follows:

July 1, 1988	46.50 mills/kWhr
January 1, 1989	51.85 mills/kWhr
January 1, 1990	57.81 mills/kWhr
January 1, 1991	64.46 mills/kWhr
January 1, 1992	71.87 mills/kWhr
January 1, 1993	80.14 mills/kWhr
January 1, 1994	87.35 mills/kWhr

Beginning on January 1, 1995, the escalating price shall be increased by the sum of the change in the Bureau of Labor Statistic's year end national consumer price index during the immediately concluded year and 2.5% divided [*145] by two.

Several comparisons illustrate the reasonableness of the settlement's prices for Diablo Canyon power. For example, a qualifying facility (QF) with an interim Standard Offer (SO) #4, price option #1, fixed price contract would receive a price of about 10.19 cents/kWh in 1989 compared to the settlement's price of 8.35 cents/kWh. The settlement's fixed prices through 1997 are well below the SO #4 prices. The SO #4 contracts provide that after the 10 year fixed price period is over, the energy price becomes the short run avoided cost energy price of SO #2. That price is tied to whatever PG&E's plant efficiencies and fuel costs are in the future. The major fuels used in the calculation are oil and gas, the prices of which are largely determined by the world price of fuel oil. These prices can be highly volatile and can increase rapidly. Assuming that the DRA's use of Data Resources Inc.'s CPI forecast is likely to be met, estimated at 5.7% per year, this is well below the expected levels of inflation and of escalation in oil prices.

Mr. Ahern testified that the settlement contains provisions which provide PG&E with some downside risk protection, particularly the floor [*146] payment provision. But even with these provisions the treatment of prolonged outages under the settlement is more favorable to PG&E's customers than traditional ratemaking. The abandonment provision puts a cap on the amount that PG&E can request after the abandonment of Diablo Canyon, which is a major advantage over traditional ratemaking because the procedure for removing a plant from rate base can take years, and the ratepayers are responsible for reasonable uncollected ownership costs of the plant.

Mr. Ahern points out, on the other hand, that if the Commission were to adopt the DRA's rate base recommendation of $ 1.1 billion at a prudence hearing, and if Diablo Canyon were to operate very well, with low capital additions and low operating and maintenance costs for 30 years and with no prolonged outages, then the ratepayers would be better off under traditional rate base and cost of service ratemaking. However, for the Commission to do this, it would have to resolve all the disputed factual issues in the case in favor of the DRA.

The settlement is a 30-year agreement, covering all Diablo Canyon costs. In the absence of a settlement, the Commission would have to hold a prudence [*147] hearing on the initial cost of the plant, as well as a prudence hearing for the capital additions made after commercial operation up to the test year 1990 of PG&E's next general rate case. In that rate case, the Commission would also need to adopt new levels of future capital additions to put in rate base and new levels of operating, maintenance, and administrative expenses. Every year, the Commission would have to assess nuclear fuel costs in PG&E's fuel cost offset proceedings. In addition, over the next 28 years, there would be many other proceedings to address the costs incurred at Diablo Canyon. Under the terms of the settlement, all of those CPUC reviews would be avoided. According to Mr. Ahern, this is a major benefit to PG&E's customers.

On cross-examination, with reference to the issue of binding future Commissions, Mr. Ahern stated that if something extraordinary were to occur during the life of the settlement agreement, the Commission would have the ability to change the settlement prices and terms. There are still some issues that have not been resolved and some risks that cannot be assessed at the present time. On the issue of floor payments and abandonment, Mr. [*148] Ahern said that the DRA did not have a firm position as to what would happen if PG&E could earn more from floor payments rather than from abandonment. According to Mr. Ahern, that is an open question which the proponents prefer to resolve when the issue arises.

2. Testimony of Bruce DeBerry

Mr. DeBerry, the Deputy Director of DRA and the Project Manager of the reasonableness review of Diablo Canyon, supports the settlement.

He testified that one of the major advantages to the settlement is that the risk of increase in the cost of capital additions to the plant is shifted from the ratepayers to the utility. Historically, the increase in costs for nuclear plant capital additions has been significant. Oftentimes, capital addition costs in nominal dollars can equal or exceed the original construction costs. At the Humboldt Unit 3 nuclear plant, capital additions equated to 267% of the plant cost of $ 24 million, while at Rancho Seco capital additions are already 264% of the original plant costs of $ 342 million. When SONGS 1 began operating in 1968, its cost included in rate base was $ 88 million. As this construction cost was being depreciated from 1968 to the present, [*149] numerous capital additions to the plant were being made. Despite continued depreciation, by 1987 the rate base amount for SONGS 1 stood at $ 468 million, or over 5 times as much as the original cost. By 1990, an additional $ 53 million will have been included in capital additions.

In other states, some nuclear plants have had similar experiences where the capital additions cost exceed their original construction costs. For example, the Beaver Valley plant in Pennsylvania built in 1976 at a cost of $ 285 million has added over $ 319 million in capital additions, which is equivalent to 112% of its original costs. The David Besse plant in Ohio which was built in 1977 for $ 271 million has had $ 350 million in capital additions or 129% of its original cost.

Although the above examples are unusual, studies of capital additions over a wide range of nuclear plants confirm that historically capital additions have increased substantially. In a study by Komanoff Energy Associates, which is explained in detail further in this decision, during the period from 1972-1986, capital additions on a per kilowatt basis increased by 424% in constant 1986 dollars. In 1972, average capital additions [*150] were $ 7.50 per kilowatt in constant 1986 dollars; by 1986, capital addition costs had increased to $ 39.20 per kilowatt in constant 1986 dollars. In a study by the Energy Information Administration, capital additions increased from $ 4.3 million per plant per year to $ 29.7 million per plant per year for the period from 1975-1984. Under the settlement, the ratepayers will not have to bear the risk of paying for the costs of greater than expected capital additions for Diablo Canyon.

Nuclear power plant performance is difficult to predict. Plants that operate well in the early years may become poor performers in later years. In California, Rancho Seco operated at a 51.5% capacity factor for its first 11 years. However, its non-operation in the last two years has resulted in a lifetime capacity factor of 39.1%. Another example is that of SONGS 1. During the first 12 years, SONGS 1 ran at an average capacity factor of 72%. But from 1980-1987, SONGS 1 had only averaged a 28% capacity factor, resulting in a 52.2% lifetime capacity factor. With respect to Westinghouse 4-loop reactors, which are similar to the units at Diablo Canyon, three Westinghouse plants, Donald Cook 2 in [*151] Michigan, Salem 2 in New Jersey, and Indian Point 3 in New York, ran well in early years, then declined in performance.

Diablo Canyon is currently operating at lifetime capacity factors of about 66% for Unit 1 and 76% for Unit 2. The capacity factor for Unit 2 does not include a recent electrical failure resulting in an unscheduled shutdown of Unit 2 for an estimated 22 days, nor does it include the expected refueling for Unit 2 in Fall 1988. Mr. DeBerry testified that the DRA believes that it is reasonable to expect that Diablo Canyon will continue to operate in the same manner as other Westinghouse 4-loop plants. However, there is the potential for capacity factor decreases as shown above. Under the settlement, the risk of poor performance is shifted from the ratepayers to the utility, which adds significant value to the settlement beyond the value of the equivalent disallowance.

Mr. DeBerry also testified about the $ 2 billion equivalent disallowance. The size of this disallowance is unprecedented. The largest disallowance adopted by any commission in any state is $ 1,640 million for the Nine Mile Point 2 plant in New York. Had disallowance comparisons been made with all [*152] current operating nuclear plants in the United States, the Diablo Canyon equivalent disallowance of $ 2 billion is over 20 times as great as the average disallowance for all operating nuclear power plants.

Mr. DeBerry acknowledged on cross examination that he believed that the DRA has a strong case for the recommended $ 4.4 billion disallowance, but in light of the risks of litigation, he concluded that ratepayers are better off under the settlement.

3. Testimony of Lee-Whei Tan

Ms. Tan is a Regulatory Analyst with the DRA. She testified on the methodology used to calculate the DRA's estimate of the equivalent rate base disallowance under the proposed settlement. The DRA's quantification of Diablo Canyon's equivalent disallowance under performance based pricing is derived from two separate forecasts of revenue requirements: one forecast under traditional ratemaking, and a forecast under the performance based pricing settlement.

The forecast of revenues under traditional cost of service ratemaking assumes that Diablo Canyon is included at full cost in PG&E's rate base. Over the expected remaining 28 year life of Diablo Canyon, the ratepayers' revenue requirements will [*153] be a function of both fixed costs associated with the $ 5.7 billion investment which includes all capital costs incurred to the commercial operation dates of both Diablo Canyon units, plus the first year's capital additions after commercial operation for both units, plus PG&E's forecast of capital additions thereafter, plus annual operating expenses, such as fuel and operations and maintenance expenses. The DRA assumed that the Diablo Canyon rate case would be completed by the end of 1989, and that the DCAA deferred cost would increase to approximately $ 3.4 billion by year end 1989. This $ 3.4 billion DCAA balance is then amortized over a five year period beginning in 1990.

The revenue requirements for performance based pricing have also been forecast for the same 28 year period. Under performance based pricing, the revenue requirement for Diablo Canyon will be a function of the escalated initial starting price times the energy (kWh) production of Diablo Canyon. The DRA's analysis assumes a capacity factor of 58%, with a net maximum dependable capacity of 1,073 MW for Unit 1 and 1,087 MW for Unit 2. The total annual expected energy output of Diablo Canyon is approximately 10,970 [*154] gigawatt hours (gWh). The annual energy output of Diablo is then multiplied by that year's escalated performance based pricing rate to yield that year's total revenue requirement.

These two alternative revenue requirements estimates are then converted to 1985 present value dollars by discounting each year's revenue requirement at an 11.5% discount rate. The economic, or net present value difference between these two revenue requirements streams represents the net ratepayer benefit of performance based pricing. Appendix E compares the revenue streams for performance based pricing and conventional ratemaking, in nominal dollars. Appendix F contains the same comparison, except that all values are expressed in 1985 present values and an annual cumulative difference (column 5) has been added. Column 5 shows that the $ 2.6 billion net present value benefit of performance based pricing over conventional ratemaking is achieved by year end 1994, meaning that the

benefits of the performance based pricing settlement are front loaded, and are expected to be received by ratepayers in the early years of the agreement.

The difference between the present values of the performance based pricing [*155] agreement payments and the traditional ratemaking revenue requirement represents the economic value of customer savings under the settlement, relative to traditional ratemaking treatment. That difference is then converted into a value that represents the equivalent amount of Diablo Canyon rate base that would be theoretically disallowed to make the net present value of both performance based pricing and traditional ratemaking revenue streams equate. The conversion factor is the ratio of (1) the present value of the sum of the revenue requirement of the original investment to (2) the original cost of the investment itself.

To compute the equivalent rate base disallowance, the DRA used the difference between the total present values of the performance based pricing payments and the traditional ratemaking revenue requirements, divided by the conversion factor of 1.26. This factor means that for every $ 1.00 of rate base investment, $ 1.26 in present value revenue requirement is generated. By applying the conversion factor to the net present value revenue requirement difference between traditional ratemaking and performance based pricing of $ 2.6 billion, an equivalent rate base [*156] disallowance for Diablo Canyon of about $ 2.025 billion ($ 2.6 billion/1.26) is derived. That is, if $ 2.025 billion of Diablo Canyon's investment cost were disallowed for ratemaking purposes under traditional ratemaking, the net present value of each revenue requirements stream in Appendix F would be equal.

4. Testimony of Truman L. Burns

Mr. Burns, a Regulatory Analyst with the DRA, explained the methodology that the DRA used to estimate Diablo Canyon revenue requirements under the settlement. The DRA used Data Resources Inc. (DRI) Fall 1987 report to forecast the CPI for the next 28 years which averages 5.7% over the long term. The DRA assumes that the annual generation of Diablo Canyon is 10,979 gWh, based upon the maximum dependable capacity of 1,073 MW for Unit 1, and 1,087 MW for Unit 2, and a capacity factor of 58%.

According to Mr. Burns, the benefit of the hydro spill provision is that PG&E's ratepayers will not be forced to take power from Diablo Canyon when lower cost hydroelectric power is available, in contrast to conventional ratemaking, where the ratepayers would still be required to pay the fixed cost of Diablo Canyon, even when the company is utilizing [*157] cheaper hydro power.

Mr. Burns elaborated on the floor payment memorandum account (FPMA), which is to be used to record all floor payments received by PG&E, to accrue interest on the floor payments received, and to record all repayments. If the floor is invoked during the term of the agreement, and in subsequent years, Diablo Canyon's capacity factor never exceeds 60%, PG&E will not have to repay any of the floor payments. PG&E can make additional floor repayments if it chooses to do so, e.g. to restore the level of the specified capacity factor. If PG&E were to abandon or retire Diablo Canyon with a net credit balance in the FPMA, PG&E is to file a request with the Commission to terminate the FPMA.

Mr. Burns testified on the abandonment provision in the settlement. The DRA believes that in the event of abandonment, it is more likely that PG&E will recover under the option of $ 3 billion in capital costs reduced by $ 100 million per year, rather than the floor payments option, since the reduced capital cost figure would more likely be lower than the sum of a stream of floor payments.

5. Testimony of Raymond J. Czahar

Mr. Czahar, a consultant with the Independent Power [*158] Corporation, described the method used to quantify the economic cost to ratepayers of including Diablo Canyon in rate base, assuming traditional cost of service ratemaking (COSR). The COSR revenue requirement is what is used by the DRA to measure the potential benefits to ratepayers of the performance based pricing (PBP) settlement. He supports the settlement.

He explained that COSR is divided into two distinct parts: fixed charges or ownership costs, and annual operating expenses. Fixed charges are those costs which relate to the capital investment in an asset and include book depreciation, return on investment, and income and property taxes. Those costs are unaffected by the level of output or production from Diablo Canyon. The annual operating expenses are composed of O&M expenses, nuclear fuel costs, and A&G expenses. The fixed charges and the annual operating expenses are added together to calculate the total revenue requirement. This is the traditional method of determining the utility's cost of service.

The key assumptions that were used in calculating the DRA's COSR forecast for fixed charges are as follows: (1) the investment in Diablo Canyon of $ 5,760 million, [*159] which is composed of the original cost of the plant on the date of commercial operation plus the first year's capital additions for each unit; (2) the operating life of the plant is expected to be 30 years beyond Unit 1's commercial operation date in 1985, and Unit 2's commercial operation date in 1986; (3) the cost of capital from 1989 through 2016 is expected to average 4.0% over the long run for returns on long term debt and preferred stock, and an expected average of 7% for return on common equity; (4) a long-term inflation factor of 5.7%, which was taken from the Fall 1987 DRI forecast; (5) a discount rate of 11.5%; (6) federal tax rates in 1986 of 46%, in 1987 of 40%, and in 1988 and thereafter of 34%; (7) a state tax rate of 9%; and (8) a property tax rate of 1% of the net depreciated rate base.

The key assumptions used in calculating the annual operating expenses for the COSR forecast are as follows: (1) the operations and maintenance expenses for the year 1988 are based on the stipulated values from CPUC D.88-03-067, and for years 1989 through 2016, the 1988 base value is escalated at inflation plus 2%; (2) the administrative and general expenses for the year 1988 are also [*160] based on the stipulated values from CPUC D.88-03-067, and for years 1989 through 2016, the 1988 base value is escalated at inflation; (3) for the years 1985 through 1987, Diablo Canyon's nuclear fuel costs are those costs reported in PG&E's Uniform Monthly Fuel Operational Report, and for 1988 through 2016, the estimate is derived from PG&E's March 1988 long-term nuclear fuel cost projections; n17 and (4) annual capital additions through 2016 were taken from PG&E's October 1986 cost effectiveness study, which was reported in 1986 dollars, escalated at a rate equal to the DRA's own inflation rate plus 2% for periods after 1986. The DRA also assumes that (1) the Commission will make its final determination on the prudence of PG&E's investment by year end 1989, and (2) that the undercollection in the DCAA will be amortized in rates over a five year period, beginning in 1990. The DRA estimates that the DCAA undercollection will total $ 3.4 billion by year end 1989. The nominal dollar amount of the expected revenue requirement for Diablo Canyon under COSR amounts to approximately $ 54 billion. The net present value of this figure is $ 12.601 billion, at an 11.5% discount rate.

n17 These fuel cost projections were based on a 65% lifetime capacity factor. The DRA assumes that at a 58% capacity factor, nuclear fuel costs per kWh would be higher than at a 65% capacity factor because at a higher capacity factor, nuclear fuel is financed over a shorter period of time than at a lower capacity factor. Thus, the DRA believes that its nuclear fuel estimate is conservative. [*161]

The DRA evaluated the impact of the floor payment provision on the equivalent disallowance value by constructing scenarios which assume that floor payments have been triggered. These floor payment scenarios are then compared to traditional COSR scenarios which assume that Diablo Canyon will be subject to a target capacity factor (TCF) adjustment.

TCFs were adopted for Diablo Canyon in D.87-10-041. Under the adopted TCF for Diablo Canyon, should the achieved capacity factor fall outside a 55% - 75% deadband, PG&E would either be penalized or receive a reward. That is, if the capacity factor is below 55%, PG&E and ratepayers equally share the replacement fuel cost; but if the capacity factor is above 75%, PG&E and the ratepayers equally share the benefits of foregoing higher fuel costs. By incorporating the TCF provision in COSR and comparing it to the floor payment provision of PBP, the comparison will reveal the differential impact on rates and the equivalent disallowance.

The DRA evaluated three different floor payment scenarios. Scenario A covers the period from 1991 - 1993; Scenario B covers the period from 1995 - 1997; and Scenario C covers the period from 2001 - 2003. [*162] Each scenario assumes zero generation for the three year time period. Under Scenario A, PG&E would receive annual revenues (that year's PBP prices multiplied by generation) as if Diablo Canyon had achieved a 36% capacity factor in 1991, a 33% capacity factor in 1992, and a 30% capacity factor in 1993. The same declining capacity factors apply for Scenario B. And in Scenario C, the declining payments are based on 33%, 30%, and 27% capacity factors.

Under each scenario, the resulting equivalent disallowance was greater than the $ 2.025 billion DRA equivalent disallowance. The equivalent disallowance under Scenarios A, B, and C were calculated at $ 2.362 billion, $ 2.292 billion and $ 2.217 billion, respectively. From the standpoint of the ratepayers, the floor payment provision of PBP is superior to traditional COSR assuming a TCF.

The DRA also evaluated four abandonment scenarios. Scenario A assumes that abandonment begins in 1993, that there are no floor payments, the amortization of the net remaining plant and capital additions rate base without AFUDC takes place over 10 years, and that $ 2.5 billion is recovered by PG&E under the PBP abandonment provision. Scenario

B assumes [*163] that abandonment begins in 1993, that there are no floor payments, that the amortization of the net remaining plant and capital additions rate base without AFUDC takes place over 5 years, and that $ 2.5 billion is recovered by PG&E under the PBP abandonment provision. Scenario C assumes that abandonment begins in 1998, that there are no floor payments, that the amortization of the net remaining plant and capital additions rate base without AFUDC takes place over 5 years, and that $ 2 billion is recovered by PG&E under the PBP abandonment provision. Scenario D assumes that floor payments were received in 1993 through 1995, that there is actual abandonment in 1996, that the amortization of the net remaining plant and capital additions rate base without AFUDC takes place over 5 years, and that $ 2.2 billion is recovered by PG&E under the PBP abandonment provision.

It is also assumed in each abandonment scenario that PG&E will receive compensation under the PBP abandonment provision which provides for a $ 3 billion cap, reduced by $ 100 million per year from 1988 to the year of abandonment, instead of under the abandonment provision which provides for an abandonment amount of floor [*164] payments for a period equal to 10 years, less the number of years for which unrepaid floor payments had been received by PG&E. For traditional ratemaking, the DRA assumed that the net depreciated rate base less AFUDC at the date of abandonment is written off against ratepayers over the corresponding five or ten year period without a return on the unamortized balance.

The following are the equivalent disallowances under the four scenarios as compared to the base case:

Abandonment Scenarios	Equivalent Disallowance (1985 $ Billions)
Base Case (No Abandonment)	2.025
Scenario A	2.366
Scenario B	2.509
Scenario C	2.351
Scenario D	2.797

In order to evaluate the sensitivity of the DRA's $ 2 billion equivalent disallowance estimate to changes in the DRA's underlying assumptions, the DRA prepared sensitivity studies which assumed changes in the inflation rate, capacity factor, and capital additions. The following are the results of the DRA's sensitivity analyses:

(1985 $ Millions)

Base Case, Equivalent Disallowance at 11.5% Discount Rate: $ 2,025

1. Discount Rate Sensitivity for Base Case

Discount Rate:	9.2%	12%	13.1%	13.8%	17%
	2037	2020	2007	1997	1932

[*165]

2. Capacity Factor (CF) Sensitivity for Base Case

CF:	40%	50%	55%	60%	64%	70%
	3909	2862	2339	1816	1397	769

3. O&M Escalation Sensitivity for Base Case

O&M Escalated at:		
CPI + 0%	CPI + 2%	CPI + 3%
1720	2025	2216

4. Capital Additions Escalation Sensitivity for Base Case

Capital Additions Escalated at:		
CPI + 0	CPI + 2%	CPI + 4%
1841	2025	2270

The witness testified on cross examination that he was aware of Mr. Clarke's expectation that Diablo Canyon would operate at a capacity factor of higher than 58%, and that the current ECAC proceeding assumed an overall capacity factor of 70.7%. However, he felt that the DRA's assumption about a 58% capacity factor is reasonable when compared with the national average of large nuclear power plants. He further testified that he was not disturbed that the settlement did not take into account the cost effectiveness of Diablo Canyon because PG&E needs future capacity.

6. Testimony of Richard A. Myers

Mr. Myers is a Senior Utilities Engineer with the DRA. He testified on the reasonableness of the DRA's assumptions about O&M expenses, A&G expenses, nuclear fuel expenses, and the capacity [*166] factors that were used in calculating the equivalent disallowances.

The DRA made certain assumptions as to the noninvestment related expenses used in calculating the equivalent disallowance. The DRA assumed that: (1) O&M expenses would escalate at a rate equal to the estimated CPI escalation rate plus 2% per year; (2) refueling outages would occur about every 18 months; (3) the amount of the estimated O&M expenses which the Commission approved in D.88-05-027 would be the starting point in 1988; (4) the estimated A&G expenses which the Commission approved in D.88-05-027 and D.86-12-095 would be the starting point in 1988; and (5) the A&G expense would escalate at the same rate as the CPI in future years. In the DRA's estimate for 1985, 1986, and 1987, the DRA used the actual O&M and A&G expenses which were found to be reasonable by the Commission in D.88-05-027, plus the Diablo Canyon related 1987 A&G expenses which were determined to be reasonable by the Commission in D.86-12-095.

The DRA's methodology for determining the reasonableness of future O&M expenses was derived from examining actual historical O&M expenses for nuclear power plants for the period from 1974 through 1986, [*167] reviewing recent Commission decisions regarding noninvestment costs, calculating the frequency with which refueling outages have occurred at other nuclear plants, and reviewing several other recent studies on nuclear O&M expenses and their escalation.

With respect to the actual historical O&M expenses, only the O&M expenses for plants with PWRs with a capacity of 750 MW or greater were analyzed. The average annual nuclear O&M expense for these PWRs increased dramatically from 1974 through 1986 from $ 5.492 million to $ 58.894 million. The average annual rate of increase of the average nuclear O&M expense from 1974 to 1986 has been 22%, while the average annual rate of increase of the consumer price index has been 7%.

Mr. Myers compared the O&M expenses for individual plants which have been in operation for several years or more and found that the increase in O&M expenses for these plants were comparable to, or only slightly lower than the increase in the average O&M expense. He concluded that the O&M expense for older plants had been increasing almost as fast as that of the newer plants. He also concluded that it was typical for annual nuclear O&M expenses to be below $ 10 million [*168] in the mid-1970's, while the current O&M expenses for those same plants are now $ 40, $ 50, or $ 60 million or more. As an example, the Rancho Seco nuclear plant had O&M expenses of $ 7 million in 1976, but in 1985 the O&M expense for that plant was $ 93 million.

With respect to Diablo Canyon's O&M expenses, the recorded expenses have been above the average O&M of other nuclear plants, but within the range of variance. In January 1988, as part of the interim rate proceedings for Diablo Canyon, PG&E and the DRA stipulated that the reasonable O&M expenses for 1988 would be $ 85 million per unit, assuming that both units would be undergoing refueling outages in 1988. In D.88-05-027, the Commission determined that those amounts were reasonable.

The frequency with which refueling outages take place is a significant factor which affects the estimate of future O&M expenses. Incremental expenses, in addition to the normal O&M expenses, are incurred during refueling outages at nuclear plants because of the increased work during these outages which cannot be effectively performed while the plant is in operation. The higher the capacity factor of any given plant, the more frequent refueling [*169] outages will be, which will cause a utility to incur higher O&M expenses.

Mr. Myers reviewed the frequency of refueling and other major outages of other nuclear plants. On the average, refueling outages occur about twice every three years. This has been the case at Diablo Canyon as well. Unit 1, which has been in operation just over three years, recently completed its second refueling outage. The second refueling outage for Unit 2 is scheduled for fall of 1988. Unit 2 will have completed its third year of operation in March 1989.

Mr. Myers also reviewed several other studies of O&M expenses. In a recent study of nonfuel operating costs for nuclear power plants, the Energy Information Administration (EIA) concluded that real O&M costs, analyzed on a 1982 $ per KW basis, have been escalating at about 12% per year. This study was based on data for all nuclear plants in the U.S. which have a capacity greater than 400 MW for the period 1974 through 1984. Mr. Myers also reviewed the testimony of Charles Komanoff of Komanoff Energy Associates (KEA) who had testified about the O&M expense for the next 40 years for the Limerick 1 nuclear plant, a 1,065 MW boiling water reactor in [*170] Pennsylvania which went into operation in February 1986. Although Mr. Komanoff did not specifically assume any particular rate of escalation, the real escalation of Mr. Komanoff's O&M expense figures appear to fall in the range of 1.5% to 3.8% per

year. Mr. Komanoff also compiled actual yearly O&M expense averages in terms of 1986 $ per KW, and calculated about 69¢ per KW for the average nuclear O&M expense in 1986. According to Mr. Myers, this would work out to an O&M expense for Diablo Canyon of about $ 82 million in 1988 dollars for 1986.

The A&G expense at Diablo Canyon is composed of eight components: (1) insurance; (2) pensions and benefits; (3) payroll taxes; (4) A&G salaries; (5) office supplies and expenses; (6) workers' compensation; (7) rents; and (8) uncollectibles and franchise requirements. The bulk of these expenses are property and liability insurance, and expenses related to the labor component of the O&M expenses. In D.88-05-027, the Commission determined that certain amounts of recorded A&G expense for Diablo Canyon for 1985, 1986, and 1987 were reasonable based on the January 1988 stipulation reached between the DRA and PG&E. In that decision, the Commission [*171] also determined that $ 31.6 million was a reasonable estimate of A&G expense for 1988. Also, in D.86-12-095, the Commission determined that an additional $ 11.7 million in Diablo Canyon related A&G expense was reasonable for Test Year 1987.

As for the assumptions pertaining to nuclear fuel expenses, data for these expenses for other U.S. nuclear plants were compiled for the years 1978, 1979, and 1982 through 1986. The DRA's projections for nuclear fuel expense also relied on figures provided by PG&E for the price of nuclear fuel for 1988 through 2016. In the late 1970's nuclear fuel expense was mainly in the range of 2 to 5 mills per kWhr, but by 1986 the range was from 6 to 10 mills per kWhr. This is roughly an 11% increase per year. The CPI increased at an annual rate of 7% per year from 1978 to 1986. The rate of increase of nuclear fuel expense has slowed in recent years, and is near the escalation rate of the CPI. When the figures supplied by PG&E, which are used in the DRA estimate, are compared to the historical cost paid by other utilities for nuclear fuel and the escalation of those historical costs, the figures appear to be reasonable. If the average nuclear fuel [*172] cost keeps going up at the same rate as the projected CPI, PG&E's figures will actually be lower than average in 1989, higher than average from 1990 to 1994, then lower than average from 1995 to 2016.

The DRA estimates that the reasonable lifetime capacity factor for Diablo Canyon will be in the range of 55% to 65%. In order to calculate an equivalent disallowance of plant costs under the terms of the Diablo Canyon settlement compared with traditional ratemaking procedures, the DRA assumed a 58% capacity factor for the next 28 years. The choice of this number was based on the group of plants which have characteristics most similar to Diablo Canyon, i.e. Westinghouse four loop PWRs, which have a capacity factor of 58%. Of this group, the plants which have operated for five years or more have a capacity factor of 55.8%. The plants in this group which have capacity factors greater than 70% have been in operation for less than five years.

To verify the DRA's assumption about the capacity factor, Mr. Myers compiled cumulative capacity factors for all nuclear plants in commercial operation in the U.S. with a generating capacity greater than 400 MW through the end of April 1988. This [*173] compilation included plants which have had, or are still having, extended outages for one reason or another. The compilation did not include plants which have been shut down altogether and may never operate again, such as TMI-2. Mr. Myers' compilation established that the time weighted average capacity factor for all plants is 61.1%. The median for all plants is also about 60%.

Other capacity factor studies also support the DRA's estimates for Diablo Canyon. KEA has performed a statistical analysis of the capacity factors for U.S. nuclear plants in order to develop estimates of capacity factors for Diablo Canyon. Using three different models, the analysis resulted in capacity factors which average about 55% to 59% for the first decade of operation, then decline with time. Two of the KEA models predict an average capacity factor of 51% for the first 26 years of Diablo Canyon operation, and after 26 years these models predict that the capacity factor would become so low that the plant would have to be retired. The third KEA model predicts an average capacity factor of 51% for the expected 30-year life of Diablo Canyon.

In the May 1988 issue of Nuclear News, E. Michael Blake [*174] compared the average design electrical rating (DER) capacity factors for the years 1985 through 1987 with the DER capacity factors of nuclear plants for the years 1982 through 1984. Mr. Blake's figures show that the average DER capacity factor improved during 1985 through 1987 to 59.7%, from the average during 1982 through 1984 of 56.4%.

7. Testimony of Charles Komanoff

Charles Komanoff is a director and principal of KEA, an energy and economic consulting firm. The purpose of his testimony was to elaborate on the DRA's assumption about future capital additions to Diablo Canyon.

KEA used its database containing the rate of expenditures for capital additions at U.S. nuclear plants for the period 1970-1986. KEA developed three alternative statistical models using this data and applied it to Diablo Canyon to develop estimates of the likely amounts that will be required to upgrade, repair, and maintain Diablo Canyon.

He compared the DRA analysis with KEA's analysis. The DRA used the projected stream of annual capital additions which PG&E adopted in its October 1986 cost effectiveness study of Diablo Canyon. This stream has a present worth cost of approximately $ 1.2 billion [*175] in 1986 dollars, which is equivalent to $ 88 million per year on a constant levelized basis (in 1986 dollars). The primary statistical model of KEA indicates that capital additions for Diablo Canyon will have a present worth cost of approximately $ 2.2 billion in 1986 dollars, which is equivalent to $ 163 million per year on a constant levelized basis. The model's estimate exceeds the PG&E estimate used by DRA by slightly over $ 1 billion, or $ 75 million per year on a levelized basis in 1986 dollars.

The two other KEA models have somewhat lower rates of capital additions for Diablo Canyon than the primary model, although they still exceed PG&E's estimate. The average capital additions costs from the three KEA models are two thirds greater than PG&E's assumed rate, a difference equivalent to approximately $ 800 million on a life cycle basis or $ 60 million annually in 1986 dollars.

In estimating future capital additions, PG&E assumed zero escalation beyond 1995. Even if an escalation factor of 4% were added to the PG&E figures, the average Diablo Canyon capital additions costs from the three KEA models would still exceed the PG&E/DRA assumptions by approximately 19% for a lifetime [*176] difference of $ 328 million and an annual difference of $ 24 million. Thus, to the extent that the KEA models are considered valid indicators of future costs at Diablo Canyon, the DRA's assumptions about capital costs understates the benefits of the settlement to the ratepayers.

On cross examination, Mr. Komanoff testified that capital additions can be of three types: improvements which are mandatory and enhance safety, or those which enhance safety and are discretionary, or those which enhance capacity value which may also enhance safety. He does not believe that PG&E will curtail spending for safety improvements merely to save on costs because Diablo Canyon is PG&E's biggest and most important financial asset.

8. Testimony of Scott Cauchois

Mr. Cauchois is a Program and Project Supervisor in the Energy Resources Branch of the DRA. The purpose of his testimony was to discuss the DRA's assumption about the 11.5% discount rate used in calculating the equivalent disallowance.

The discount rate is a tool to compare cash flows. Since cash flows occur over time, the normal procedure is to discount them to a single lump sum present value. The present value is the required [*177] principal amount which, if invested at the present time, would generate an expected future cash flow which would provide a return of principal equal to the assumed discount rate. The discount rate quantifies a time preference for consuming or spending money or resources and measures the expected return on that money over time.

In the DRA's analysis, the discount rate is used to obtain the present value to ratepayers of the revenue requirements associated with Diablo Canyon under traditional ratemaking, and the present value of the fixed and variable payments that would be made under the negotiated agreement. The 11.5% discount rate is about equal to PG&E's long run incremental weighted cost of capital of 11.3%. The choice of 11.5% also compares favorably with rates used in regulated industries and with rates found in other studies.

C. Testimony of AG Witnesses

The following witnesses testified for the AG in favor of the settlement: David Marcus, Michael J. Strumwasser, and Richard B. Hubbard.

1. Testimony of David Marcus

David Marcus is a consultant with a background in the energy field. Mr. Marcus was retained by the AG for the purpose of calculating the equivalent [*178] disallowance associated with the proposed settlement.

Mr. Marcus explained that an equivalent disallowance calculation involves a comparison between the net present value (NPV) of PG&E's revenues from the settlement, and the NPV of PG&E's revenues for Diablo Canyon under traditional ratemaking. The equivalent disallowance is the amount of the Diablo Canyon capital costs, before

commercial operation, that would need to be disallowed by the Commission in order to produce the same NPV under the settlement as under the traditional COSR. The equivalent disallowance was done on a company wide basis.

The following assumptions were made by Mr. Marcus for computing PG&E's revenues under the settlement: (1) a discount rate of 11.5%; (2) an overall capacity factor of 58% n18 which is the time weighted average performance through January 31, 1988 of 83 U.S. nuclear plants over 700 megawatts capacity in commercial operation; and (3) for the variable price component after 1994, and for all other adjustments involving inflation rates, an annual increase in the CPI of 6%.

n18 The 58% overall capacity factor is based on an eighteen month fuel cycle, and two in service inspection outages for each unit. That is, the plant is assumed to operate at 75% capacity for fourteen months, and at zero capacity for four months for refueling. Then every ten years, there is an additional three month outage for each unit for maintenance and inspection. [*179]

Based upon the 58% capacity factor, Mr. Marcus compared the revenues that PG&E would receive under the proposed settlement with the revenues that PG&E would receive under traditional ratemaking for Diablo Canyon. He concluded that the revenues received under the settlement have the same net present value as the revenues that would be produced under traditional ratemaking with a rate base disallowance of $ 2.05 billion.

Mr. Marcus made alternative calculations regarding the equivalent disallowance's sensitivity to the effects of a change in plant performance, O&M and refueling costs, discount rate, the assumed inflation rate, and post COD capital additions. His analysis shows that a change of 1% in the assumed lifetime capacity factor for Diablo Canyon changes the equivalent disallowance by approximately $ 110 million. Thus, if the plant is assumed to operate at a 55% capacity factor, the equivalent disallowance would be about $ 2.4 billion. On the other hand, if the plant operates at a 62% capacity factor, the equivalent disallowance would be about $ 1.6 billion.

Another important variable involved O&M and refueling expenses. In Mr. Marcus' base case, he assumed that these [*180] expenses would increase annually at 2% above the assumed inflation rate. However, if these costs rose only at the rate of inflation, the equivalent disallowance would be reduced by about $ 334 million. But if those costs increased by 5% per year above the rate of inflation, the equivalent disallowance would be about $ 726 million higher.

Mr. Marcus acknowledged on cross-examination that Diablo Canyon's current performance is above average when compared to other power plants. The capacity factor for Unit 1 for commercial operation date through June 30, 1988 was 67.7%, and for Unit 2, 76.7%. Both units at Diablo Canyon are currently operating at a combined capacity factor of 67% after three completed fuel cycles.

2. Testimony of Richard B. Hubbard

Mr. Hubbard, the Vice President of MHB Technical Associates (MHB), testified for the AG in support of the settlement. The purpose of his testimony was to provide an evaluation of the Independent Safety Committee (Committee) to be created under the proposed settlement. MHB has conducted studies in the past pertaining to the safety, quality, reliability, and economic aspects of nuclear power generation facilities.

The Committee [*181] has four key characteristics. First, the composition of the Committee will consist of three experts who have knowledge, background, and experience in nuclear facilities. Mr. Hubbard believes that three Committee members will provide for a divergence of opinion. He believes that the most important factor in selecting the Committee members is their qualifications to address the technical issues that the Committee members will face.

The second characteristic is that the Governor, the Attorney General, and the Chairman of the California Energy Commission will each appoint one member from a list of candidates nominated by the President of the CPUC, the Dean of Engineering at the University of California at Berkeley, and PG&E. Mr. Hubbard believes that the selection process is an appropriate method for retaining experts who will be independent, and who will provide objective judgments based solely on the technical merits.

Third, the Committee's objectives will be to review Diablo Canyon operations, conduct technical studies, and to make recommendations regarding the safety of Diablo Canyon to PG&E and to state officials. The Committee will have a fair amount of freedom to evaluate [*182] any document in the possession of PG&E that pertains to safety, and to visit any area of the plant after reasonable notice. The Committee will report its findings on at least an annual basis.

The fourth characteristic of the Committee is the budget to fund the Committee that will be paid by ratepayers. Mr. Hubbard views the initial annual budget of $ 500,000 as adequate so that the Committee can accomplish its objectives. It is in the Committee's discretion whether the Committee will operate on a full or part time basis. However, with the budget allotted, there should be sufficient funds to hire other experts that may be required.

Mr. Hubbard agrees that performance based pricing may create economic incentives that might affect the safety of Diablo Canyon. However, he does not believe that PG&E will sacrifice safety for production based upon PG&E's past operating performance of the plant. In addition, since PG&E agreed to the inclusion of the Committee as part of the settlement, this can only help to increase the public scrutiny of PG&E's activities at Diablo Canyon. Neither the Committee nor state officials have authority over radioactive hazards, but anyone can formally [*183] request action from the NRC. Mr. Hubbard feels that the Committee's activities provide an additional level of assurance of safety at Diablo Canyon, and that its activities complement, rather than conflict with the activities of the NRC.

Although Mr. Hubbard is not aware of any other nuclear plants that have a performance based pricing mechanism, the concept of providing economic incentives in the utility industry is not a new idea. A number of state regulatory commissions already have some type of incentive program for the utilities they regulate. According to Mr. Hubbard, it is common practice for the management of utilities and their major contractors to have incentive salary compensation based on achieving certain performance standards. In addition, contracts for goods and services provided to utilities routinely have bonuses or penalties based on performance objectives.

3. Testimony of Michael J. Strumwasser

Mr. Strumwasser is a Special Assistant Attorney General who testified in favor of the settlement. The purpose of his testimony was to show that the settlement is reasonable for PG&E ratepayers.

He has four reasons why he believes that the settlement benefits [*184] ratepayers. The first is that the settlement is equivalent to a disallowance of more than $ 2 billion assuming a capacity factor of 58%. In Mr. Strumwasser's opinion, that equivalent disallowance compares favorably to the likely results of fully litigating the prudence case. Although he believes that the evidence would support a disallowance exceeding $ 2 billion, he does not agree that the entire $ 4.4 billion disallowance recommended by the DRA is justified. Based upon the history of past Commission decisions and other factors, there is a substantial risk that the Commission might disallow less than $ 2 billion. Thus, an equivalent disallowance which exceeds $ 2 billion is an attractive number.

Mr. Strumwasser's second reason is that the settlement shifts the performance risks of the operation of Diablo Canyon from the ratepayers to PG&E. Under traditional ratemaking, the ratepayers pay for a return of and a return on all of the plant's reasonable capital costs, and for all reasonable operating and fuel costs. These payments continue despite the performance or non-performance of the plant. Under the settlement, ratepayers pay a price for electricity only when Diablo Canyon [*185] is producing power, subject only to the floor provisions of the settlement.

His third reason is that the settlement shifts the risk of future cost overruns from ratepayers to PG&E. Under traditional ratemaking, ratepayers must pay for all reasonable operating costs and reasonable costs for capital additions even if they are greater than projected. The settlement provides that these and other costs are paid for by PG&E out of its revenues from the operation of Diablo Canyon. Experience has shown that operating costs of a nuclear power plant have risen faster than inflation and industry expectations. If this trend continues, PG&E will have to absorb these extra costs.

Mr. Strumwasser's fourth reason is that the settlement provides for the creation of an Independent Safety Committee which will act as additional oversight for the operation of Diablo Canyon. Without the settlement, there would be no committee to review and comment on safety issues at Diablo Canyon.

The settlement arguably creates economic incentives for PG&E that might affect safety. For example, certain kinds of maintenance only affect safety without increasing reliability. Since PG&E must pay for all maintenance [*186] under the settlement, it would have less incentive to perform such work. However, the Committee is designed to provide added assurance that PG&E will not promote increased plant operation or reduce plant costs at the expense of safety. If an action of PG&E affects safety, the Committee could make recommendations which would be brought to the attention of the highest energy officials in California, and could form the basis for a petition to the NRC. Although the Committee has no enforcement authority, the Committee has the power to advise and to persuade.

VIII. Testimony of Parties Opposed to the Settlement

A. Testimony of San Luis Obispo Mothers for Peace

Lucy Jane Swanson testified on behalf of SLOMP in opposition to the proposed settlement. She has been an active member of SLOMP since 1969.

SLOMP's concerns are in four areas. The first concern is that the proposed settlement creates a conflict between plant safety and the financial rewards to PG&E. That is, the performance based pricing mechanism creates an incentive for PG&E to maximize plant operation so as to maximize revenues and to disregard safety concerns that only affect safety but do not enhance plant [*187] performance.

SLOMP cites various NRC memorandums expressing concern over incentive pricing and the AG's August 23, 1985 response to Commissioner Vial's request that value based pricing be examined. The AG's response outlined steps that should be taken in the event value based pricing was adopted for Diablo Canyon, including obtaining a commitment from the NRC to take broad and aggressive measures to ensure the public safety. Among the recommended measures were increased NRC onsite inspection staff, increased NRC audits, and monitoring of safety related policies and practices at PG&E headquarters. SLOMP believes that those steps are the minimum requirements that must be in place to mitigate the problems associated with a price structure based upon performance. However, Ms. Swanson points out that none of those steps were adopted as part of the proposed settlement.

SLOMP's second concern is the way in which the members of the Independent Safety Committee are nominated and selected. To obtain qualified members for the Committee, it is likely that the nominees will have ties to the nuclear industry. SLOMP feels that the nominations and appointments of the Committee members will [*188] be done by the utilities and by Commission related bodies. In addition, none of the nominees are nominated or appointed by any citizen group.

The third concern is that the information that the Committee is entitled to is no more than what the general public can obtain. Ms. Swanson said that the Committee can only get the information that PG&E chose to provide and that the information would not be received in a timely manner.

SLOMP's fourth concern is that the Committee has no enforcement authority to implement its findings. The Committee's only authority is to go on an annual plant tour. All the Committee can do is to submit its findings to the CPUC, the AG, the Governor, and the CEC.

SLOMP believes that the Committee only creates the illusion that safety concerns will be adequately addressed in the event the settlement is adopted. Without any enforcement authority, the allotted budget and the objectives of the Committee will not enhance safety at Diablo Canyon. Based on the above reasons, SLOMP recommends that the Commission reject the settlement in its entirety.

B. Testimony of Life on Planet Earth

Henry Hammer testified on behalf of Life on Planet Earth (LOPE) in [*189] opposition to the proposed settlement.

LOPE criticized four aspects of the settlement. LOPE's first concern was with the settlement prices and price escalation. Mr. Hammer stated that no other manufacturer in California is guaranteed a price for its product for the next 28 years. He believes that if the settlement is adopted, electric rates for the next six years will result in a 52% increase from present rates. In comparison, Mr. Hammer states that the price for electricity rose less than 10% in the last six years. In addition, because rates for the next six years are not adjusted or pegged to the Consumer Price Index, the settlement increase in rates will result in rate shock to those on low or fixed incomes.

LOPE's second concern is with the revenue that PG&E might generate if the settlement is adopted. Mr. Hammer testified that if Diablo Canyon continues to operate at a capacity factor similar to the capacity factor of the plant to date, PG&E could earn back by 1995 almost all of the $ 5.5 billion that it cost to build the plant. LOPE believes that under the settlement the ratepayers will have to pay for PG&E's $ 4.4 billion in mistakes.

The third criticism of the settlement [*190] is that it leaves decommissioning costs untouched. LOPE believes that this is unfair to ratepayers because it will not account for the real cost of decommissioning Diablo Canyon. Thus, the burden of the true cost of decommissioning will be borne by ratepayers in the future.

LOPE's fourth criticism is that under the settlement, the ratepayers will end up having to buy electricity from Diablo Canyon at the prescribed prices even if cheaper electricity is available from other sources. LOPE asserts that

this will cause large users to leave the PG&E system to produce their own electricity or to seek cheaper electricity. As a result, small users will end up paying the highest price for electricity because they can't afford to disconnect.

C. Testimony of Toward Utility Rate Normalization

Sylvia M. Siegel testified on behalf of TURN in opposition to the settlement.

She testified that the CPUC is obligated to regulate utilities and to ensure that rates are just and reasonable. Although California uses a future test year to set rates, that does not mean that it is reasonable to forecast what conditions or prices will be for a nuclear power plant for the next thirty years. If [*191] Mr. Clarke's expectations about Diablo Canyon's future operation are correct, or if the capacity factors used by the CEC or in the ECAC proceedings are reflective of future operation, PG&E will more than offset the equivalent disallowance of $ 2 billion in the future, and even possibly come out with hardly any disallowance.

She said that the projections made by the proponents are speculative. TURN believes that further computer runs should be done using assumptions that are different than those the proponents have used. She believes there are other reasonable scenarios under which PG&E would be able to recover its entire investment in a comparatively short time. TURN believes that it is faulty to base projections on an average base case scenario of 58% when PG&E, unlike other plants included in the average, has been rebuilt three times. One would expect that a plant built in such a manner would perform better than average.

In the DRA's testimony, Mr. Ahern testified that an advantage to the settlement is that it protects ratepayers from the risks of world oil price increases. Mrs. Siegel points out, however, that market projections are that the current oil price decline will [*192] continue for the near future. Thus, the prices agreed upon in the proposed settlement freezes for the future a very high price for electricity.

As for the safety committee, TURN is of the opinion that the committee is nothing but a subterfuge to enhance the acceptability of the proposed settlement. The committee has no authority and cannot enforce any of its recommendations. As a result, the amount budgeted for the committee will be wasted, and will have to be paid by ratepayers. In lieu of the safety committee, TURN suggests that pressure be applied to Congress and the NRC so that the NRC has sufficient staff to increase its surveillance of Diablo Canyon's operation.

TURN also believes that decommissioning costs should have been addressed as part of the proposed settlement, that additional information be provided to analyze the issues of double dipping on rate of return and on abandonment costs, and that the Commission should investigate the cost effectiveness of shutting down the plant.

D. Testimony of the Redwood Alliance

1. Testimony of Stephen S. Bernow

Dr. Stephen S. Bernow of Energy Systems Research Group, Inc. testified on behalf of the Redwood Alliance [*193] in opposition to the settlement.

He described the overall structure of the settlement and its expected impact. In calculating costs Dr. Bernow used his own projections of Diablo Canyon O&M costs and capital additions costs, and the DRA's assumptions about capital cost recovery, discount rate, and capacity factor. He also used PG&E's production costing simulations to compute the avoided energy costs. Using a discount rate of 11.5%, Dr. Bernow determined that the levelized future cost of electricity under the settlement is 11.8¢ per kWh. Under traditional COSR, the levelized cost is 13.1¢ per kWh, whereas under avoided cost or value pricing the cost is 5.1¢ per kWh.

Dr. Bernow testified that the settlement attempts to achieve several objectives at the same time: reasonable rates for Diablo Canyon power, a fair treatment of the Diablo Canyon costs, protection of ratepayers from further risk of cost escalation, incentives for good operating performance, and avoidance of costly and time consuming litigation. However, in the pursuit of these objectives, Dr. Bernow feels that the settlement adversely impacts: (1) economical system planning; (2) safe Diablo Canyon operation; (3) the [*194] ultimate decommissioning of the plant; and (4) future ratemaking and operations.

With respect to the issue of system planning, Dr. Bernow stated that system planning for utilities should include appropriate plant retirement decisions. The objective of electric utility operations and planning is to provide reliable electrical power to customers at the lowest cost feasible. Instead, the settlement locks PG&E ratepayers into purchasing the power produced by Diablo Canyon for the next 28 years, at a levelized cost of about 12 cents per kWh. Dr. Bernow

believes that this combination of 28 years and set prices effectively precludes reasonable decisionmaking with respect to the timing of Diablo Canyon's retirement. Under the settlement, PG&E has the incentive to operate the plant as much and as long as possible even if it is not cost effective or if it conflicts with efforts to develop more promising energy technologies.

Dr. Bernow believes that given the trends in nuclear operating costs, the current marginal economics of Diablo Canyon's operation, and the history of early retirement of nuclear power plants due to economic reasons, it would be imprudent to assume that Diablo Canyon [*195] will operate economically through the year 2015. Instead, it should be recognized that the continued operation of the plant at some point may be found to be uneconomical or undesirable for other reasons. His preliminary economic analysis of the operation of Diablo Canyon shows that it may be economical to shut down Diablo Canyon at the present time. Dr. Bernow believes that if the Commission approves the settlement, this will preclude the Commission from reviewing the ongoing operation of the plant and determining whether Diablo Canyon should be retired at some future point.

Dr. Bernow's second concern is that the settlement adversely affects the safe operation of Diablo Canyon. If the settlement is approved, in the first year of operation the cost of Diablo Canyon's down time will amount to about $ 4 million per day. In 1994, the cost of down time will be about $ 6 million per day. Under the settlement, the O&M and capital additions costs will no longer be passed through to ratepayers. Thus, the incentive to keep the plant operating and the incentive to spend less on the plant raises concerns that the safe operation and maintenance of the plant may be compromised. That is, [*196] while additional expenditures may improve Diablo Canyon's availability, these expenditures may not maintain or improve safety. Furthermore, the safety committee will not have any authority over plant operations, and therefore does not eliminate his safety concerns.

Dr. Bernow's third area of concern is that under the settlement, the responsibility for the ultimate decommissioning of the plant is on the ratepayers. Plant operating costs can impact decommissioning costs. However, since the distinction between operating costs and decommissioning costs is not always clear, Dr. Bernow feels that it is inappropriate to segregate the decommissioning costs from the rest of the plant's costs. Without the settlement, the costs of ultimate decommissioning as well as any ongoing operation and maintenance costs are both passed on to ratepayers. Under the settlement, since O&M costs are absorbed by PG&E, this could set up a conflict between what is attributable to O&M costs and what is attributable to decommissioning costs. If more costs were shifted to decommissioning, the ratepayers would end up paying increased decommissioning expenses.

The fourth concern is the settlement's impact on [*197] future ratemaking and operations. Under the settlement, PG&E is in effect selling the output of Diablo Canyon to itself. Dr. Bernow's concern is that some of the risks of operation have been shifted to PG&E shareholders which may affect PG&E's cost of money, particularly if Diablo Canyon performs poorly. In that instance, PG&E may face situations in which rational planning or ratepayer interests are in conflict with PG&E's shareholder interests. Furthermore, the settlement may create a situation in which the Commission jeopardizes its jurisdiction over the rates at Diablo Canyon since, in Dr. Bernow's estimation, an unregulated subsidiary of PG&E might be set up to operate Diablo Canyon. In such an event the FERC may assert jurisdiction.

Dr. Bernow opposes the settlement as written. He also recommends that the Commission should hold a hearing as to whether the continued operation of Diablo Canyon is cost effective. If, however, the Commission is inclined to approve the settlement, Dr. Bernow recommends several changes be made with respect to the settlement:

(a) Consider restructuring the payments under the settlement so that the revenues per kWh of electricity production [*198] are more in line with the value of the power. According to Dr. Bernow, this would decrease both the distortions to least cost planning and the concerns for safe operation of the plant.

(b) Consult with the NRC to obtain its views of the impact of the settlement upon safe operation of the plant, and upon appropriate modifications to ensure or enhance safety.

(c) Create a safety committee which would have meaningful authority over the operation of Diablo Canyon.

(d) Clarify PG&E's responsibility for the decommissioning of Diablo Canyon in the event of an accident. A procedure for distinguishing between clean up costs and normal decommissioning costs should be done.

(e) It should be clarified as to who is responsible for the costs of removal and disposal of spent nuclear fuel.

(f) Continue the current external fund for the decommissioning of Diablo Canyon, but without contributions from ratepayers.

(g) Set up procedures to ensure that PG&E ratepayers do not bear the burden of a higher cost of capital to PG&E as a result of the shifting of the risks to PG&E.

Dr. Bernow responded to the rebuttal testimony of PG&E's witness, Peter Hindley, who disagreed with Dr. Bernow's [*199] recommendation to consider shutting down the plant. Dr. Bernow does not expect his recommendations to be acted upon at once. Instead, it should be considered a preliminary analysis designed to demonstrate that further planning analysis of Diablo Canyon is needed.

Dr. Bernow briefly reviewed the April 1988 economic analysis of Diablo Canyon made by PG&E, and referred to by Mr. Hindley in his testimony. Dr. Bernow identified what he viewed to be a major flaw in PG&E's methodology that biases PG&E's analysis. In calculating the impacts of Diablo Canyon upon system operation, PG&E used a computerized dispatch simulation model. Two cases were run, one with Diablo Canyon and one without. In the case without Diablo Canyon, PG&E assumed that it would not build new generating capacity to replace Diablo Canyon, nor would there be any replacement energy purchases. Dr. Bernow believes that this is an unrealistic assumption.

Dr. Bernow also responded to Mr. Hindley's criticism of his treatment of the capacity value of Diablo Canyon and PG&E's claim that the dependable capacity of Diablo Canyon was reduced from 2,160 MW to 1,392 MW. With respect to the first criticism, Dr. Bernow's use [*200] of a zero capacity value for 1988 to 1991 reflects the course of action that PG&E would take in the event that Diablo Canyon were shut down since surplus capacity is expected to last through 1999. As to the second criticism, Diablo Canyon's capacity was not reduced. Rather, Diablo Canyon's 2,160 MW of nuclear capacity was replaced with 1,392 MW of combined cycle capacity. According to Dr. Bernow, combined cycle capacity has much better system reliability than nuclear capacity, and therefore it is not necessary to replace every MW of Diablo Canyon's capacity.

2. Testimony of Robert Kinosian

The Redwood Alliance called Robert Kinosian, who is employed by the DRA, to testify regarding two studies which he prepared in January and August of 1988 about the cost effectiveness of Diablo Canyon.

Mr. Kinosian's January analysis compares the operating costs of Diablo Canyon (fuel costs, O&M, A&G, capital additions, and decommissioning) to the costs of replacement power without the operation of Diablo Canyon. For 1988, the operating costs of Diablo Canyon were calculated by Mr. Kinosian to be $ 458 million or 38.1 mills per kWh. The cost of not operating Diablo Canyon and purchasing [*201] replacement power for 1988 was calculated by Mr. Kinosian to be $ 387 million or 32.2 mills per kWh. Most of the assumptions used in the January analysis were taken from Commission decisions.

Mr. Kinosian's August analysis was a revision of his January analysis. In his August analysis he used the forecast that the DRA was using in the PG&E ECAC case. This change affected replacement energy costs as well as QF and geothermal steam costs. Revisions were made to the operating costs of Diablo Canyon using the values that the DRA used in calculating the equivalent disallowance under the settlement. The mothballing expense of Diablo Canyon was increased from $ 36 million to $ 50 million in response to PG&E's comments about Mr. Kinosian's January 1988 analysis. His August analysis calculated the 1988 operating costs of Diablo Canyon to be $ 471 million or 32.8 mills per kWh, compared to the nonoperation or replacement costs of $ 412 million or 28.7 mills per kWh. Mr. Kinosian testified that the primary reason for the narrowing margin was that the capacity factor that was assumed for the plant in the ECAC case was higher than what was assumed in his January analysis. The secondary [*202] reason was the increase in the assumption about mothballing. Thus, given the assumptions that he used, Mr. Kinosian testified that it would be cost effective to shut down Diablo Canyon for the 1988-89 ECAC period.

The witness reviewed the prepared testimony of Mr. Hindley and concluded that the analysis by Mr. Hindley of the cost effectiveness of Diablo Canyon overestimates the value of Diablo Canyon's generation.

IX. Analysis of the Settlement

For ease of understanding the Settlement Agreement and its major implications, each paragraph will be discussed separately. The discussion will cover what we believe to be the substantive effects of the paragraph and our interpretation of those effects; additional explanations and some changes can be found in the Implementing Agreement.

Settlement Agreement

This Settlement Agreement is made among Pacific Gas and Electric Company (PG&E), the Division of Ratepayer Advocates (DRA) of the California Public Utilities Commission (CPUC), and the Attorney General of the State of California. The Agreement covers operation and CPUC jurisdictional revenue requirements associated with each unit of the Diablo Canyon Nuclear Power Plant [*203] (Diablo Canyon) for the 30-year period following the commercial operation date of each unit.

1. Exclusive Ratemaking

This Agreement sets forth PG&E's exclusive method for recovering any CPUC jurisdictional costs of owning or operating Diablo Canyon for the term of this Agreement.

The Settlement Agreement covers the price ratepayers pay for Diablo Canyon power regardless of change of ownership of Diablo Canyon to third parties or affiliates of Diablo Canyon. The Settlement Agreement is intended to govern regardless of the organizational or financial structure or form of ownership of Diablo Canyon.

2. Term

The term of this Agreement shall be from July 1, 1988 to May 6, 2015 for Diablo Canyon Unit 1 and from July 1, 1988 to March 12, 2016 for Diablo Canyon Unit 2.

The Unit 1 operating license expires April 23, 2008 and the Unit 2 operating license expires December 9, 2010. If not extended by the NRC, the units will be deemed abandoned on their respective license expiration dates and the abandonment provisions of Paragraph 13 will be invoked.

3. Prices

The prices for Diablo Canyon power shall consist of a fixed price and an escalating price. The fixed price shall [*204] be 31.5 mills/kWhr. The escalating price shall be as follows:

July 1, 1988	46.50 mills/kWhr
January 1, 1989	51.85 mills/kWhr
January 1, 1990	57.81 mills/kWhr
January 1, 1991	64.46 mills/kWhr
January 1, 1992	71.87 mills/kWhr
January 1, 1993	80.14 mills/kWhr
January 1, 1994	87.35 mills/kWhr

The escalation portion of the price increases at 11.5% per year. The total price increases at 7.0% per year. The opponents argue that the Settlement Agreement by fixing prices for 28 years and guaranteeing that all Diablo Canyon output is sold, gives PG&E an advantage that no other utility possesses. Under this scheme the Commission has abdicated control over Diablo Canyon's prices and should low cost alternate fuels or alternate sources of electricity become available this Commission could do nothing but stand helpless while PG&E reaps exorbitant profits.

PG&E responds that the fixed prices are one part of a complex settlement agreement which must be considered in its entirety. The price is negotiated, not tied to any particular ratemaking procedure. Its starting price of 7.8¢ /kWh is much less than the 15¢ /kWh which might be charged if the entire cost of Diablo Canyon were [*205] included in rate base, and less than the approximately 10¢ /kWh charged for SONGS power. The proponents assert that because the general rate of inflation is likely to be more than 2.5% per year, the real price of Diablo Canyon power is likely to decline after 1995. In contrast, most authorities (including the California Energy Commission) estimate that over the long run alternate fuel prices will increase at a rate faster than the general rate of inflation.

We have expressed our concern elsewhere in this decision about our authority to bind future Commissions to the prices fixed in the Settlement Agreement. Putting that question aside, we are comfortable with the prices and find them reasonable. If Diablo Canyon were placed in rate base at $ 5.5 billion the initial price would be almost double the Settlement Agreement price and, in any event, the ratepayers would have to pay for Diablo Canyon regardless of its production.

4. Price Escalation after December 31, 1994

Beginning on January 1, 1995, the escalating price shall be increased by the sum of the change in the Bureau of Labor Statistics' yearend national consumer price index during the immediately concluded year and [*206] 2.5 percent divided by two.

A forecast of the CPI will be used for setting rates for the ECAC test period. For example, in the year 2000, assuming a CPI increase of 5% annually, the price is 14.046¢ /kWh. In the year 2016, same assumption, the price is 22.788¢ /kWh. In approximately April of each year the ECAC filing is made including a forecast of the following year's Diablo Canyon price based on a forecast of the current year's recorded CPI. Near the end of the year rates are set for the test year based on the forecast. When the recorded CPI is available or revised, Diablo Canyon's expenses are booked using the recorded CPI. Rates are not changed when the CPI changes; booked expenses are changed when the CPI changes.

5. Peak Period Price Differentiation

Beginning on January 1, 1989, the fixed and escalating prices shall be time differentiated to reflect the benefit of increased operation during peak periods. The prices shall be multiplied by the following allocation factors depending on time of operation:

A. A factor of 1.3 for the equivalent of the first 700 hours of full operation for each unit between 10 a.m. and 10 p.m. on weekdays during June through September. [*207]

B. A factor of 0.7 for the equivalent of the first 700 hours of full operation for each unit for any hours of the year not covered by (a).

C. A factor of 1.00 for output not covered by (a) or (b).

The purpose of this paragraph is to give PG&E an incentive to operate during peak periods and schedule downtime during the off peak.

6. Balancing Account

A. PG&E waives all rights to amortize in rates the amounts that have accrued in the Diablo Canyon Adjustment Account (DCAA) from the respective dates of commercial operation of Units 1 and 2 through June 30, 1988. PG&E also waives its rights to collect any litigation expenses recorded or recordable hereafter in the deferred debit account established pursuant to D.86-06-079 or otherwise directly associated with the Diablo Canyon rate proceeding.

B. PG&E shall be entitled to retain all amounts collected as interim rates for Diablo Canyon through June 30, 1988, and those amounts shall no longer be subject to refund.

C. It is the intention of the parties that the rates established by this Agreement shall be effective immediately upon approval of the Agreement by the CPUC.

D. The DCAA shall be maintained until the time to [*208] seek judicial review has expired without review being sought or until all court challenges are terminated, whichever is later (this date shall be referred to as the "final approval date"). The amounts collected by PG&E in base rates for Diablo Canyon costs (excluding decommissioning costs) from July 1, 1988 until the final approval date shall be subtracted from the amounts that would have been received under this Agreement from July 1, 1988, to compute the net amount that would have been received under this Agreement. Upon the final approval date, PG&E shall either refund or amortize and collect in rates for a period not to exceed three years as set by the Commission the amount that is equal to the difference between the amount received under interim rate relief from July 1, 1988, and the net amount that would have been received under this Agreement from July 1, 1988.

This paragraph sets forth a major concession by PG&E, the waiver of the accruals in the DCAA. On July 1, 1988 the DCAA balance was about $ 1.975 billion, based on full recovery of all costs. Foregoing recovery of this amount by itself provides an equivalent disallowance of about $ 1.2 billion. After the final approval [*209] date, the interim rates for Diablo Canyon will be considered final and no longer subject to refund.

7. Basic Revenue Requirement

A. PG&E shall identify and maintain as separate plant or other for future rate recovery, two utility assets in the total amount (after tax) of no more than $ 1.175 billion.

B. One utility asset shall be made up of the excess of equity allowance for funds used during construction (AFUDC) over capitalized interest pursuant to Statement of Financial Accounting Standards No. 34, accrued by PG&E from the start of construction to the commercial operation of each unit. The other utility asset shall consist of certain other incurred costs, including deferred taxes on prior flowthrough timing differences, write-down of nuclear fuel to

market and loss on reacquired debt, but not including the write-off of any amounts in the DCAA as provided in Paragraph 6 above.

C. These utility assets shall be depreciated and collected in base rates on a straight line basis, starting July 1, 1988, using a 28-year life. PG&E shall be entitled to earn its authorized rate of return on these utility assets. Since a significant portion of both utility assets does not have [*210] a tax basis, appropriate taxes shall be computed on the depreciation component and collected in base rates.

D. Nothing in this Agreement shall prohibit the Commission from denying rate recovery on one or both of these utility assets pursuant to Public Utilities Code Section 455.5.

E. As provided in Paragraph 7C, PG&E shall include in base rates the full revenue requirement at the authorized rate of return on the utility assets. This shall be called the "basic revenue requirement."

The "utility assets" are defined in the Implementing Agreement and amount to $ 1.056 billion. They are included in the settlement to avoid an accounting problem which would have required PG&E to take a larger write-off against earnings. The BRR will be adjusted in PG&E's annual attrition proceeding or general rate case. For details, see the Implementing Agreement.

8. Revenue

Except for decommissioning as set forth in Paragraph 10, the costs of the Safety Committee provided for in Paragraph 16, and except as modified by Paragraph 9, the revenue to PG&E shall be computed as follows:

A. The "Diablo Canyon annual revenue" shall equal the sum of fixed and escalating prices as set forth in Paragraph [*211] 3, and as adjusted by the escalation provision of Paragraph 4 and the peak period price differentiation provision of Paragraph 5, multiplied by annual Diablo Canyon net generation.

B. PG&E shall receive in rates, through its Energy Cost Adjustment Clause (ECAC), the difference between the Diablo Canyon annual revenue and the basic revenue requirement.

C. If the difference between the Diablo Canyon annual revenue and the basic revenue requirement is less than or equal to zero, PG&E shall still receive the full basic revenue requirement. However, in that case, PG&E shall be deemed to have triggered the floor provision under Paragraph 9.

D. Except as specifically provided in this Agreement, the operation of Diablo Canyon pursuant to this Agreement and all revenues associated with this Agreement shall be excluded from reasonableness reviews, AER risk allocation, and target capacity factors. Replacement or displacement power costs associated with the level of Diablo Canyon operation shall be recognized in ECAC rates. There shall be no issue in any proceeding as to the reasonableness of PG&E in operating Diablo Canyon or purchasing Diablo Canyon output so as to cause replacement [*212] or displacement power costs to be incurred. The reasonableness of PG&E in choosing among replacement or displacement power sources shall be subject to ECAC review.

E. If the ECAC ceases to be used for PG&E ratemaking, a new ratemaking mechanism shall be developed to carry out the terms of this Agreement.

See the Implementing Agreement for details. For reasons that are obscure, PG&E has, in some paragraphs of the Settlement Agreement and the Implementing Agreement, referred to itself as "purchasing Diablo Canyon output." PG&E explains that it really doesn't purchase the output (unless Diablo Canyon is transferred to a third party), the ratepayers purchase the output and will purchase the entire output regardless of need or price except during hydro spill conditions. And, of course, PG&E will operate the plant at its optimum capacity.

Paragraph 8D provides that the operation of Diablo Canyon is exempt from reasonableness reviews by the Commission. The opponents of the settlement perceive this provision as an abdication of the Commission's duty to fix just and reasonable rates for PG&E. PG&E, to the contrary, views the provision as part of the settlement, all of whose provisions [*213] are binding for the entire length of the agreement. PG&E is giving up its right to traditional ratemaking in exchange for a binding agreement. We agree with PG&E and we see no conflict with our duty to fix just and reasonable rates. The settlement fixes a price for Diablo Canyon output, not rates. The question is whether the Settlement Agreement is just and reasonable today, not whether changed circumstances in the future may make it more or less reasonable.

We have already acknowledged that we cannot bind future Commissions, therefore there is no abdication of our duty to fix just and reasonable rates. But that doesn't mean that we expect a future Commission to review the reasonableness of the operation of Diablo Canyon. We expect the opposite; we expect a future Commission to abide by the settlement and not conduct reasonableness reviews of Diablo Canyon.

Please refer to Section X.I. of this decision for our discussion of the AER adjustment.

9. Floor

A. Except as provided in Paragraph 8C, an annual revenue floor can be triggered at PG&E's option. In the event that the revenue produced by the formula in subparagraph 9B is greater than the basic revenue requirement, [*214] the floor shall be the basic revenue requirement plus the amount by which the formula revenue exceeds the basic revenue requirement. In the event that the revenue produced by the formula is equal to or less than the basic revenue requirement, the floor shall be the basic revenue requirement.

B. The formula revenue shall be the sum of the then current fixed and escalating prices multiplied by a specified capacity factor multiplied by the megawatt (MW) rating. For 1988 through 1997, the specified capacity factor is 36%; it is reduced by 3% in 1998 and again by 3% in 2008. Each time the floor is triggered, 3% shall also be deducted from the specified capacity factor. The MW rating shall be the net Maximum Dependable Capacity of 1,073 MW for Unit 1 and 1,087 MW for Unit 2.

C. The floor payments (including the basic revenue requirement) received shall be repaid with interest from 50% of the revenues received from subsequent year operations over a 60% capacity factor. In addition, the original specified capacity factor for a year may be re-established at PG&E's option through repayment with interest. The interest rate shall be the interest rate on 10-year single A utility bonds [*215] as listed in the last issue of Moody's Bond Survey published in the year in which the floor provision is invoked.

D. If operation falls below the floor capacity factor in three consecutive calendar years (whether or not PG&E invokes the floor), then PG&E must file an application either seeking abandonment, as described in Paragraph 13, or explaining why it believes continuation of this pricing package, including the regulatory asset, is appropriate.

PG&E will establish and maintain a Floor Payment Memorandum Account (FPMA). The FPMA will be used to record all floor payments received by PG&E, to accrue interest on the amount of the floor payments received, and to record all repayments of floor payments. PG&E will invoke the floor prior to January 31 of the year following the year in which Diablo Canyon operates at less than the specified capacity factor. This will usually result in a downward adjustment of the ECAC revenue requirement for Diablo Canyon power. We interpret the application of interest charges to the FPMA to mean that the account will accrue interest monthly, as do other ratemaking accounts.

The operation of the floor payment is one of the most controversial elements [*216] of the settlement. Our concern is the potential for abuse.

Subparagraph 9(C) provides for repayment of the floor payments and appears straightforward. PG&E shall repay the floor payment with interest from 50% of the revenues received from subsequent year operations over a 60% capacity factor. Giving ordinary meaning to the words "payments received shall be repaid with interest" we would conclude that a debt is created. PG&E says no and the DRA and AG agree with PG&E. PG&E goes on to say that 9(C) means that it must repay the floor payments only from 50% of the revenues received from subsequent year operations over a 60% capacity during the term of the agreement. At the hearing, PG&E said if the agreement expires before the floor payments are repaid it keeps the money. The DRA and AG disagree with this interpretation. They contend that 9(C) means that if the floor payments haven't been repaid by the agreement termination date, this Commission may exercise its discretion in disposing of the funds in the FPMA; the Commission may permit PG&E to keep the money, or refund the money to the ratepayers, or do anything in between. At oral argument PG&E's attorney backed away from [*217] PG&E's earlier position that PG&E kept the money and said that the Commission could dispose of the funds in any "lawful" manner. But he was forthright in saying that he believed a refund to ratepayers would be illegal as either retroactive ratemaking or the confiscation of PG&E's property.

To accede to PG&E's interpretation could lead to an anomalous result. If PG&E receives floor payments which are not repaid, the Commission can consider those payments when determining PG&E's recovery on abandonment. But should the balance in the floor payment account exceed the value of Diablo Canyon on abandonment, PG&E's position is that PG&E cannot be required to refund the excess. If that were true, PG&E could earn more by shutting the plant down and collecting three years of floor payments rather than by abandoning the plant in the first year.

The ultimate question before us is whether the settlement is in the public interest; and one of the issues bearing on the ultimate question is the disposition of the FPMA. The following table sets forth for each year the Settlement Agreement is in effect the revenue PG&E would receive if it triggered the floor payments (column f) and the amount [*218] it may request if it abandoned the plant (column g).

Inputs: CPI = 5.0 % per year
FPMA = 10.0 % per year
Floor trigger = Col. (d)
Actual C.F. = Col. (e)

DIABLO CANYON SETTLEMENT AGREEMENT
Pro Forma Floor Payment Calculations

Year	Energy Price (c/kwh)	Specified C.F. (%)	Floor Pmt. (1, if taken)	Actual C.F. (%)	Formula Revenue ($ million)	Abandonment Rights ($ million)	Annual FPMA Entry ($ million)	FPMA Balance ($ million)
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
1988	7.800	36			268	3,000	0	0
1989	8.335	36			568	2,900	0	0
1990	8.931	36			608	2,800	0	0
1991	9.596	36			654	2,700	0	0
1992	10.337	36			704	2,600	0	0
1993	11.164	36			760	2,500	0	0
1994	11.885	36			810	2,400	0	0
1995	12.213	36			832	2,300	0	0
1996	12.553	36			855	2,200	0	0
1997	12.906	36			879	2,100	0	0
1998	13.272	33			829	2,000	0	0
1999	13.652	33			852	1,900	0	0
2000	14.046	33			877	1,800	0	0
2001	14.455	33			903	1,700	0	0
2002	14.879	33			929	1,600	0	0
2003	15.319	33			957	1,500	0	0
2004	15.775	33			985	1,400	0	0
2005	16.248	33			1,015	1,300	0	0
2006	16.739	33			1,045	1,200	0	0
2007	17.249	33			1,077	1,100	0	0
2008	17.778	30			1,009	1,000	0	0
2009	18.327	30			1,040	900	0	0
2010	18.896	30			1,073	800	0	0
2011	19.486	30			1,106	700	0	0
2012	20.099	30	1	0	1,141	600	1,141	1,141
2013	20.735	27	1	0	1,059	500	1,059	2,314
2014	21.394	24	1	0	972	400	972	3,517
2015	22.078	21			0	0	0	0
2016	22.788	21			0	0	0	0
		Total	3				3,172	
				End 2014 FPMA balance				3,517

[*219]

Under the abandonment provisions, in the year 2012, the plant value on abandonment is $ 0.6 billion, but the floor payment if invoked is $ 1.141 billion. If PG&E shut the plant down for the three years 2012, 2013, and 2014, rather than abandon in the year 2012, it would receive, by the end of 2014, floor payments of $ 3.517 billion including interest. Contrast that with the $ 0.6 billion it would have received had it abandoned Diablo Canyon in the year 2012. At the termination of the Settlement Agreement, the FPMA may have a balance in excess of $ 3.5 billion which, under the Settlement Agreement, is $ 500 million more than the abandonment value of Diablo Canyon today! To avoid this inequitable result, the presiding administrative law judge recommended that the settlement agreement be construed to permit the Commission to order refunds of money in the FPMA upon termination of the agreement. PG&E took exception to this and proposed an alternative disposition (set forth in Section X.L.). After considering all the evidence regarding the disposition of the FPMA, we conclude that the solution in the best interest of the ratepayers, when balanced against the rights of PG&E, and in [*220] order to preserve the settlement, is to provide protection to both PG&E and the ratepayers.

We find that the disposition of floor payments shall be made on the following basis:

a. In any year in which floor payments, when added to the preexisting balance in the FPMA exceed the maximum abandonment payment for that year, then such additional floor payments shall be designated as refundable floor payments and received by PG&E subject to potential refund (plus interest) by order of the Commission upon termination of the FPMA if, at that time, the Commission finds that a refund is the preferable disposition.

b. All other floor payments received by PG&E (and interest thereon) shall not be subject to refund, but in accordance with Paragraph c shall continue (1) to be subject to the obligation to repay with interest from one-half of the revenues from production in subsequent years in excess of a 60% capacity factor and (2) to be taken into consideration by the Commission in deciding a reasonable abandonment payment to allow PG&E.

c. All repayments of floor payments from one-half of the revenues from production in subsequent years in excess of a 60% capacity factor shall be applied [*221] to FPMA balances as follows: (1) interest, then principal on the nonrefundable balance; and then (2) interest, then principal on the refundable balance.

Implicit in 9D is the power of the Commission to order PG&E to abandon Diablo Canyon if operation falls below the floor capacity factor in three consecutive calendar years. The Commission would then set the amount PG&E would be entitled to upon abandonment pursuant to Paragraph 13.

10. Decommissioning

This Agreement shall have no effect on revenues for the cost of the eventual decommissioning of Diablo Canyon, which shall receive ratemaking treatment in accordance with Commission policies for decommissioning nuclear plants.

Two issues have arisen from this innocuous sentence. First, decommissioning expense is a function of the operation of the plant. In general, the more equipment that is added to the plant the more costly the decommissioning; further, certain equipment may cost more to decommission than other equipment. It is quite possible for PG&E to make improvements to the plant to promote efficiency which it would not make if it had to consider either the increase in decommissioning costs or whether this Commission [*222] would disallow the cost of the improvements as being imprudently incurred. In our opinion imprudently incurred decommissioning expenses can be disallowed by us under this Settlement Agreement just as we might do under traditional ratemaking.

Second, decommissioning costs are collected tax free (IRC § 468A) so long as the taxpayer obeys certain IRS rules. Today, PG&E is the taxpayer. If PG&E transfers Diablo Canyon to others so that PG&E is not the taxpayer then it may not obtain the tax benefits. Under its current federal tax exemption PG&E collects about $ 54 million a year tax free from ratepayers which is placed in a trust to cover decommissioning costs. If federal taxes had to be paid the $ 54 million would have to be increased by 51% or $ 28 million. To lose the federal exemption would also cause loss of the state tax exemption. This result would be intolerable if PG&E's ratepayers had to pay this tax.

In reply to the ALJ's question regarding the treatment of decommissioning costs should PG&E lose its decommissioning cost tax exemption because it transfers Diablo Canyon to another entity, the proponents did not answer directly, but said "If, at some time in the future, [*223] PG&E is no longer entitled to the tax benefits of the decommissioning trust, the parties expect the Commission to deal with that situation in the same manner the Commission would deal with the issue at any other nuclear plant in the state. . . ." Our policy is that if PG&E were to transfer Diablo Canyon and thereby lose its decommissioning costs tax exemption, PG&E's customers would not be liable for the tax portion of the decommissioning costs and we so interpret Paragraph 10 of the Settlement Agreement.

11. Purchase Policy

PG&E shall have the right and obligation to purchase all Diablo Canyon output, except during hydro spill conditions on the PG&E system. During hydro spill conditions, ratepayers shall not pay for Diablo Canyon output to the extent of the hydro spill. PG&E shall, however, have the right during such conditions to sell Diablo Canyon output.

See the Implementing Agreement for the definition of hydro spill. The effect of this paragraph is that the ratepayers are obligated to pay for Diablo Canyon power as if it were purchased by PG&E under a power purchase contract at the escalating prices set forth in this agreement.

12. Segregation of Costs

A. [*224] For ratemaking purposes, all Diablo Canyon costs shall be segregated from other PG&E operations. No costs of Diablo Canyon shall be included in rates, except as provided in this Agreement. Diablo Canyon costs include

any and all costs incurred by PG&E as a result of Diablo Canyon ownership, including but not limited to administrative and general expenses, operations and maintenance expenses, fuel-related costs, and any payment of the costs of accidents at other nuclear plants assessed to utilities owning nuclear plants.

B. PG&E shall keep full records, including reasonably contemporaneous accounts, to allow identification and auditing of all costs directly allocable to Diablo Canyon. These records shall be consistent with the Uniform System of Accounts and applicable accounting requirements of the CPUC.

The paragraph in the Settlement Agreement that could be expected to cause the most litigation over the life of the agreement is Paragraph 12, which shifts the risks of Diablo Canyon from the ratepayers to PG&E. Elsewhere in this opinion we have discussed the benefits received by the ratepayers as a result of the shift of risk. In this portion of the opinion, we discuss the [*225] effect of the shift on rate of return. The Implementing Agreement expands on Paragraph 12 and directly considers return on equity and cost of capital. PG&E accepts the $ 2 billion equivalent disallowance for its cost of capital determination. The pertinent provisions are:

a. PG&E shall not recover any premium in its authorized return on equity after January 1, 1989 as a result of the Settlement or Implementing Agreement or the operation of Diablo Canyon.

b. Any net increase in PG&E's overall cost of capital that is caused by the operation of Diablo Canyon under the Settlement Agreement as compared to the operation of Diablo Canyon under traditional ratemaking, assuming a $ 2 billion disallowance, shall be considered as a Diablo Canyon cost, and recovered only through the revenues provided under the Settlement Agreement.

To comply with these provisions is easier said than done.

This paragraph raises most clearly the issue of whether this current Commission can bind future Commissions on the manner in which PG&E's rate of return is decided. And even if future Commissions acquiesce in the concept behind Paragraph 12, interpretation and implementation of the paragraph may still [*226] be disputed. The proponents have submitted a detailed discussion of how Paragraph 12 should be interpreted in their Joint Answers to Workshop Questions (Exhibit 515) pages 14 through 23, and further elaboration may be found in portions of the cross-examination of witnesses Ahern, Clarke, and others. Not all of the testimony is consistent.

In determining PG&E's return on equity, the settlement contemplates that the Commission will take into account that PG&E owns a nuclear plant. PG&E should be compared to other gas and electric utilities with those risk characteristics similar to PG&E's risk characteristics assuming that performance based pricing resulting from the Settlement Agreement was not in effect. We are to assume that Diablo Canyon is operating as well as other nuclear plants; no better, no worse. Were Diablo Canyon to perform very badly, that should not be considered in determining PG&E's rate of return. If, however, poor performance of Diablo Canyon affects PG&E's cost of capital, e.g. bond interest is higher, then a downward adjustment should be made. In that instance, the Commission would impute a cost of embedded debt reflecting PG&E as if it had Diablo Canyon [*227] in rate base assuming a $ 2 billion disallowance, and operating an "average" nuclear plant, all under traditional ratemaking. The objective of these complex adjustments is to make sure that the risk being transferred to PG&E is not turned back to the ratepayers through the rate of return.

As a practical matter each time PG&E applies for an increase in its rate of return or the DRA seeks a decrease, a number of studies are required to comply with the Settlement Agreement, among which are (1) a separations study allocating revenues and costs between Diablo Canyon and non-Diablo Canyon, (2) a rate of return study comparing PG&E as a nuclear plant operator with other nuclear plant operators, (3) a study comparing the "average" nuclear plant operation with Diablo Canyon to determine if Diablo Canyon is within the "average" range, (4) if PG&E is found to be below average, a study to determine if the below average performance has adversely affected PG&E's cost of capital and, if so, to make the appropriate adjustment and (5) a study to determine PG&E's investment in Diablo Canyon under traditional ratemaking assuming a $ 2 billion disallowance.

Two results of those studies could be (a) [*228] investors perceive increased risks to PG&E because of the shift to shareholders of the operating risks heretofore borne by ratepayers and demand a higher return on equity. Under the settlement that higher demand must be rejected. And (b) PG&E pays higher interest on its debt because of the perceived increased risks. Under the settlement that increased cost should be borne by Diablo Canyon and, therefore, disallowed in PG&E's rate of return. If Diablo Canyon performs poorly over the term of the Settlement Agreement, we can expect these questions to arise time and again for 28 years.

13. Abandonment Rights

A. If PG&E requests special ratemaking treatment for both units of Diablo Canyon in the event of prolonged or permanent outages, it may ask for recovery of no more than the lesser of these two amounts:

(1) The floor payments which would be paid according to Paragraph 9, for 10 minus (n) years, where (n) is the number of years for which unrepaid floor payments have been received by PG&E; or

(2) $ 3.00 billion in capital costs through 1988, reduced by $ 100 million per year of operation after 1988. In the event of a nation-wide shutdown of all nuclear plants (not just [*229] Westinghouse plants), the capital cost amount computed under this subparagraph may be increased to include the non-equity portion of reasonable direct costs of capital additions, reduced by straight-line depreciation.

B. If PG&E requests special ratemaking treatment for only one unit of Diablo Canyon, it may ask for recovery of no more than one-half the lesser of (1) and (2).

C. Nothing in this paragraph shall preclude the Attorney General or DRA from opposing a PG&E abandonment request requested under this paragraph.

The abandonment provisions are complex, and made moreso when considered in conjunction with the floor payments. As the Settlement Agreement gets closer to its termination date options become available to PG&E which are detrimental to the ratepayer. The proponents are of the opinion that should PG&E ever seek to abandon Diablo Canyon, PG&E would recover under section A.(2) which provides for a maximum recovery of $ 3 billion less $ 100 million per year starting in 1989 (unless there is a nationwide shutdown of all nuclear plants). No one described a scenario which would invoke section A.(1). Pursuant to Paragraph 9 "Floor," PG&E is entitled to obtain floor payments [*230] when Diablo Canyon's operation falls below the specified capacity factor. And PG&E may obtain these floor payments throughout the life of the agreement without repayment if the revenue received from subsequent year operations does not exceed a 60% capacity factor, and without explanation or abandonment if the operation does not fall below the floor capacity factor in three consecutive calendar years. The amount of the yearly floor payment can be substantial. Rather than abandon, it would pay PG&E to shut down the plant, seek floor payments for three years, and then abandon the plant. This negates Section A.(2). This result can be mitigated by limiting the amount to which PG&E is entitled under the floor payments, which we have done. See our discussion in Section IX.9 (Floor) and Section X.L. In the event of abandonment of the plant, the utility assets will be removed from rate base.

14. Treatment After 30 Years

PG&E shall file an application by May 1, 2014 requesting whatever ratemaking treatment it wishes for Diablo Canyon for the period beginning May 7, 2015 for Unit 1 and March 13, 2016 for Unit 2. Nothing in this Agreement shall preclude the Commission from setting [*231] rates on any lawful basis.

The Settlement Agreement may terminate in a number of ways.

1. PG&E may abandon the plant and seek payment under the abandonment provisions. Abandonment includes the case of the NRC's failing to extend the operating licenses of Units 1 and 2.

2. PG&E says it may retire the plant upon expiration of the term of the Settlement Agreement (or perhaps earlier). This option is unlikely to occur as PG&E would be giving up its abandonment rights.

3. Should PG&E keep the plant in operation after the Settlement Agreement expires by its terms, it may request whatever ratemaking treatment it wishes and the Commission may set rates on any lawful basis.

4. The Commission could terminate the Settlement Agreement under its authority to set just and reasonable rates.

One thread that is common to all four alternatives is the disposal of the money in the FPMA. As we have discussed this could be as much as $ 3.5 billion. For the reasons earlier stated this money does not go, ipso facto, to PG&E. Rather, it is to be disposed of according to the procedures set forth in Section IX.9 (Floor).

15. Jurisdictional Allocation

The revenue under Paragraphs 7 and [*232] 8 above shall be computed on a CPUC jurisdictional basis.

16. Safety

An Independent Safety Committee shall be established and shall operate as described in Attachment A which is hereby incorporated by reference herein. (See Appendix C.)

All of the opponents to the settlement also oppose the creation of a safety committee and oppose the safety committee even if the settlement is approved by the Commission. The safety committee consists of three members, one each appointed by the Governor, the Attorney General, and the Chairman of the California Energy Commission. The committee is to review Diablo Canyon operations for the purpose of assessing the safety of operations and suggesting recommendations for safe operation. The committee will receive quarterly reports of some, but not all, Diablo Canyon records and has the right to conduct an annual examination of the Diablo Canyon site. It may request additional records and site visits. It cannot make unannounced inspections. It has no enforcement powers. It is funded as an operating expense of PG&E charged to the ratepayers. Its initial budget is approximately $ 500,000 which increases in proportion to the Diablo Canyon [*233] price increases.

The opponents argue that performance based pricing gives an incentive to PG&E to maximize profits at the expense of safety. PG&E has an economic motive to avoid safety related curtailments and maintenance, especially for safety related problems that do not affect plant performance. Because of this profit motive, safety concerns, it is argued, become even more exacerbated and should be met by vigorous supervision, not by an ineffectual committee, without enforcement powers, politically appointed, which meets once a year and reviews documents long after the fact. The Mothers for Peace assert that the safety committee "is an empty attempt to appease the public's safety concerns. We would go further and say that the Safety Committee would give the public the mistaken impression that it is protected, when the committee cannot and would not add to public safety. As a result, the establishment of the so-called Safety Committee is worse than having no Safety Committee."

The AG and the DRA strongly support the safety committee. While conceding that it has no enforcement powers, the proponents argue that the safety committee's activities will complement those of the [*234] NRC. Because of the strong public concern for safety, PG&E's willingness to establish the committee indicates an openness to public scrutiny. The committee will provide the public and its elected officials with access to Diablo Canyon's operating information, and will have substantial resources, starting with $ 500,000 and increasing annually, to conduct independent inspections and analyses, and with an established vehicle to communicate with responsible government officials. The committee will increase public scrutiny of PG&E's activities which can only have a positive impact on the safety of Diablo Canyon. It will bring important safety information to the attention of the highest energy officials in California, and it will be a responsible, expert body which can make its views known to the NRC.

We believe the safety committee can be a useful monitor of safety at Diablo Canyon, but this can be achieved only if qualified, dedicated people are appointed. The committee will be as good or as bad as the dedication of its members. We are not so cynical to believe that it was proposed in order to lull the public with a false sense of security. And given the close attention paid to [*235] Diablo Canyon safety by the Mothers for Peace and other grass roots organizations, we are confident that the public will not relax its vigilance. The committee, by the terms of the settlement, is subject to our oversight, which includes public hearings, to determine the reasonableness of its activities.

17. Effect of Change in Agreement

Except for an Implementing Agreement, which will be prepared and executed as soon as possible, this Agreement represents the complete agreement among PG&E, DRA and the Attorney General as of the date of this Agreement. This Agreement is subject to approval by the CPUC. Except as expressly provided herein or except as may be agreed to by all parties to this Agreement, any material change in this Agreement shall render the Agreement null and void.

We express no opinion of the consequences should a future Commission, without the consent of the parties to the agreement, make a material change in the agreement.

X. Further Discussion

A. Risk of Going to Hearing

The most important element in determining the fairness of a settlement is the relationship of the amount agreed upon to the risk of obtaining the desired result. The desired [*236] result in this instance being the inclusion of Diablo Canyon in PG&E's rate base at a value of either $ 5.5 billion (favorable to PG&E) or $ 1.1 billion (favorable to the DRA and its supporters). Although the amount in controversy, $ 4.4 billion, is great, that in itself does not measure the risk. The measure is the relative strength of each party's case.

Risk, in the context of a settlement approval, need not be measured with precision, nor can it, without an opportunity to see and hear witnesses and cross-examine them in the underlying action. But if risk cannot be measured

precisely in this instance, still it must be measured. To that end, we believe it sufficient to analyze the risks involved in going to trial on the two major issues of this case: the Hosgri Fault discovery and the mirror image error.

1. The Hosgri Fault

The facts surrounding PG&E's failure to locate the Hosgri Fault, its eventual discovery, and PG&E's reaction to that discovery are set forth in Section III.C. PG&E admits that it did not perform the kind of offshore seismological study necessary to discover the Hosgri Fault; it says it wasn't needed. PG&E admits that it did not revise the response [*237] spectra for Diablo Canyon when informed of the Hosgri Fault; it says it would have been imprudent to do so. And PG&E admits that it changed the response spectra only when ordered by the NRC.

PG&E was prepared to present witnesses and exhibits which would have shown, and might have persuaded us, that:

1. It hired a group of geologists and seismologists who had impeccable credentials and were leaders in their field.

2. Those experts performed extensive onshore and offshore explorations for potential earthquake hazards; but not for the location of the 1927 earthquake.

3. In 1968, the experts knew of the 1927 earthquake and placed its epicenter at 60 miles southwest of the Diablo Canyon site. This was not done through independent investigation but was the location generally accepted by the scientific community.

4. In 1968, the scientific community accepted 0.2g as the maximum acceleration generated by a 7.5 magnitude earthquake.

5. PG&E's experts postulated a 6.75 magnitude earthquake directly beneath the site with acceleration postulated at 0.2g, and designed the plant to withstand earthquake motions twice as strong as those reasonably expected.

6. During the late 1960's, [*238] the scientific community assumed that a magnitude 8.5 earthquake would not cause ground motion greater than 0.5g. And it was not until the results of the 1971 San Fernando earthquake were analysed that higher ground motions were thought possible.

7. During the hearings on the construction permits for Units 1 and 2 neither the AEC nor its consultants, USGS and the USC&GS, thought that offshore seismic profiling was necessary at Diablo Canyon.

8. The epicenter of the 1927 earthquake, first located by Dr. Perry Byerly off the coast of Santa Barbara, was generally accepted in the 1960's at the Byerly location, as shown on the California Department of Water Resources epicenter map.

9. At the time the AEC approved PG&E's seismic work, the USGS knew about the Hosgri Fault, having identified it in 1968 and mapped it in 1970, and testified in 1970 in support of PG&E's seismic design.

10. After the publication of the Hosgri Fault location in the early 1970's, neither PG&E's consultants nor the AEC's staff changed their opinions. Twice during 1974 the AEC opposed efforts to halt construction because of the discovery of the offshore feature.

11. It was not until 1976 that the NRC [*239] required a reevaluation of the plant to 0.75g peak acceleration.

The DRA views the evidence differently. It argues that safe design is the most important aspect of nuclear plant design, that geoseismic siting studies at best are imprecise, involve significant uncertainty, and allow for different interpretations over which experts can be expected to differ. Therefore, the DRA asserts, conservatism in analysis and design is paramount and PG&E was not conservative.

The DRA was prepared to present witnesses and exhibits which would have shown, and might have persuaded us, that:

1. PG&E failed to perform any but the most perfunctory offshore seismic analysis. At the time of PG&E's investigation in the 1960's, seismic reflection techniques were well known, were available, were cheap, and were used by PG&E's consultants at other prospective sites.

2. PG&E's consultants failed to evaluate the location of the 1927 earthquake southwest of the site.

3. PG&E's consultants, in the late 1960's suspected the existence of offshore faults but did not conduct any studies.

4. Prior to 1960 at least three published epicenter locations of the 1927 earthquake placed the location nearer to the [*240] site than Dr. Byerly's placement.

5. Given four conflicting published locations of the 1927 earthquake and the inherent uncertainty in establishing the location of an offshore earthquake, a conservative approach would have been to conduct an offshore investigation.

6. The assumed 6.75 magnitude earthquake design basis at the site was not conservative. It was assumed to occur 12 miles below the site. Smaller earthquakes closer to the site would have required a higher design basis.

7. The USGS neither discovered, nor assessed the earthquake capacity of the Hosgri Fault prior to 1973.

8. Seismologists recognized, prior to the 1960's, that ground accelerations as high as 1.0g not only could occur, but had occurred.

9. Regardless of what was or was not done prior to 1972, after the Hosgri Fault was referenced in published material in 1971, PG&E should have recognized its implications and immediately started to reevaluate the source of the 1927 earthquake.

10. Upon reevaluation, PG&E should have known that the Hosgri Fault might be capable of a very large earthquake and that the 1927 earthquake could have occurred on the Hosgri Fault. For seismic design purposes, taking the [*241] most conservative approach, PG&E should have assumed that an earthquake of similar magnitude could recur on this fault within three to five miles of the plant site.

11. Acting promptly, PG&E should have conducted offshore explorations and disclosed the results to the AEC by July 1973.

12. In 1975, a USGS study reevaluated the location of the 1927 earthquake, found the Byerly location to be in error, and said that the earthquake could have occurred on the southern end of the Hosgri Fault.

13. From the date PG&E learned of the Hosgri Fault in October 1972 until the NRC ordered a reevaluation in May 1976, PG&E continued to construct the plant and essentially completed it. The redesign came three years after PG&E had knowledge of the Hosgri Fault and, therefore, was much costlier to implement.

PG&E's witnesses and the DRA's witnesses are in conflict on every major point of the seismological issues. Some of the conflict is a difference of opinion, e.g., the degree of conservativeness used by PG&E in its seismic investigations. Some of the conflict is more factual, e.g., Did the USGS know of the Hosgri Fault prior to 1970 when it approved PG&E's seismic designs? Both sides present [*242] their position through experts, well qualified, experienced, and of stature in their fields. The stakes are high. To adopt the DRA's position in toto, the disallowance could be as much as $ 4.4 billion; to adopt the position that PG&E's original seismic studies were reasonable but that PG&E should have recognized its error in 1972 and commenced the needed modifications could result in a disallowance of as much as $ 3.4 billion. The risk to the DRA is not quite as large. If PG&E's position were adopted, there would be no disallowance for its failure to discover or recognize the implications of the Hosgri Fault, but the question of the mirror image error would remain. The risk to the DRA on the Hosgri Fault issue is approximately $ 2 billion. In our opinion, there is substantial evidence which would sustain a decision for either PG&E or the DRA. We find there are substantial risks to both parties in going to hearing on the Hosgri Fault issue.

2. The Mirror Image Error

A description of the mirror image error and how it occurred is set forth in Section III.D. There is no dispute that an error was made by PG&E and its contractors. The dispute is over the consequences of [*243] the error. The DRA contends that the mirror image error triggered the IDVP and all of the resulting costs, some $ 2.4 billion. PG&E contends that the error was minor and did not trigger the IDVP; that the IDVP was caused by national politics, when Congress got angry with the NRC and the NRC had to defend its reputation as a tough regulator and chose PG&E as a scapegoat.

The DRA was prepared to present witnesses and exhibits which would have shown, and might have persuaded us, that:

1. PG&E's management was not competent to manage a large, complex project that had inherent risks several times greater than any of PG&E's previous construction projects.

2. PG&E's board of directors took only a perfunctory interest in the construction and costs of Diablo Canyon.

3. PG&E's management, using the traditional functional organization structure, was too informal and haphazard to grasp and control the complexities of a project the size of Diablo Canyon. A project manager system which would provide a single focus for project decision making and cost control was needed.

4. PG&E's quality assurance program was inadequate. Prior to 1982 it was not independent and was understaffed. The [*244] QA inspectors could only suggest change, not order it, and were intimidated by the engineers whose work was being inspected.

5. The redesign effort required by the NRC's adopting a 0.75g acceleration standard was not done in accordance with the rigorous, well controlled, formal methods that a quality assurance program would have mandated.

6. After the mirror image error was disclosed and further investigation revealed additional design errors, the NRC lost confidence in the adequacy of the design of Diablo Canyon.

7. Because of the loss of confidence, a review of the adequacy of the entire design of Diablo Canyon was undertaken and numerous errors were found; so many that PG&E chose to abandon its justification of the plant design, and, instead, did a complete reanalysis of all major structures and piping installation, making the necessary modifications.

8. PG&E was cited by the NRC for making a Material False Statement, a violation of NRC regulations, concerning the independence of consultants working on the verification process. As a penalty, the NRC imposed strict reporting requirements and procedures to assure an independent review. Those procedures caused the redesign [*245] effort to become cumbersome, time consuming, and very expensive.

9. The IDVP required literally tens of thousands of design reanalyses and modifications. For example, about 27,000 pipe supports were reanalyzed, resulting in modifications to over 55% of the pipe supports in Unit 1 and 80% of the pipe supports in Unit 2.

10. The cost of complying with the IDVP and restoring the NRC's confidence in PG&E and in the design of Diablo Canyon was $ 2.4 billion.

PG&E emphatically disagrees with the DRA's assertions. PG&E states that the mirror image error was minor and did not compromise plant safety. It argues that the entire design verification program was politically motivated. It was not that the NRC lost confidence in PG&E, but that Congress lost confidence in the NRC. The IDVP was imposed to restore the NRC in Congress' eyes as a tough regulator. And almost all of the costs of the IDVP occurred as a result of redesigning the plant to 1982's standards rather than determining if the plant was adequately designed to the standards in place when the plant was originally constructed, i.e., mid-1970's standards.

PG&E was prepared to present witnesses and exhibits which would have [*246] shown, and might have persuaded us, that:

1. Diablo Canyon was discussed at virtually every board meeting, although not always shown in the minutes, and senior management was involved in every important aspect of the project.

2. PG&E's use of a functional form of organization for the Diablo Canyon project was in keeping with PG&E's proven record for quality design and construction and with industry standards at the time for the design and construction of nuclear power plants.

3. The use of a project management system was in its infancy in the 1960's and PG&E would have been irresponsible to have used a new and untried form of organization on a project the size of Diablo Canyon. Errors would have multiplied and costs would have compounded.

4. PG&E's quality assurance program met all NRC requirements. The NRC staff reviewed the program periodically and, until late 1981, always found it adequate.

5. The NRC did not lose confidence in PG&E. Only 13 design errors were found after the mirror image error investigation, all of which were random and isolated in nature, and none of which compromised the safety of the plant.

6. Other plants which had design errors did not have [*247] their license suspended nor an IDVP imposed. Therefore, the NRC had reasons other than design error for imposing the IDVP and those reasons concerned the Congress' view of the NRC.

7. The NRC suspended PG&E's license and imposed the IDVP as a reaction to Congressional criticism, as symbolic gestures designed to restore the NRC's credibility as a tough and competent safety regulator.

8. The Diablo Canyon design was not reviewed retrospectively, using the design techniques and methods of the construction period (which had been approved by the NRC), but was reviewed using state-of-the-art analysis. The NRC employed the Brookhaven National Laboratory as consultants to review the IDVP according to the most modern standards.

9. Advances in computer technology and modelling techniques made far more sophisticated finite element analyses possible by the time the IDVP reviewers were examining Diablo Canyon than were possible when the design was originally done.

10. As a result, over one billion dollars was spent on plant modifications to make the completed plant comply with the most up-to-date analytical techniques. These modifications were upgrades, not the correction of errors. [*248]

11. At least one billion dollars of the DRA's proposed $ 2.4 billion mirror image error disallowance was attributable to costs for normal plant completion and regulatory compliance activities which would have been incurred regardless of the mirror image error.

12. Finally, if an economically sound quantification method were used (the Revenue Requirement Operations) to determine the cost of the mirror image error, rather than a $ 1.4 billion mirror image disallowance, the amount would be closer to $ 791 million.

The stakes attributable to the mirror image error are as high as the seismic issue stakes, and are estimated by the DRA at about $ 2.4 billion if the total cost of the IDVP is considered the proximate result of the error. For the reasons stated in the testimony above, PG&E places the damages at about $ 100 million. While admitting the error, it asserts the error was minor and the IDVP and its costs were caused by intervening events that had no relation to the error. Wherever the truth may lie, the issue is hotly contested with the usual experts on each side. Both parties bear the risk of failing to persuade us and, not unreasonably, desire to mitigate that risk by [*249] settling. As with the Hosgri Fault issue, the mirror image error issue could go either way.

The opponents argue that the settlement amount is inadequate and should be rejected. They argue that the DRA has presented a strong case for a $ 4.4 billion disallowance which was not refuted by PG&E in spite of the number of experts who were prepared to testify in its behalf. Further, they contend that the $ 2 billion equivalent disallowance is a deceptive number based on an unwarranted assumption that Diablo Canyon would perform at an average capacity factor of 58%.

The point of a settlement being to avoid the risk of a trial, we can't try the lawsuit to determine if the opponents are correct. But we can use our experience to decide whether a case has merit. That is a function of a settlement judge. For the reasons discussed above, we believe PG&E's and the DRA's case both may have merit. Whether the $ 2 billion equivalent disallowance is a firm figure is another question, and is discussed below.

A settlement of $ 2 billion in present value plus other benefits when the amount in controversy is $ 4.4 billion, given the diversity of expert opinion, the years of preparation, the testing [*250] of each side through depositions, and the inherent uncertainty of any kind of juridical decision, is reasonable.

B. Timing of the Settlement

One helpful test of the adequacy of a settlement relates to the progress of the litigation at the time the settlement is offered. The more one knows about the merits of the controversy, the easier it is to decide if a settlement is fair. In this instance, the proceedings went to the day of hearing before the settlement was reached. Hundreds of volumes of prepared testimony were received and thousands of pages of discovery were exchanged. The only thing lacking was cross-examination of the witnesses in open court and much of that was anticipated in extensive depositions. The proponents of the settlement had more than enough information to reach a reasonable resolution of the issues and those opposed had that same information available to them. No one can complain of a lack of availability of competent information upon which to base a judgment regarding the adequacy of the settlement.

The Commission is almost as knowledgeable as the parties. Although we do not have the benefit of the depositions nor are we privy to the settlement [*251] discussions, the record before us provides ample information regarding the merits of the settlement. The amount in controversy is known, the amount and other benefits offered can be determined

with a reasonable degree of accuracy, and the risks of litigation can be reliably analyzed. The timing of the settlement could not have been better.

C. Amount Offered in Settlement

The amount offered in settlement is not a fixed sum or an easily determinable sum, but is an amount which can only be estimated based on the life of the settlement agreement and the assumptions regarding Diablo Canyon's reliability over that life. The DRA and the AG have estimated the offer to have a present value equivalent to a $ 2 billion reduction in rate base, which PG&E has accepted for its cost of capital determination. Additionally, the settlement agreement is beneficial to PG&E's ratepayers because it shifts the substantial risks of poor plant performance and runaway future costs from the customers to the utility, provides a reasonable price for Diablo Canyon electricity until the year 2016, and provides a reasonable package of provisions governing future regulation of the plant.

Under traditional [*252] cost of service ratemaking for a utility-owned power plant, the CPUC allows the reasonable construction costs into PG&E's rate base; PG&E earns in rates its rate of return and recovers depreciation on the rate base, usually without regard to plant performance; PG&E applies for and obtains in base rates all reasonable costs of operations, maintenance, administration, and overheads; and PG&E receives nuclear fuel costs in separate fuel cost offset proceedings.

Under the settlement, PG&E receives from its customers a price applied to the actual electricity produced by Diablo Canyon. If the plant operates poorly, PG&E suffers. If it operates well, PG&E is rewarded with higher revenues. In this manner operating risks are shifted from ratepayers to the utility and its shareholders. Given the examples of poor nuclear power plant performance and the high risks associated with nuclear plants, the shifting of the operating risk from PG&E's customers to the utility has real value to PG&E's customers, perhaps worth hundreds of millions of dollars. In California, the examples of Rancho Seco, San Onofre Unit 1, and Humboldt show the high costs for which customers are responsible under cost [*253] of service ratemaking when a nuclear plant operates poorly.

Nuclear plants experience recurring need for new additions after initial construction is finished. The NRC can require new programs and facilities to promote safety. The size and complexity of the plants create high cost and capital addition risks. Under performance based pricing the risk of unusually high costs for plant modifications, operations, maintenance, insurance, security, and other plant activities are shifted from the customers to the utility.

The settlement is estimated to provide for an equivalent rate base disallowance of about $ 2 billion, using a set of reasonable or conservative assumptions about future Diablo Canyon operation and costs, including a 58% capacity factor. This means that the settlement treats PG&E's customers financially over the life of the plant as if the Commission had disallowed $ 2 billion of Diablo Canyon's construction costs from PG&E's rate base. Estimates of equivalent rate base disallowances can, however, vary widely with different assumptions about future plant operation and costs. For example, a 70% average plant life capacity factor assumption results in an equivalent rate [*254] base disallowance estimate of less than $ 800 million, while an assumption of a capacity factor as poor as Rancho Seco's, about 40%, results in a disallowance estimate of nearly $ 4 billion. A $ 2 billion disallowance exceeds any other state's disallowance adopted for an operating nuclear plant.

A number of the settlement's provisions provide PG&E with some downside risk protection, particularly the floor price provision. Under reasonable scenarios, however, the settlement's treatment of prolonged outages is more favorable to PG&E's customers than traditional ratemaking. The abandonment provision protects ratepayers while providing limited protection to PG&E. Under traditional cost of service ratemaking, a plant stays in rate base until removed by the Commission, which can take years (Humboldt), and the customers are responsible for reasonable uncollected ownership costs. The settlement's abandonment provision limits the amount that PG&E can request after Diablo Canyon abandonment, and the other parties can oppose the request.

We are under no illusions about the firmness of the amount of the settlement. Not only is the $ 2 billion equivalent disallowance based upon assumptions [*255] of the effect over 28 years of variables such as capacity factor, rate of inflation, O&M expenses, and capital additions, but also we are of the opinion that PG&E does not believe the equivalent disallowance is $ 2 billion or anything near it. PG&E has agreed to the arithmetic, not the assumptions. If PG&E thought that it was giving up the equivalent of $ 2 billion in rate base, prudence would dictate that it negotiate a $ 2 billion rate base reduction and keep the plant in rate base; let the ratepayer retain the risks of downtime, inflation, cost overruns, capital additions, NRC regulations, etc. Its acceptance of the settlement signifies to us that it believes it can operate the plant at more than a 73% capacity factor at reasonable costs for the term of the agreement. And it believes it can operate the plant safely.

The DRA and the AG think otherwise and expect the equivalent disallowance to be greater than $ 2 billion, while admitting that good performance by PG&E is possible. Our crystal ball is no clearer than the parties regarding future performance and costs so we accept the $ 2 billion estimate. But we find that shifting the risk of operation from the ratepayers to [*256] PG&E is the most significant benefit gained by the ratepayers and tips the scale in favor of the settlement.

D. Capacity Factor

The DRA and the AG have based their $ 2 billion settlement amount of a number of assumptions regarding PG&E's operation of Diablo Canyon, the most controversial being the capacity factor. The capacity factor percentage is derived by dividing the kilowatt hours actually generated in a given period by the maximum amount of kilowatt hours which could be generated in the period. The principal reason for low capacity is downtime. When a plant or a unit operates, it operates at near 100% capacity and when it is down, it is at 0% capacity. All nuclear plants have downtime for scheduled outages, refueling outages being the lengthiest, which prevent the capacity factor from exceeding 80% or so. It is the unscheduled outages which bring the capacity factor below expectations. Those kinds of outages include plant modification to meet more stringent regulatory requirements, replacing steam generators or pipes, unexpected salt water corrosion, and accidents. The DRA and the AG have assumed that PG&E will operate Diablo Canyon at a 58% capacity factor for [*257] the next 28 years. We will accept the assumption, but not with the fervor of its proponents. Our analysis of the underlying statistics leads us to conclude that if the plant operates for 28 years, and that is a very big "if," it will operate at well above a 58% capacity factor.

A review of the testimony shows the fragility of the 58% estimate. Mr. Myers, the DRA witness concluded that it appears most likely that Diablo Canyon will operate in the range of 50% to 70%; the average for comparable plants ranges from 55% to 65%; therefore, a reasonable estimate for Diablo Canyon "should be in the range of 55% to 65%." He settled on 58% because it is the average of the capacity factors for Westinghouse four-loop PWRs and the average of large Westinghouse PWRs which have been in operation for more than five years. He presented the following table of his primary statistics.

CUMULATIVE CAPACITY FACTORS FOR NUCLEAR PLANTS n1

	Time-Weighted Average (%)	Under 50%	50-60%	60-70%	Over 70%
All Plants	61.1	14	26	29	33
Five+ Yrs Op	60.7	12	20	20	15
All PWRs	63.1	7	13	20	27
All BWRs	57.3	7	13	9	6
All W PWRs	64.9	3	10	12	19
Five+ Yrs Op, W	64.4	3	8	9	9
All W PWRs 750+	59.9	3	9	9	12
Five+ Yrs Op, W, 750+	58.3	3	7	6	2
Post-TMI, W	61.7	2	5	3	10
W, Four-Loop	58.0	3	6	7	7
Five+ Yrs Op, W, 4-Loop	55.8	3	5	4	0

[*258]

n1 Diablo Canyon Nuclear Power Plant has a Westinghouse four-loop pressurized water reactor.

He said that through May 1988, Unit 1's cumulative capacity factor was 70% and Unit 2's, 76%.

Mr. Marcus, the AG's witness, testified that he calculated the 58% capacity factor as the time weighted average performance, through January 1988, of 83 nuclear plants over 700 MW that have been in commercial operation in the U.S. He said that Diablo Canyon's current performance is above average, it is operating at a 67% capacity factor after three completed fuel cycles.

PG&E, while accepting the 58% capacity factor for the purpose of this settlement has, in other proceedings, taken a markedly different view. Mr. Clarke testified that PG&E expects to operate the plant at a 65% to 70% capacity factor. At 70% the equivalent disallowance would be approximately $ 500 million. In PG&E's 1988 ECAC proceeding the estimate for 1989 is near 70% and the California Energy Commission's (draft report) estimate of capacity is near 72% for 1988. Mr. Maneatis testified that if PG&E could maintain a capacity factor of between 73% and 75% over the remaining life of the plant it would sustain no disallowance, [*259] all other assumptions being the same. A 1987

PG&E 20-year nuclear fuel forecast assumed a 67% capacity factor, and a 1988 PG&E five-year nuclear fuel forecast assumed a 65% capacity factor.

The 58% capacity factor estimate is based on averages of nuclear plants, some that operate much better than average and some that operate much worse than average. And none have operated for 30 years; at most 15 years for a comparably sized plant. None of the analysts made a specific analysis of Diablo Canyon taking into account that it has been the most closely inspected plant ever constructed and apparently none considered (although they knew of) the views of the managers of PG&E as to how well the plant is expected to operate. Nor, evidently, did they consider the current high capacity factor. Because of the use to which the capacity factor is put, we are surprised that the DRA did not include recent data and the forecasts of PG&E as part of the equation. Under the circumstances, the expectation of the chairman of the board of PG&E that Diablo Canyon will perform at a 65% or better capacity factor throughout the term of the settlement agreement should not be ignored. Nevertheless, because [*260] the experts are unanimous, and because of the importance we attach to shifting the operating risks from the ratepayers to the company and the high risk of unscheduled outages, we accept the 58% capacity factor of the DRA and the AG as a reasonable basis to compute the equivalent disallowance.

E. Shifting of Operating Risk

The most important feature of the settlement, and the most novel, is the shift of the risk of operating Diablo Canyon from the ratepayers to PG&E. Because of this shift, PG&E assumes the risks of poor operation and cost overruns, which under traditional regulation usually fall on the ratepayers, and obtains the benefits of efficient operation and excellent performance. In determining the value of the settlement PG&E made certain assumptions regarding the operation and maintenance expenses and capital addition costs that it has agreed to pay for the next 28 years. Should those assumptions prove wrong and unforeseen extraordinary expenses occur PG&E must absorb the additional costs. Especially in the area of plant safety there is a high risk of unforeseen costs. The history of regulation since TMI is replete with instances of NRC demands for improved safety [*261] and new safety equipment which required the unanticipated expenditure of tens of millions of dollars. That burden, which conventionally is imposed on the ratepayers, is now to be borne by PG&E.

A public utility such as PG&E under traditional regulation operates in a sheltered workshop environment. Its rates are fixed by the Commission to cover its operating costs and a reasonable return on rate base. If a plant goes out of service, rates are set to cover that cost. On a theoretical level, the Commission could disallow imprudent costs, but except for major construction projects such as Diablo Canyon and San Onofre, that rarely happens. The phenomenon of an increase in employees in the year prior to a rate case and their subsequent decrease after rates are raised is not unknown in utility regulation. The point is that the risks of utility operation are usually borne by the ratepayer but the benefits of efficiency are not always attained. Utility management does not have the same incentives which are attributed to the private sector. This is not to say that the ratepayers do not benefit from regulation - they do - and the benefits are substantial, particularly protection from [*262] abuse of monopoly power, but in the case of the Diablo Canyon settlement, one can readily see the benefits to both the ratepayers and PG&E of the shift in risk. Nothing expresses the risks in this shift of risk better than PG&E's insistence on a floor payment provision and an abandonment provision. Risk obviously has its limits.

The floor payment provision, while giving limited protection to PG&E, aptly illustrates the shift of risk from the ratepayers to PG&E. The floor, at most, provides revenues equivalent to those earned by operations at a 36% capacity factor, well below the industry average 58% capacity factor. In case of a shutdown and invocation of the floor, the loss of revenue would be substantial, and the repairs required to regain efficiency would be expensive. Under conventional regulation that loss of revenue and cost of repairs would be borne by the ratepayers; under the settlement PG&E is responsible. Over the life of the agreement one would expect changes requiring capital additions or maintenance expenses in excess of those currently contemplated, extra costs that would normally be recovered from the ratepayers. Under the settlement, PG&E must recover those [*263] costs from revenue generated by Diablo Canyon.

However, balancing the risks PG&E is assuming, is the opportunity for PG&E to operate more efficiently than average and thereby reduce costs and increase revenues. It is estimated that each percent of capacity equals about $ 100 million in disallowance. Should PG&E sustain a capacity factor of 62% over the life of the plant, the proposed settlement would be equal to a $ 1.6 billion disallowance. Although imprecise, the effect on PG&E's revenue of operations at Diablo Canyon above or below the 58% average capacity can readily be computed. A large portion of PG&E's profits or losses will be determined by Diablo Canyon's performance. PG&E can fare well or poorly under the

performance based pricing plan of the settlement; both the risk of poor plant performance and the benefit of good performance are put on PG&E. n19

n19 Performance based pricing is a new concept in regulation, being embraced by some as a modern day revelation. When seen from the perspective of the nonregulated world, however, where companies have to compete, it is a concept at least as old as Adam Smith and probably as old as Adam and Eve.

The opponents' principal [*264] argument against performance based pricing is that it is an incentive scheme which will encourage PG&E to maximize plant operations so as to maximize revenues and to disregard safety concerns that only affect safety but do not enhance plant performance. They buttress their position with past statements from the AG and the NRC which voiced similar concerns. The witnesses for PG&E, the AG, and the DRA were cross-examined at length on this issue and all testified that they were satisfied that the settlement, rather than increasing the concern for safety, actually reduces the concern. The testimony of the Director of the DRA is representative, and persuasive. He testified that shifting the operating risks from the ratepayers to PG&E provides PG&E with a strong incentive to operate Diablo Canyon efficiently, carefully, and safely. Since revenue is tied to performance, it is to PG&E's interest to operate so that the possibility of shutting down the plant is reduced to the minimum. In our opinion, it would be economically irresponsible (not to mention morally reprehensible) for PG&E to neglect safety for short term gain; and we cannot envision long term gain if safety is neglected. [*265] The threat of an NRC shutdown with the likely imposition of an Independent Safety Verification Program is a risk even the most avaricious investor would not hazard. It is more likely that PG&E would lower its safety guard if the ratepayers bore the risk than when PG&E bears it. In effect, PG&E is betting the company that it will operate safely and profitably.

F. Shutting Down Diablo Canyon

The evidence presented by the Redwood Alliance regarding the savings to be achieved if Diablo Canyon were shut down is not persuasive. Dr. Bernow testified that his study of the economics of closing the plant was preliminary and more investigation was needed. But he also testified that should the additional investigation confirm his preliminary analysis that it would be economically justified to shut down Diablo Canyon, then the revenue analysis should be expanded into a social and environmental cost benefit analysis. PG&E's testimony on plant shutdown, also preliminary, reaches the exact opposite conclusion. We need not reconcile the two positions as the evidence, admittedly, is insufficient and to obtain an adequate record would require, at the very least, months of preparation and [*266] months of hearing time. One of the purposes of the settlement is to avoid spending those months. Dr. Bernow's testimony has not persuaded us that the settlement is not in the public interest.

Nor is Mr. Kinosian's testimony persuasive. First, it only applied to the 1988-89 test year and second, it failed to properly allocate decommissioning costs, which, if it had done so, would have shown the cost savings in shutting down Diablo Canyon were negligible.

G. Rate Relief

A large part of the estimated $ 2 billion equivalent rate base reduction is the value of PG&E's waiver of its right to collect in rates the uncollected balance accrued in the DCAA, approximately $ 2 billion as of July 1, 1988, which, assuming the entire plant were in rate base, has a present value to the ratepayers equivalent to a disallowance of $ 1.2 billion.

Some comparisons are helpful to put the rate relief offered by the settlement in perspective. For instance, under the settlement Diablo Canyon energy will be priced at 7.8¢ /kWh at the start. In contrast, if the full costs of Diablo Canyon were allowed, and if the DCAA were amortized over 10 years, the starting price would exceed 15¢ /kWh, requiring [*267] a 25% increase in rates. Avoidance of this potential rate shock is a benefit not to be ignored. The 7.8¢ /kWh compares favorably with electricity produced by SONGS 2 and 3 which is priced at about 9.5 to 10¢ /kWh.

The opponents of the settlement argue that because the price for electricity is fixed by the settlement, the public is denied the benefits of lower oil and gas prices for some 28 years. Should oil and gas prices remain low, the settlement allows PG&E to run Diablo Canyon constantly, taking advantages of the higher priced electricity and losing the benefit of low alternate fuels, to the detriment of the ratepayers. PG&E argues, not surprisingly, that the stable settlement price is a boon to ratepayers because it takes some uncertainty out of pricing - the ratepayer is not at the mercy of events beyond control. Opponents argue that setting prices by formula for 28 years is a "crystal ball calculation" and they recommend adjusting the settlement price every two or three years based on current market constraints. Implicit in the

crystal ball comment is the expectation that over time market rates will be more favorable to the ratepayers than the settlement prices. We are [*268] not as sanguine as the opponents. More to the point, price is but one element of the settlement and cannot be isolated without destroying the settlement. We believe the price is reasonable.

H. Hearing Costs

Although a relatively minor item, as a result of the settlement tens of millions of dollars are expected to be saved in hearing costs, both for this hearing and for future hearings. PG&E estimates it has about $ 100 million in sunk costs of litigation (which under the settlement it waives) and expects another $ 10 million in costs should a full prudence hearing be held. The Commission's costs are much lower, but still significant. We believe that not only will the savings be substantial if a prudence hearing is foregone, but also down the road we will avoid hearings every two or three years for the next 28, on Diablo Canyon capital improvements, prudence, operations, and rates; a more than substantial savings for the ratepayers.

Added to the real dollar savings are the intangible benefits of diverting management and Commission effort from lawsuits to productive work, freeing professional staff for other projects, and permitting the Commission and its staff to assist [*269] those whose problems in their own eyes seem equally pressing.

I. Annual Energy Rate (AER) Adjustment

The settlement requires that Diablo Canyon revenues be excluded from PG&E's AER. Nuclear fuel expenses are now subject to AER revovery, and those expenses will be removed. In addition, PG&E expenses for replacement or displacement fuel due to operation of Diablo Canyon will be removed from AER recovery, through an annual adjustment at the end of each AER forecast period. For example, if Diablo Canyon production is greater than amounts forecast in a given ECAC proceeding, then PG&E expenses for other fuels will be reduced from the ECAC forecast, and PG&E would increase its earnings through the AER. The annual AER adjustment will reduce customer costs by crediting the ECAC balancing account with the AER fraction of the displacement fuel expenses foregone by PG&E. If Diablo Canyon production is les than forecast, an opposite adjustment will be made to prevent PG&E losses through the AER.

This mechanism is explained in the Settlement Agreement (Section 8.D), the Implementing Agreement (Sections 8.A.1, 8.B.3), Exhibit 513 (Question and Answer 5j at pp. 17-18), and Exhibit 515 [*270] (Questions and Answers 2, 3 and 4 at pp. 32-35; example calculation at p. 45). The settlement proponents propose a formula for making the annual adjustment, found in the tariff provisions of Exhibit 93,303. However, in Exhibit 515 the proponents recognize the possibility of altering that formula. PG&E witness Long testified that the Commission can adjust the terms of the formula without voiding the settlement. We will take that opportunity now.

Witness Long testified that the AER adjustment operates at PG&E's system margin. PG&E witness Hindley testified that use of a production cost model is a good way to calculate incremental costs, and that use of such a model would be a better way to estimate incremental costs than use of the system average heat rate found in the proposed tariff formula. Therefore we will change the formula to substitute an appropriate incremental energy rate (IER) for the proposed system average heat rate.

Witness Long testified that the IER used to calculate Qualifying Facilities (QF) payments is the wrong IER for the annual AER adjustment, but that IERs can be easily derived. We agree, and we will order PG&E to calculate an appropriate IER, to be called [*271] the Diablo Incremental Energy Rate (DIER) to distinguish it from the QF IER, as follows.

In each ECAC case the QF IER is developed by calculating the difference in operating costs between two scenarios, QFs-in and QFs-out, then dividing that difference by the energy purchased from the QFs and by the Utility Electric Generation (UEG) gas rate. The total costs for each scenario are computed using production cost models. The DIER should be developed in much the same way, by calculating operating costs for two scenarios, both of which should assume QFs-in, for which Diablo Canyon output is 10% above and 10% below the capacity factor or availability factor assumed in the calculation of the QF IER. The DIER is then the difference in costs between the two scenarios, divided by the difference in Diablo Canyon generation and by the same UEG gas rate used in the QF calculation. This calculation should not be difficult because all model assumptions have been made in the process of determining the QF IER. If the specified 10% deviations are so small as to yield erratic DIER values, PG&E should revise the deviations appropriately and justify its revisions.

PG&E should make the calculations [*272] using the model conventions and resource assumptions adopted in A.88-04-057, its current ECAC proceeding, and report the resulting DIER with its first annual Diablo Canyon compliance filing. Future DIERs should be litigated in ECAC proceedings, not simply provided by PG&E.

J. Ratemaking

To implement the settlement we must authorize revisions to PG&E's revenue requirements, customer rates, and ratemaking account balances.

The revenue requirements and rates adopted will become effective January 1, 1989. Revenue requirements will be changed for four of PG&E's rate elements: Base Energy Rate, Energy Cost Adjustment Clause (ECAC) rate, Annual Energy Rate (AER), and Diablo Canyon Adjustment Clause (DCAC) rate. The net change to 1989 revenue requirements (relative to currently authorized revenues, not present rate revenues) is an increase of $ 284.212 million, as developed in Appendix G. This is an increase of 5.2% over currently authorized revenues.

This decision will not authorize actual customer rates. Rather, the authorized revenue changes will be incorporated into the revenue allocation and rate design developed in PG&E's current ECAC/AER/ERAM proceeding, A.88-04-020 [*273] and A.88-04-057. Rates authorized in that case may also consider 1989 revenue changes for financial and operational attrition.

Although rate and revenue changes due to the settlement will become effective January 1, 1989, the settlement terms dictate account revisions to adjust PG&E's revenues as if the settlement had been effective for the period July 1 - December 31, 1988. Adjustments for base rate, ECAC rate, AER, and DCAC rate revenues will be consolidated into a single net adjustment to be made to the ECAC account. The net adjustment cannot be calculated until early 1989, because it depends on recorded sales, expenses, and plant generation through the end of 1988. Appendix G shows the method for making the net adjustment. PG&E will be authorized to make the appropriate account adjustments in early 1989, notifying the Commission and all parties after the adjustments are made.

During the settlement hearings PG&E revised its requested tariff language to implement the settlement. The revised tariff sheets are shown in Exhibit 93,303 and should replace the tariff sheets appended to the Implementing Agreement. The DRA and the AG concur that the revised tariffs will correctly [*274] implement the terms of the settlement. We also agree, with the exception that the tariff provision for the yearly AER adjustment be modified to replace system average heat rate with the DIER as explained in Section X.I. above.

In order to stay informed about the operation and costs of Diablo Canyon, we will order PG&E to file an annual Diablo Canyon Compliance Report commencing in 1989. The reporting requirements reflect workshop discussions and are shown in Appendix H.

K. Intervenor Compensation

The Public Solar Power Coalition and the Abalone Alliance have requested compensation for their participation in these matters. Neither party has cited the Commission's Rules of Practice under which they seek compensation, nor have they complied with the provisions of the rules. Under these circumstances, we cannot find them eligible to claim compensation.

The Mothers for Peace and Rochelle Becker, and the Redwood Alliance also filed requests for compensation, and these parties did comply with our rules. The Mothers for Peace and Rochelle Becker request $ 30,000 to cover their reasonable expenses of participation in this proceeding. The Redwood Alliance seeks $ 110,400. We [*275] find that they have met the requirements of our Rules and will therefore find them eligible to claim compensation.

L. Comments

This decision was issued as a Proposed Decision. Comments were filed by PG&E, the DRA, the Attorney General, the San Luis Obispo Mothers for Peace, the Redwood Alliance, and William M. Bennett.

PG&E asserts that the Proposed Decision makes substantive changes to three elements of the settlement: (1) to the floor provisions, (2) to decommissioning costs, and (3) to the safety committee. PG&E asserts that the changes to the floor and decommissioning provisions unfairly alter the balance of interests negotiated in the settlement. The DRA and the AG support the comments of PG&E.

1. The Floor Provision

The Proposed Decision found that any money in the FPMA would be subject to potential refund by the Commission. The finding was made to insure that the Commission had the power to ameliorate a possible inequity resulting from the FPMA holding more money at the time of abandonment of Diablo Canyon (or termination of the settlement) than the value of Diablo Canyon at that time. We were concerned that any money collected by PG&E under our order [*276] would not be subject to refund unless we specifically made it so. (City of Los Angeles v. PUC (1972) 7 Cal. 3d 331, 356; PT&T v. PUC (1968) 62 Cal. 2d 634.) PG&E says that this result was never contemplated by the Settlement and Implementing Agreements and is a material change in the settlement. PG&E, nevertheless, to preclude such inequity, would accept an interpretation of the settlement as follows:

a. In any year in which floor payments, when added to the preexisting balance in the FPMA exceed the maximum abandonment payment for that year, then such additional floor payments shall be designated as refundable floor payments and received by PG&E subject to potential refund (plus interest) by order of the Commission upon termination of the FPMA if, at that time, the Commission finds that a refund is the preferable disposition. n20

n20 Mathematically, we interpret refundable floor payments to be calculated as follows:

R = (B + F) - (the higher of B or A), except that R cannot be less than zero,

where R = refundable floor payments, B = balance in the FPMA at the start of the year in which the floor payment is taken, F = floor payment amount for that year, and A = maximum abandonment payment for that year. [*277]

b. All other floor payments received by PG&E (and interest thereon) shall not be subject to refund, but in accordance with Paragraphs c and d below, shall continue (1) to be subject to the obligation to repay with interest from one-half of the revenues from production in subsequent years in excess of a 60% capacity factor and (2) to be taken into consideration by the Commission in deciding a reasonable abandonment payment to allow PG&E.

c. All repayments of floor payments from one-half of the revenues from production in subsequent years in excess of a 60% capacity factor shall be applied to FPMA balances as follows: (1) current interest, pro rata between that due on refundable and nonrefundable FPMA balances; and then (2) principal (including past interest), pro rata between the refundable and nonrefundable balances.

d. If, in taking the balance in the FPMA into account in determining a reasonable abandonment payment to allow PG&E pursuant to Paragraph 13C of the Implementing Agreement, the Commission decides to use any portion of the balance in the FPMA to offset any portion of the maximum abandonment right payment, the FPMA balance shall be offset pro rata between the refundable [*278] and nonrefundable amounts in the FPMA.

To use the Proposed Decision's example (p. 140), in year 2012 the floor payment calculated according to the formula in the Settlement Agreement could be $ 1.141 billion, but the maximum abandonment payment would be $ 600 million. If there were no balance in the FPMA, in year 2012 PG&E would receive $ 600 million of floor payments subject only to repayment from subsequent operational revenues or potential offset against abandonment rights, and $ 541 million subject to potential full refund by order of the Commission. The interest accruing on each portion of the FPMA balance would be classified in the same manner as the principal. If the floor were invoked again in year 2013, the floor payment would be $ 1.059 billion. Since the maximum abandonment payment would be $ 500 million, there would be a balance of at least $ 1.141 billion in the FPMA, and there is already $ 600 million of nonrefundable floor payments as a result of floor payments made in year 2012, then all floor payments in year 2013 would be subject to potential full refund.

The difference between the Proposed Decision's treatment of the FPMA and PG&E's proposal is shown by the [*279] following example: Should Diablo Canyon be abandoned when its maximum abandonment payment was $ 300 million after drawing floor payments in accordance with the example in the preceding paragraph (and no repayments having been made), PG&E would absolutely retain at least $ 600 million plus interest, plus having a claim for $ 300 million, rather than merely having a claim for $ 300 million and a claim for the FPMA balance.

PG&E's proposal is substantially different from its previous position regarding floor payments and now it has agreed to a refund plan which, should PG&E trigger the floor payments, has the potential for returning billions of dollars to the ratepayers. Although it is less beneficial to ratepayers than the interpretation in the Proposed Decision, it has the advantage of PG&E's acceptance, and the support of the DRA and the AG.

Paragraphs c and d, however, ask for too much. Paragraph c would have floor repayments divided pro rata between the FPMA refundable and nonrefundable balances. Because under Paragraph b, PG&E will keep the nonrefundable balance, which by the time repayments are made will be more than the maximum abandonment right payment, it should be required [*280] to pay off the nonrefundable balance first. We will modify Paragraph c accordingly. n21 Paragraph d is totally unacceptable. It would use refundable amounts to offset a portion of the maximum abandonment right payment. We believe that if any portion of the balance in the FPMA is used to offset the maximum abandonment right payment, the nonrefundable portion should be exhausted first. Under the PG&E proposal, the following example is representative: Assume: (1) an FPMA balance of $ 1.500 billion, divided $ 1.00 billion nonrefundable and $ 500 million refundable, and (2) a maximum abandonment right payment of $ 600 million. PG&E's proposal would offset the $ 600 million with $ 400 million from the nonrefundable portion and $ 200 million from the refundable portion. The result is PG&E retains $ 1.2 billion and the potential refund is only $ 300 million; this is unacceptable. We remind PG&E that under the settlement, the Commission has the discretion to permit PG&E to retain the entire FPMA, refundable and nonrefundable amounts, plus awarding PG&E the entire maximum abandonment right payment. We will adopt the first and second paragraphs of PG&E's proposal, modify the third [*281] paragraph, and reject the fourth. This decision has been modified accordingly.

n21 c. All repayments of floor payments from one-half of the revenues from production in subsequent years in excess of a 60% capacity factor shall be applied to FPMA balances as follows:

(1) interest, then principal on the nonrefundable balance; and then

(2) interest, then principal on the refundable balance.

2. Decommissioning

PG&E asserts that the Proposed Decision would transfer all costs of decommissioning to PG&E if there were ever increased costs related to income taxes. PG&E has proposed language to make clear that should tax benefits be lost only the increased taxes would be paid by PG&E; the ratepayers would continue liable for the decommissioning costs under the terms of the settlement. As this was our intent, we will modify the decision accordingly. This is agreeable because the settlement provides that all Diablo Canyon output (except during a hydro spill condition) goes to the ratepayers at the prices set forth in the settlement. Should this output not go to the ratepayers then the ratepayers would not be liable for decommissioning costs.

3. The Safety Committee [*282]

PG&E urges us not to withdraw from the nominating process of members of the safety committee, arguing that we are an important ingredient in the nominating process and that our participation will help assure the safe operation of the plant. On further reflection, we will participate as requested.

4. Other

The Mothers for Peace commented that the Proposed Decision included facts regarding the Hosgri Fault and the mirror image error which the parties were not allowed to litigate and that the decision did not mention any of the recommendations of the San Luis Obispo parties. The Mothers for Peace misconstrue our discussion of the Hosgri Fault and the mirror image error and our findings thereon. Our discussion of the two alleged construction errors was not to determine whether they had or had not occurred, but was to determine if there was merit in the contention that they had occurred and the potential liability if they had occurred. An analogous procedure is summary judgment when the court must determine whether there is a material issue of fact to be tried. The court reviews the record; it does not conduct a trial. The Proposed Decision Findings 4 and 5 do not find the [*283] facts of the Hosgri Fault and the mirror image error, they find that there is substantial evidence on both sides of the issues.

The Mothers for Peace object to the Proposed Decision's failing to include or refer to its recommendations. The recommendations were omitted because they either proposed material changes in the settlement and would therefore negate it, or were extraneous to the issues of the hearing. Its first recommendation sets the tone: It recommends "that the Commission allow for recommendations that could change this agreement without making it 'null and void.'" To accede to that recommendation would void the agreement and set us back to square one. Another recommendation would have us order the negotiating discussions be made part of the record. We have previously ruled that the discussions are privileged. Extraneous recommendations included: that the Commission analyze PG&E's long-term

seismic report, that the Commission discuss the settlement with the NRC and place the NRC's comments in the record, and that all safety committee meetings be held in San Luis Obispo. As they are extraneous, there is no point in discussing them. The participation of the San [*284] Luis Obispo parties, however, did much to focus our attention on particular issues in this case, especially on safety issues, and they have made a substantial contribution to our analysis and decision, but they have not persuaded us to adopt their recommendations.

The Redwood Alliance commented, as did the San Luis Obispo parties, that our discussion and findings on the Hosgri Fault and the mirror image problem are in error. For the reasons previously stated, we believe our discussion and findings are appropriate. The Alliance also commented that Finding 13, where we found that the evidence on shutting down Diablo Canyon was not persuasive, is wrong. The Alliance merely reargues its position. We will not change the finding. Mr. Bennett, in his comments, also merely reargues his prior position regarding lack of due process and other perceived errors; his argument has not improved with time.

Because of corrections to the formulas being applied in this case (Appendix G), the amount of revenue increase authorized by this decision is $ 284,212,000 rather than the $ 261,318,000 described in the Proposed Decision.

Findings of Fact

In our findings regarding the adequacy of the [*285] settlement we have made specific findings on issues that we or the parties consider significant. We do not believe it necessary to make separate findings on every paragraph in the Settlement Agreement and the Implementing Agreement.

1. PG&E seeks to include the cost of constructing its Diablo Canyon nuclear power plant in its rate base in the amount of $ 5.5 billion.

2. The DRA asserts that the reasonable cost of constructing Diablo Canyon is $ 1.1 billion and seeks a $ 4.4 billion disallowance.

3. PG&E, the DRA, and the AG have agreed to settle the dispute by recommending to the Commission a Settlement Agreement and an Implementing Agreement which in the opinion of the DRA and the AG would provide revenue to PG&E, over a 28-year period, in an amount which is equivalent to the revenue which would be received by PG&E if the reasonable cost of Diablo Canyon included in rate base was $ 3.5 billion. The settlement provides an estimated $ 2 billion equivalent rate base reduction and shifts the risks of operating the plant from the ratepayers to the utility.

4. The risk of disallowance to PG&E of [*286] going to hearing on the Hosgri Fault issue is approximately $ 4.4 billion. The risk to the DRA if PG&E were to prevail on the Hosgri Fault issue is to lose approximately $ 2 billion of its recommended disallowance. There is substantial evidence which would sustain a decision for either PG&E or the DRA on the Hosgri Fault issue.

5. The stakes attributable to the mirror image error are approximately $ 2.4 billion if the total cost of the IDVP is considered the proximate result of the error, which is the position of the DRA. PG&E asserts that the cost of the error is no more than $ 100 million. There is substantial evidence which would sustain a decision for either PG&E or the DRA on the mirror image error issue. There are substantial risks to both PG&E and the DRA in going to hearing on the mirror image error issue.

6. The timing of the settlement was exceptional. It came after prepared testimony had been exchanged, other exhibits and information had been exchanged, and depositions and discovery almost completed. Only a trial would have provided more information. The settling [*287] parties were sufficiently informed of the merits of each other's case to enable them to make a knowledgeable judgment regarding the strengths and weaknesses of each other's case. Similarly, the Commission has adequate information upon which to make an informed judgment of the adequacy of the settlement.

7. The DRA's and AG's estimate of the dollar value of the settlement - an equivalent rate base disallowance of approximately $ 2 billion - is reasonable and is based on reasonable assumptions.

8. The assumption that Diablo Canyon will operate over the life of the agreement at a 58% capacity factor is reasonable.

9. The assumptions regarding the inflation rate, operation and maintenance expenses, capital additions, and the discount rate, etc., that are the foundation of the equivalent disallowance estimate are reasonable.

10. The most important benefit to the ratepayers of the settlement is the shift of the risk of operating Diablo Canyon from the ratepayers to PG&E. Because of this shift, PG&E assumes the risks of poor operations, plant outages, all operation and maintenance expenses including unforeseen extraordinary expenses, all capital addition costs including unforeseen [*288] extraordinary costs, and premature abandonment. The ratepayers share a small part of these risks through the floor payment and abandonment payment provisions of the settlement.

11. As part of the $ 2 billion equivalent disallowance, PG&E will waive its right to collect in rates the uncollected balance accrued in the DCAA, approximately $ 2 billion as of July 1, 1988, which has an equivalent disallowance value to ratepayers of approximately $ 1.2 billion. After the final approval date, the interim rates for Diablo Canyon will be considered final and no longer subject to refund.

12. PG&E will waive all costs incurred in preparing for, and participating in, this hearing. The amount is approximately $ 100 million.

13. The evidence presented on the issue of shutting down Diablo Canyon because it is economically unjustified was preliminary, inadequate, and not persuasive.

14. The proponents of the settlement met and prepared the settlement documents including the price structure without consulting or informing other parties. This was not anticompetitive nor a violation of the antitrust laws. In any case, the economic considerations embodied in the settlement are of overriding [*289] importance.

15. The Settlement Agreement and the Implementing Agreement are reasonable in light of the whole record, consistent with law, and in the public interest.

16. The settlement establishes performance based pricing ratemaking which is an alternative to the traditional ratemaking method of an allowed rate of return on undepreciated capital costs.

17. The price schedule in Paragraph 3 of the Settlement Agreement is reasonable.

18. The "utility assets" referred to in Paragraph 7 of the Settlement Agreement and defined in the Implementing Agreement, and the amount of each component of the utility assets are reasonable.

19. Any revenue received by PG&E under Paragraph 9 of the Settlement Agreement will be received by PG&E subject to the following procedure:

a. In any year in which floor payments, when added to the preexisting balance in the FPMA exceed the maximum abandonment payment for that year, then such additional floor payments shall be designated as refundable floor payments and received by PG&E subject to potential refund (plus interest) by order of the Commission upon termination of the FPMA if, at that time, the Commission finds that a refund is the preferable [*290] disposition.

b. All other floor payments received by PG&E (and interest thereon) shall not be subject to refund, but in accordance with Paragraph c shall continue (1) to be subject to the obligation to repay with interest from one-half of the revenues from production in subsequent years in excess of a 60% capacity factor and (2) to be taken into consideration by the Commission in deciding a reasonable abandonment payment to allow PG&E.

c. All repayments of floor payments from one-half of the revenues from production in subsequent years in excess of a 60% capacity factor shall be applied to FPMA balances as follows: (1) interest, then principal on the nonrefundable balance; and then (2) interest, then principal on the refundable balance.

20. By exercising its rights to obtain floor payments, PG&E agrees that the Commission may order a refund to ratepayers of the money in the FPMA in accordance with Finding 19, if the Commission finds that a refund is the preferable disposition.

21. We interpret Paragraph 10 of the Settlement Agreement to mean a) that if PG&E were to transfer Diablo Canyon and thereby lose its decommissioning costs tax deduction, the Commission could require [*291] that ratepayers not pay any such additional costs, and b) the settlement agreement does not prevent imprudently incurred decommissioning expenses from being disallowed in any future decommissioning hearing pertaining to Diablo Canyon.

22. The Safety Committee will be a useful monitor of safe operation of Diablo Canyon. With competent members dedicated to achieving safety at Diablo Canyon, the committee will confer a benefit on the public, and is in the public interest.

23. The funds to operate the Safety Committee are reasonable and are a reasonable charge on PG&E's ratepayers.

24. Under the terms of the settlement an annual revenue adjustment is necessary to exclude the impacts of Diablo Canyon operation from PG&E revenues received through its AER.

25. Use of an appropriate IER in the annual AER adjustment formula will provide a more accurate adjustment than would use of system average heat rate.

26. The formula proposed by the proponents to determine the annual AER adjustment should be modified to replace system average heat rate with an appropriate incremental energy rate.

27. The DIER described in this decision should be substituted for the system average heat rate [*292] in the annual AER adjustment formula. This formula may be modified by the Commission in future ECAC proceedings.

28. The revenues and account adjustment calculations shown in Appendix G were developed at technical workshops and meetings open to all parties to this proceeding.

29. The revenues and account adjustments shown and described in Appendix G correctly implement the terms of the settlement and are reasonable.

30. The revised tariff sheets in Exhibit 93,303, modified to included the DIER in the annual AER adjustment formula, correctly implement the terms of the settlement and are reasonable.

31. It is reasonable to incorporate the revenue revisions authorized in this proceeding into rates authorized in PG&E's current ECAC and attrition proceedings, where revenue allocation and rate design issues have been considered.

32. Adjustments to ratemaking accounts required by the settlement to allow recovery of Diablo Canyon energy purchase costs during the period July 1 - December 31, 1988 cannot be made until after the revenue changes authorized by this decision become effective.

33. The settlement requires that the account adjustments for the period July 1 - December [*293] 31, 1988 be consolidated into a single adjustment to PG&E's ECAC account.

34. All parties had adequate time to prepare for the settlement hearings. To the extent that they were not prepared is the result of inadequate funding and insufficient staff to fully participate in a case of this magnitude.

35. The Public Solar Power Coalition and the Abalone Alliance are not eligible to claim compensation in this proceeding.

36. The Redwood Alliance and the San Luis Obispo Mothers for Peace and Rochelle Becker are found eligible to claim compensation in this proceeding.

Conclusions of Law

1. The rulings of the Presiding Administrative Law Judge should be affirmed.

2. The use of the proposed settlement procedures should be affirmed.

3. The Settlement Agreement and the Implementing Agreement, as interpreted by this decision, should be approved and adopted.

4. This Commission cannot bind future Commissions in fixing just and reasonable rates for PG&E. Nevertheless:

To the extent permitted by law, the Commission intends that this decision be binding upon future Commissions. In approving this settlement, based on our determination that taken as a whole its terms produce a [*294] just and reasonable result, this Commission intends that all future Commissions should recognize and give all possible consideration and weight to the fact that this settlement has been approved based upon the expectations and reasonable reliance of the parties and this Commission that all of its terms and conditions will remain in effect for the full term of the agreement and be implemented by future Commissions.

5. The revisions to PG&E's 1989 revenue requirement calculated in Appendix G should be adopted.

6. Rates to accomplish the adopted revenue changes should be set in PG&E's current ECAC and attrition proceedings, A.88-04-020, A.88-04-057, A.88-07-037 and Advice No. 1226-E.

7. The account adjustments required by the settlement as described in Appendix G should be adopted.

ORDER

IT IS ORDERED that:

1. The Settlement Agreement (Appendix C) and the Implementing Agreement (Appendix D) are approved and adopted.

2. The rulings of the Presiding Administrative Law Judge are affirmed.

3. The use of the proposed settlement procedures (Appendix B) is affirmed.

4. Pacific Gas and Electric Company (PG&E) is authorized to file revised tariff sheets in conformity with this [*295] decision which increase its attrition year 1989 revenue requirement by $ 284.212 million, as shown in Appendix G.

5. The authorized revenue increase shall include revisions to the following of PG&E's rate elements:

A. An increase of $ 3.202 million in Base Energy Rate revenues, and a corresponding increase of $ 3.202 million in PG&E's Base Revenue Amount;

B. An increase of $ 762.712 million in Energy Cost Adjustment Clause (ECAC) rate revenues;

C. A decrease of $ 8.846 million in Annual Energy Rate (AER) revenues; and

D. A decrease of $ 472.856 million in Diablo Canyon Adjustment Clause (DCAC) rate revenues, which shall terminate the DCAC rate.

6. PG&E shall incorporate the above revenue changes into rates authorized in its current ECAC and attrition proceedings, Application (A.) 88-04-020, A.88-04-057, A.88-07-037, and Advice No. 1226-E.

7. PG&E shall, in filing tariff provisions to implement this decision, modify the formula to calculate the annual revenue adjustment which excludes the impacts of Diablo Canyon operation from revenues received through its Annual Energy Rate (AER), by substituting the Diablo Incremental Energy Rate (DIER) for the proposed system average [*296] heat rate.

8. PG&E shall calculate the 1989 value of the DIER for the current ECAC forecast period, as described in this decision and shall report that value in its first annual Diablo Canyon compliance filing.

9. PG&E shall adjust its ECAC account balance to allow recovery of Diablo Canyon energy purchase costs as if the settlement had been effective during the period July 1 - December 31, 1988, according to the method described in Appendix G. The ECAC account adjustment shall be made as soon as the necessary data are available, but no later than January 31, 1989.

10. PG&E shall on March 31 of each year commencing in 1989 through the year after Diablo Canyon is retired or abandoned file a Diablo Canyon Compliance Report as described in Appendix H.

11. The tariff filings authorized by this decision shall conform to General Order 96-A, shall be marked to show that they were authorized by this decision, and shall become effective 5 days after the date filed, but no earlier than January 1, 1989. The revised tariffs shall apply only to service rendered on or after their effective date.

12. Pursuant to the Rules of Practice and Procedure, the San Luis Obispo Mothers for Peace [*297] and Rochelle Becker and the Redwood Alliance are found eligible to claim compensation.

13. The Abalone Alliance and Public Solar Power Coalition are not eligible to claim compensation.

This order is effective today.

Dated December 19, 1988, at San Francisco, California.

APPENDIX A

List of Appearances

Applicant: Peter W. Hanschen, Attorney at Law, and Messrs. O'Melveny & Myers, by Joseph M. Malkin and Charles C. Read, Attorneys at Law, for Pacific Gas and Electric Company.

Interested Parties: John K. Van de Kamp, Attorney General, by Andrea S. Ordin, Michael J. Strumwasser, Mark J. Urban, and Peter Kaufman, Deputy Attorneys General, for the State of California; Rochelle Becker, for San Luis

Obispo Mothers for Peace (SLOMP) and for herself; William M. Bennett, for himself; Robert M. Teets, Jr., for himself; Henry Hammer, for Life on Planet Earth; William Knecht, by Philip Presber, Attorney at Law, for California Association of Utility Shareholders; Laurie McDermott, for Consumers Organized for Defense of Environmental Safety (CODES); Morrison & Foerster, by Preston Moore, Thomas J. Long, and Thomas Vinje, Attorneys at Law, and [*298] Sylvia M. Siegel, for Toward Utility Rate Normalization (TURN); Harvey Mark Eder, for Public Solar Power Coalition; Bryan Gaynor, Attorney at Law and James S. Adams, for Redwood Alliance; Roger Herried and Don Eichelberger for Abalone Alliance; Messrs. Chickering & Gregory, by C. Hayden Ames, Attorney at Law, for Chickering & Gregory; Richard K. Durant and Stephen E. Pickett, Attorneys at Law, for Southern California Edison Company; Stephen L. Baum and Jeffrey X. Guttero, Attorneys at Law, for San Diego Gas & Electric Company; Kenneth Haggard, for Concerned Cal-Poly Faculty and Staff; Michael McQueen, Attorney at Law, for Union Oil Company of California; Reed V. Schmidt, for California Street Light Association; Messrs. Armour, St. John, Wilcox, Goodin and Schlotz, by James D. Squeri, Attorney at Law, for California Building Industry Association; Messrs. Downey, Brand, Seymour & Rohwer, by Deborah Kay Tellier, Philip A. Stohr, and Christopher T. Ellison, for Downey, Brand, Seymour & Rohwer; Octavio Lee, for the State Board of Equalization; A. Kirk McKenzie, Attorney at Law, for California Energy Commission; Wayne W. Truxillo, [*299] for the City of Santa Clara; Harrison Call, Jr., for Call Company, Ltd.; Alice Loo, for John Vickland, Attorney at Law, for San Francisco Bay Area Rapid Transit; William B. Marcus and Jeff Nahigian, for Economic Consultant Services, JBS Engineering, and the Independent Energy Producers Association; Barbara Barkovich, for California Large Energy Producers Association; Linda J. Dondanville, for Unocal Geothermal Division; Norman J. Furuta, Attorney at Law, for Department of the Navy; Leonard Snaider, Attorney at Law, for City and County of San Francisco; Dellon E. Coker, and David A. McCormick, Attorneys at Law, for the Department of the Army; and Thomas B. Robinson, Dan Hauser, and Gordon E. Bruno, for themselves.

Division of Ratepayer Advocates: Edward W. O'Neill, Arocles Aguilar, Kathleen C. Maloney, and Steven Weissman, Attorneys at Law, and Bruce DeBerry and Joel Tolbert.

Commission Advisory and Compliance Division: James Weil, James Pretti, and John Peeples.

APPENDIX B

The following article is proposed for addition to the Rules of Practice and Procedure:

Article 13.5 - Stipulations and Settlements

51. (Rule [*300] 51) Definitions.

The following definitions apply for purposes of this article.

(a) "Party" or "Parties" means any person who has filed an appearance in the proceeding.

(b) "Commission Proceeding" means an application, complaint, investigation or rulemaking before the California Public Utilities Commission.

(c) "Settlement" means an agreement between some or all of the parties to a Commission proceeding on a mutually acceptable outcome to the proceedings. In addition to other parties to an agreement, settlements in applications must be signed by the applicant and in complaints, by the complainant and defendant.

(d) "Stipulation" means an agreement between some or all of the parties to a Commission proceeding on the resolution of any issue of law or fact material to the proceeding.

(e) "Contested" describes a stipulation or settlement that is opposed in whole or part, as provided in this article, by any of the parties to the proceeding in which such stipulation or settlement is proposed for adoption by the Commission.

(f) "Uncontested" describes a stipulation or settlement that (1) is filed concurrently by all parties to the proceeding in which such stipulation or [*301] settlement is proposed for adoption by the Commission, or (2) is not contested by any party to the proceeding within the comment period after service of the stipulation or settlement on all parties to the proceeding.

51.1. (Rule 51.1) Proposal of Settlements or Stipulations.

(a) Parties to a Commission proceeding may stipulate to the resolution of any issue of law or fact material to that proceeding, or may settle on a mutually acceptable outcome to that proceeding, with or without resolving material

issues. Resolution shall be limited to the issues in that proceeding and shall not extend to substantive issues which may come before the Commission in other or future proceedings.

(b) Prior to the formal filing of any stipulation or settlement, the settling parties shall convene at least one conference with notice and opportunity to participate provided to all parties for the purpose of discussing stipulations and settlements in a given proceeding. Written notice of the date, time and place shall be furnished at least seven (7) days in advance to all parties to the proceeding. Notice of any subsequent meetings may be oral, may occur less than seven days in advance and may [*302] be limited to prior conference attendees and those parties specifically requesting notice.

(c) Attendance at any stipulation or settlement conference or discussion conducted outside the public hearing room shall be limited to the parties to a proceeding.

Parties may by written motion propose stipulations or settlements for adoption by the Commission in accordance with this article. The motion shall contain a statement of the factual and legal considerations adequate to advise the Commission and parties not expressly joining the agreement of its scope and of the grounds on which adoption is urged.

When a settlement pertains to a proceeding under the Rate Case Plan, the settlement must be supported by a comparison exhibit indicating the impact of the settlement in relation to the utility's application. If the participating Staff supports the settlement, it must prepare a similar exhibit indicating the impact of the proposal in relation to the issues it contested, or would have contested, in a hearing.

(d) Stipulations and settlements should ordinarily not include deadlines for Commission approval, however, in the rare case where delay beyond a certain date would invalidate the [*303] basis for the proposal, the timing urgency must be clearly stated and fully justified in the motion.

(e) The Commission will not approve stipulations or settlements, whether contested or uncontested, unless the stipulation or settlement is reasonable in light of the whole record, consistent with law, and in the public interest.

51.2. (Rule 51.2) Timing.

Parties to a Commission proceeding may propose a stipulation or settlement for adoption by the Commission (1) any time after the first prehearing conference and (2) within 30 days after the last day of hearing.

Page 51.3. (Rule 51.3) Filing.

Parties proposing a stipulation or settlement for adoption by the Commission shall concurrently file their proposal in accordance with the rules applicable to pleadings (See Article 2), and shall serve the proposal on all parties to the proceeding.

51.4. (Rule 51.4) Comment Period.

Whenever a party to a proceeding does not expressly join in a stipulation or settlement proposed for adoption by the Commission in that proceeding, such party shall have 30 days from the date of mailing of the stipulation or settlement within which to file comments contesting all or part of the [*304] stipulation or settlement, and shall serve such comments on all parties to the proceeding. Parties shall have 15 days after the comments are filed within which to file reply comments. The assigned administrative law judge may extend the comment and/or response period on motion and for good cause.

51.5. (Rule 51.5) Contents of Comments.

A party contesting a proposed stipulation or settlement must specify in its comments the portions of the stipulation or settlement that it opposes, the legal basis of its opposition, and the factual issues that it contests. Parties should indicate the extent of their planned participation at any hearing. If the contesting party asserts that hearing is required by law, appropriate citation shall be provided. Any failure by a party to file comments constitutes waiver by that party of all objections to the stipulation or settlement, including the right to hearing to the extent that such hearing is not otherwise required by law.

51.6. (Rule 51.6) Contested Stipulations and Settlements.

(a) If the stipulation or settlement is contested in whole or in part on any material issue of fact by any party, the Commission will schedule a hearing [*305] on the contested issue(s) as soon after the close of the comment period as reasonably possible. Discovery will be permitted and should be well underway prior to the close of the comment

period. Parties to the stipulation or settlement must provide one or more witnesses to testify concerning the contested issues and to undergo cross examination by contesting parties. Contesting parties may present evidence and testimony on the contested issues.

(b) The Commission may decline to set hearing in any case where the contested issue of fact is not material or where the contested issue is one of law. In the latter case, opportunity for briefs will be provided.

To ensure that the process of considering stipulations and settlements is in the public interest, opportunity may also be provided for additional prehearing conferences and any other procedure deemed reasonable to develop the record on which the Commission will base its decision.

(c) The Commission may decide the merits of contested stipulation or settlement issues without further application of these rules if the record contains substantial evidence upon which to base a reasoned decision.

(d) Stipulations may be accepted [*306] on the record in any proceeding and the assigned administrative law judge may waive application of these rules to the stipulation upon motion and for good cause shown.

51.7. (Rule 51.7) Commission Rejection of a Stipulation or Settlement.

The Commission will decline to adopt a proposed stipulation or settlement without hearing whenever it determines that the stipulation or settlement is not in the public interest. In that event, parties to the stipulation or settlement may either withdraw it or they may offer it as joint testimony at hearing on the underlying proceeding.

51.8. (Rule 51.8) Adoption Binding, Not Precedential.

Commission adoption of a stipulation or settlement is binding on all parties to the proceeding in which the stipulation or settlement is proposed. Unless the Commission expressly provides otherwise, such adoption does not constitute approval of, or precedent regarding, any principle or issue in the proceeding or in any future proceeding.

51.9 (Rule 51.9) Inadmissibility.

No statements, admissions, or offers to stipulate or settle, whether oral or written, made in preparation for, or during negotiations of stipulations or settlements shall [*307] be subject to discovery, or admissible in any evidentiary hearing unless agreed to by all parties participating in the negotiation.

All information obtained during the course of negotiations shall be treated as confidential among the participating parties and their clients and shall not otherwise be disclosed outside the negotiations without the consent of the parties participating in the negotiations.

If a stipulation or settlement is not adopted by the Commission, the terms of the proposed stipulation or settlement are also inadmissible unless their admission is agreed to by all parties joining in the proposal.

51.10. (Rule 51.10) Applicability.

These rules shall apply on and after the effective date of the decision promulgating them in all formal proceedings involving gas, electric, telephone and Class A water utilities.

In proceedings where all parties join in the proposed stipulation or settlement, a motion for waiver of these rules may be filed. Such motion should demonstrate that the public interest will not be impaired by the waiver of these rules.

Any party in other proceedings before the Commission may file a motion showing good cause for applying these rules [*308] to settlements or stipulations in a particular matter. Such motion shall demonstrate that it is in the public interest to apply these rules in that proceeding. Protests to the motion may be oral or written.

APPENDIX C

SETTLEMENT AGREEMENT

This Settlement Agreement (Agreement) is made among Pacific Gas and Electric Company (PG&E), the Division of Ratepayer Advocates (DRA) of the California Public Utilities Commission (CPUC), and the Attorney General of the State of California. The Agreement covers operation and CPUC jurisdictional revenue requirements associated with each unit of the Diablo Canyon Nuclear Power Plant (Diablo Canyon) for the 30-year period following the commercial operation date of each unit.

1. EXCLUSIVE RATEMAKING

This Agreement sets forth PG&E's exclusive method for recovering any CPUC jurisdictional costs of owning or operating Diablo Canyon for the term of this Agreement.

2. TERM

The term of this Agreement shall be from July 1, 1988 to May 6, 2015 for Diablo Canyon Unit 1 and from July 1, 1988 to March 12, 2016 for Diablo Canyon Unit 2.

3. PRICES

The prices for Diablo Canyon power shall consist of a fixed price and an escalating price. The fixed [*309] price shall be 31.5 mills/kWhr. The escalating price shall be as follows:

July 1, 1988	46.50 mills/kWhr
January 1, 1989	51.85 mills/kWhr
January 1, 1990	57.81 mills/kWhr
January 1, 1991	64.46 mills/kWhr
January 1, 1992	71.87 mills/kWhr
January 1, 1993	80.14 mills/kWhr
January 1, 1994	87.35 mills/kWhr

4. PRICE ESCALATION AFTER DECEMBER 31, 1994

Beginning on January 1, 1995, the escalating price shall be increased by the sum of the change in the Bureau of Labor Statistics' year-end national consumer price index during the immediately concluded year and 2.5 percent divided by two.

5. PEAK PERIOD PRICE DIFFERENTIATION

Beginning on January 1, 1989, the fixed and escalating prices shall be time differentiated to reflect the benefit of increased operation during peak periods. The prices shall be multiplied by the following allocation factors depending on time of operation:

A. A factor of 1.3 for the equivalent of the first 700 hours of full operation for each unit between 10 a.m. and 10 p.m. on weekdays during June through September.

B. A factor of 0.7 for the equivalent of the first 700 hours of full operation for each unit for any hours of the year not covered by (a). [*310]

C. A factor of 1.00 for output not covered by (a) or (b).

6. BALANCING ACCOUNT

A. PG&E waives all rights to amortize in rates the amounts that have accrued in the Diablo Canyon Adjustment Account (DCAA) from the respective dates of commercial operation of Units 1 and 2 through June 30, 1988. PG&E also waives its rights to collect any litigation expenses recorded or recordable hereafter in the deferred debit account established pursuant to D.86-06-079 or otherwise directly associated with the Diablo Canyon rate proceeding.

B. PG&E shall be entitled to retain all amounts collected as interim rates for Diablo Canyon through June 30, 1988, and those amounts shall no longer be subject to refund.

C. It is the intention of the parties that the rates established by this Agreement shall be effective immediately upon approval of the Agreement by the CPUC.

D. The DCAA shall be maintained until the time to seek judicial review has expired without review being sought or until all court challenges are terminated, whichever is later (this date shall be referred to as the "final approval date"). The amounts collected by PG&E in base rates for Diablo Canyon costs (excluding decommissioning [*311] costs) from July 1, 1988 until the final approval date shall be subtracted from the amounts that would have been received under this Agreement from July 1, 1988, to compute the net amount that would have been received under this Agreement. Upon the final approval date, PG&E shall either refund or amortize and collect in rates for a period not to exceed three years as set by the Commission the amount that is equal to the difference between the amount received under interim rate relief from July 1, 1988, and the net amount that would have been received under this Agreement from July 1, 1988.

7. BASIC REVENUE REQUIREMENT

A. PG&E shall identify and maintain as separate plant or other accounts for future rate recovery, two utility assets in the total amount (after tax) of no more than $ 1.175 billion.

B. One utility asset shall be made up of the excess of equity allowance for funds used during construction (AFUDC) over capitalized interest pursuant to Statement of Financial Accounting Standards No. 34, accrued by PG&E from the start of construction to the commercial operation of each unit. The other utility asset shall consist of certain other incurred costs, including deferred [*312] taxes on prior flowthrough timing differences, write-down of nuclear fuel to market and loss on reacquired debt, but not including the write-off of any amounts in the DCAA as provided in Paragraph 6 above.

C. These utility assets shall be depreciated and collected in base rates on a straight line basis, starting July 1, 1988, using a 28-year life. PG&E shall be entitled to earn its authorized rate of return on these utility assets. Since a significant portion of both utility assets does not have a tax basis, appropriate taxes shall be computed on the depreciation component and collected in base rates.

D. Nothing in this Agreement shall prohibit the Commission from denying rate recovery on one or both of these utility assets pursuant to Public Utilities Code Section 455.5.

E. As provided in Paragraph 7C, PG&E shall include in base rates the full revenue requirement at the authorized rate of return on the utility assets. This shall be called the "basic revenue requirement."

8. REVENUE

Except for decommissioning as set forth in Paragraph 10, the costs of the Safety Committee provided for in Paragraph 16, and except as modified by Paragraph 9, the revenue to PG&E shall be [*313] computed as follows:

A. The "Diablo Canyon annual revenue" shall equal the sum of fixed and escalating prices as set forth in Paragraph 3, and as adjusted by the escalation provision of Paragraph 4 and the peak period price differentiation provision of Paragraph 5, multiplied by annual Diablo Canyon net generation.

B. PG&E shall receive in rates, through its Energy Cost Adjustment Clause (ECAC), the difference between the Diablo Canyon annual revenue and the basic revenue requirement.

C. If the difference between the Diablo Canyon annual revenue and the basic revenue requirement is less than or equal to zero, PG&E shall still receive the full basic revenue requirement. However, in that case, PG&E shall be deemed to have triggered the floor provision under Paragraph 9.

D. Except as specifically provided in this Agreement, the operation of Diablo Canyon pursuant to this Agreement and all revenues associated with this Agreement shall be excluded from reasonableness reviews, AER risk allocation, and target capacity factors. Replacement or displacement power costs associated with the level of Diablo Canyon operation shall be recognized in ECAC rates. There shall be no issue in [*314] any proceeding as to the reasonableness of PG&E in operating Diablo Canyon or purchasing Diablo Canyon output so as to cause replacement or displacement power costs to be incurred. The reasonableness of PG&E in choosing among replacement or displacement power sources shall be subject to ECAC review.

E. If the ECAC ceases to be used for PG&E ratemaking, a new ratemaking mechanism shall be developed to carry out the terms of this Agreement.

9. FLOOR

A. Except as provided in Paragraph 8C, an annual revenue floor can be triggered at PG&E's option. In the event that the revenue produced by the formula in subparagraph 9B is greater than the basic revenue requirement, the floor shall be the basic revenue requirement plus the amount by which the formula revenue exceeds the basic revenue requirement. In the event that the revenue produced by the formula is equal to or less than the basic revenue requirement, the floor shall be the basic revenue requirement.

B. The formula revenue shall be the sum of the then current fixed and escalating prices multiplied by a specified capacity factor multiplied by the megawatt (MW) rating. For 1988 through 1997, the specified capacity factor is [*315] 36%; it is reduced by 3% in 1998 and again by 3% in 2008. Each time the floor is triggered, 3% shall also be deducted from the specified capacity factor. The MW rating shall be the net Maximum Dependable Capacity of 1073 MW for Unit 1 and 1087 MW for Unit 2.

C. The floor payments (including the basic revenue requirement) received shall be repaid with interest from 50% of the revenues received from subsequent year operations over a 60% capacity factor. In addition, the original specified capacity factor for a year may be re-established at PG&E's option through repayment with interest. The interest rate shall be the interest rate on 10-year single A utility bonds as listed in the last issue of Moody's Bond Survey published in the year in which the floor provision is invoked.

D. If operation falls below the floor capacity factor in three consecutive calendar years (whether or not PG&E invokes the floor), then PG&E must file an application either seeking abandonment, as described in Paragraph 13, or explaining why it believes continuation of this pricing package, including the regulatory asset, is appropriate.

10. DECOMMISSIONING

This Agreement shall have no effect on revenues [*316] for the cost of the eventual decommissioning of Diablo Canyon, which shall receive ratemaking treatment in accordance with Commission policies for decommissioning nuclear plants.

11. PURCHASE POLICY

PG&E shall have the right and obligation to purchase all Diablo Canyon output, except during hydro spill conditions on the PG&E system. During hydro spill conditions, ratepayers shall not pay for Diablo Canyon output to the extent of the hydro spill. PG&E shall, however, have the right during such conditions to sell Diablo Canyon output.

12. SEGREGATION OF COSTS

A. For ratemaking purposes, all Diablo Canyon costs shall be segregated from other PG&E operations. No costs of Diablo Canyon shall be included in rates, except as provided in this Agreement. Diablo Canyon costs include any and all costs incurred by PG&E as a result of Diablo Canyon ownership, including but not limited to administrative and general expenses, operations and maintenance expenses, fuel-related costs, and any payment of the costs of accidents at other nuclear plants assessed to utilities owning nuclear plants.

B. PG&E shall keep full records, including reasonably contemporaneous accounts, to allow identification [*317] and auditing of all costs directly allocable to Diablo Canyon. These records shall be consistent with the Uniform System of Accounts and applicable accounting requirements of the CPUC.

13. ABANDONMENT RIGHTS

A. If PG&E requests special ratemaking treatment for both units of Diablo Canyon in the event of prolonged or permanent outages, it may ask for recovery of no more than the lesser of these two amounts:

(1) The floor payments which would be paid according to Paragraph 9, for 10 minus (n) years, where (n) is the number of years for which unrepaid floor payments have been received by PG&E; or

(2) $ 3.00 billion in capital costs through 1988, reduced by $ 100 million per year of operation after 1988. In the event of a nation-wide shutdown of all nuclear plants (not just Westinghouse plants), the capital cost amount computed under this subparagraph may be increased to include the non-equity portion of reasonable direct costs of capital additions, reduced by straight-line depreciation.

B. If PG&E requests special ratemaking treatment for only one unit of Diablo Canyon, it may ask for recovery of no more than one-half the lesser of (1) and (2).

C. Nothing in this paragraph [*318] shall preclude the Attorney General or DRA from opposing a PG&E abandonment request requested under this paragraph.

14. TREATMENT AFTER 30 YEARS

PG&E shall file an application by May 1, 2014 requesting whatever ratemaking treatment it wishes for Diablo Canyon for the period beginning May 7, 2015 for Unit 1 and March 13, 2016 for Unit 2. Nothing in this Agreement shall preclude the Commission from setting rates on any lawful basis.

15. JURISDICTIONAL ALLOCATION

The revenue under Paragraphs 7 and 8 above shall be computed on a CPUC jurisdictional basis.

16. SAFETY

An Independent Safety Committee shall be established and shall operate as described in Attachment A which is hereby incorporated by reference herein.

17. EFFECT OF CHANGE IN AGREEMENT

Except for an Implementing Agreement, which will be prepared and executed as soon as possible, this Agreement represents the complete agreement among PG&E, DRA and the Attorney General as of the date of this Agreement. This Agreement is subject to approval by the CPUC. Except as expressly provided herein or except as may be agreed to by all parties to this Agreement, any material change in this Agreement shall render the Agreement [*319] null and void.

DATED: June 24, 1988

JOHN K. VAN DE KAMP
ATTORNEY GENERAL

DATED: June 24, 1988

CALIFORNIA PUBLIC UTILITIES COMMISSION
DIVISION OF RATEPAYER ADVOCATES
By
William R. Ahern, Director

DATED: June 24, 1988

PACIFIC GAS AND ELECTRIC COMPANY
By
Richard A. Clarke, Chairman of the Board and Chief Executive Officer

ATTACHMENT A

SAFETY COMMITTEE

I. Composition of Committee.

1. An Independent Safety Committee (the "committee") shall be established consisting of three members, one each appointed by the Governor of the State of California, the Attorney General and the Chairman of the California Energy Commission ("CEC"), respectively, serving staggered three-year terms. The committee shall review Diablo Canyon operations for the purpose of assessing the safety of operations and suggesting any recommendations for safe operation. Neither the committee nor its members shall have any responsibility or authority for plant operations, and they shall have no authority to direct PG&E personnel. The committee shall conform in all respects to applicable federal laws, regulations and Nuclear Regulatory Commission ("NRC") policies.

2. Committee members [*320] shall be selected from a list of candidates jointly nominated by the President of the California Public Utilities Commission (the "CPUC"), the Dean of Engineering of the University of California at Berkeley, and PG&E.

a. At the time of the committee's initial formation, the President of the CPUC, the Dean of Engineering, and PG&E shall jointly provide a list of nine candidates. The Governor shall appoint a member for a one year term, the Attorney General shall appoint a member for a two year term, and the Chairman of the CEC shall appoint a member for a three year term. Each year thereafter, the President of the CPUC, the Dean of Engineering, and PG&E shall jointly provide to the appropriate appointing authority a list of three candidates as alternatives to reappointment of that authority's designated committee member whose term is expiring. The incumbent shall be deemed an additional nominee. Each such subsequent appointment shall be for a three year term.

b. Should a committee member not complete the appointed term, the authority who appointed that member shall appoint a replacement to serve for the unexpired portion of the term from a list of three candidates nominated [*321] by the President of the CPUC, the Dean of Engineering and PG&E in accordance with the appointment procedures set forth below in subparagraphs d., e., and f.

c. The President of the CPUC, the Dean of Engineering, and PG&E shall propose as candidates only persons with knowledge, background and experience in the field of nuclear power facilities.

d. Should the President of the CPUC, the Dean of Engineering and PG&E be unable to agree upon candidates in the first year, each shall submit to the other two a list of four nominees. The President of the CPUC, PG&E and the Dean of Engineering may each strike any two of the eight names proposed on the other two nomination lists. The names remaining after the exercise of this right to strike shall be submitted to the three appointing authorities.

e. Should the President of the CPUC, PG&E and the Dean of Engineering be unable to agree upon a list of three nominees in any year after the first year, each shall submit to the other two a list of two nominees. The President of the CPUC, PG&E and the Dean of Engineering may each strike any one of the four names proposed on the other two nomination lists. The names remaining after exercise of [*322] this right to strike shall be submitted to the appointing authority.

f. In any year in which there is no agreement on a joint list, should any nominating authority fail to submit a separate list of nominees, the other two shall each have the right to nominate an additional two candidates in the first year or one candidate in any subsequent year.

g. The joint nomination list shall be submitted to the appointing authorities on or before January 1 of each year. In any year in which there is no agreement on a joint list, the separate lists, after exercise of the rights to strike, shall be submitted to the appointing authorities on or before February 1 of that year. Appointments shall be made by March 1 of each year. Each Safety Committee term shall commence on July 1 of the year of appointment.

h. The chairman of the CEC and the President of the CPUC shall exercise their powers under this agreement after consultation with their respective commissions in public session.

II. Scope of Committee Operations.

A. Receipt of Reports and Records.

The committee shall have the right to receive on a regular basis such of the following operating reports and records of Diablo Canyon [*323] as the committee may request. Such reports and records shall be provided quarterly as available:

1. Automatic scrams while critical

2. Significant events

3. Safety system actuations

4. Forced outage rate

5. Collective radiation exposure

6. Industrial safety loss time accident rate

7. NRC public reports and evaluations of Diablo Canyon

8. Such other reports pertinent to safety as may be produced in the course of operations and may be requested by the committee

B. Annual Site Inspection.

The committee shall have the right to conduct an annual examination of the Diablo Canyon site. If the committee requires additional information regarding a specific issue raised by the quarterly reports, the committee may request such information, and, upon proper notice to PG&E, conduct a site visit to investigate that issue.

PG&E shall cooperate with the committee in arranging times for the committee's visits to the site and shall be responsible for insuring the cooperation of PG&E employees and contractors in providing access to the plant and facilities of PG&E and to pertinent records. Any such site visit must comply with all applicable federal laws, regulations and NRC policies, [*324] including laws, regulations and policies governing screening of persons who may participate in site inspections.

C. Committee Reports and Recommendations.

The committee shall prepare an annual report, and such interim reports as it deems appropriate, which reports shall include any recommendations of the committee. The report shall be submitted first to PG&E, and PG&E shall respond in writing within 45 days. PG&E's response shall be made part of the report which shall then be submitted to the CPUC, the Governor, the Attorney General and the CEC. The CPUC, the Governor, the Attorney General and the CEC, or any one of them, may file a request pursuant to 10 CFR § 2.206 for the Director of Nuclear Reactor Regulation to institute a proceeding to require PG&E to adopt any safety recommendation made by the Committee. PG&E is free to oppose any such recommendation before the NRC.

D. Confidentiality of Information.

In the course of review of Diablo Canyon operations, committee members may receive confidential information. Federal law restricts disclosure of certain information; accordingly, committee members shall seek approval of the NRC for access to such information and shall [*325] comply with all laws, regulations and policies applicable to access to, possession and use of such information. To the extent that PG&E believes that other information sought by the committee, not regulated by the Atomic Energy Act, constitutes confidential business information, the disclosure of which might injure PG&E in its business, PG&E may so designate that information. Information so designated shall be treated as confidential and not disclosed outside the committee unless a majority of the committee challenges the propriety of the claim of confidentiality by vote taken within 30 days of designation. A dispute between the committee and PG&E on a claim of confidentiality shall promptly be submitted to binding arbitration. Committee members and all persons who receive confidential information in the course of or as a result of the committee's activities shall have a duty to maintain the confidentiality of that information and, in addition to the compliance with the requirements of federal law and regulations, shall execute a confidentiality agreement.

The committee may contract for services, including the services of consultants and experts, to assist the committee in its [*326] safety review. Disclosure of PG&E information or records to any such person shall be governed by the provisions of this agreement in the same manner as disclosure to members of the committee. No disclosure shall be made to any person who does not have a need to receive the information in order to assist the committee in its safety review. Nor shall disclosure be made to any person with a conflict of interest.

This provision shall not preclude the committee from submitting relevant information to the NRC or to the CPUC, the Governor, the Attorney General or the CEC to the extent permitted by federal law. Prior to the disclosure of any confidential information, however, the committee shall give PG&E notice of its intention to do so and an opportunity to designate specific documents or information which should not be publicly disclosed and to seek to prevent public disclosure by the entity to which disclosure is made.

E. Compensation of the Committee.

Members of the committee shall be compensated in an amount established by the CPUC, to be commensurate with fees PG&E pays for similar services. The fees and expenses of the committee and its contractors shall be paid by PG&E and [*327] included in its ordinary rate base operating expenses. The fees and expenses shall not exceed $ 500,000 in the first year; thereafter, the $ 500,000 shall escalate at the same rate as the total price set for Diablo Canyon generation. The committee and its contractors shall keep accurate books, records and accounts which shall be open to inspection and audit by the CPUC or its designee and by PG&E. Such audit shall include review of the reasonableness of fees and expenses and review for conflicts of interest.

APPENDIX D

IMPLEMENTING AGREEMENT

This Implementing Agreement is made among Pacific Gas and Electric Company (PG&E), the Division of Ratepayer Advocates (DRA) of the California Public Utilities Commission (Commission), and the Attorney General of the State of California. These same parties have entered into a Settlement Agreement, dated June 24, 1988, covering the operation and CPUC jurisdictional revenue requirements associated with the Diablo Canyon Nuclear Power Plant (Diablo Canyon) for the 30-year period following the commercial operation date of each unit.

1. INTERPRETATION

A. This Implementing Agreement supplements and clarifies portions of the Settlement [*328] Agreement. The Settlement Agreement and this Implementing Agreement are intended to be interpreted as a single, integrated

agreement. In the event of any conflict between the terms of the two agreements, this Implementing Agreement shall govern.

B. All references in this Implementing Agreement to paragraphs are to the Settlement Agreement, unless otherwise specified.

C. For the purposes of the Settlement Agreement, Diablo Canyon shall be considered a single entity, i.e., no unit by unit distinction should be made with the exception of term, peak period price differentiation, megawatt rating and abandonment provisions.

D. The Settlement Agreement and the Implementing Agreement are not intended to set any precedent, implied or otherwise, with respect to any other investment or activity of PG&E or of any other regulated utility, nor are they intended to be used to determine any pricing provisions of any other contract or tariff.

E. The word "annual," as used in the Settlement Agreement and the Implementing Agreement, means a 12-month calendar year, unless stated otherwise.

F. The Settlement Agreement and this Implementing Agreement represent the complete agreement among PG&E, [*329] DRA and the Attorney General as of the date of this Agreement. This Implementing Agreement is subject to approval by the Commission.

G. Except as expressly provided herein or as may be agreed to by all parties to the Settlement and Implementing Agreements, any material change in these agreements shall render the agreements null and void.

2. EXCLUSIVE RATEMAKING (Paragraph 1)

The Settlement Agreement shall govern the amount paid by the ratepayers for Diablo Canyon power for the 30-year period following the commercial operation date of each unit, regardless of the organizational or financial structure or form of ownership of Diablo Canyon. The parties acknowledge that the advantages and disadvantages for them of the Settlement Agreement may vary during its effective period. Nevertheless, and in full recognition of this fact, the parties intend that the Settlement Agreement remain in effect for its full term unless the provisions of Paragraph 13 (Abandonment) are invoked.

3. TERM (Paragraph 2)

The term of this Implementing Agreement shall be the same as the term of the Settlement Agreement.

4. PRICE ESCALATION AFTER DECEMBER 31, 1994 (Paragraph 4)

A. The CPI (as defined [*330] by the U.S. Department of Labor, Bureau of Labor Statistics (all urban, all items)) change used for each January 1 price escalation after December 31, 1994 shall be the percent change in the CPI from the end of the prior year (y-1), where y represents the current year, compared to the CPI at the end of the second prior year (y-2), determined or calculated on a consistent basis, according to the following formula: (y-1) CPI / (y-2) CPI -1.

Example: The 1995 CPI change is equal to end of 1994 CPI / end of 1993 CPI -1.

If the above calculation produced a CPI change of 0.06 (6 percent), the 1995 escalation factor would be (0.060 + 0.025)/2 = 4.25%.

B. Since Energy Cost Adjustment Clause (ECAC)/Annual Energy Rate (AER) filings are made on a forecast basis prior to the computation of the relevant year-end CPI, an estimated CPI will be used in the forecast and an appropriate adjustment will be made in the next ECAC/AER filing based on the actual CPI. The amount recorded in the Energy Cost Adjustment Account (ECAA) will be based on the actual CPI.

5. PEAK PERIOD PRICE DIFFERENTIATION (Paragraph 5)

"700 hours of full operation" referred to in Paragraphs 5A and 5B is equal to 751.1 [*331] gigawatt-hours of generation for Unit 1 and 760.9 gigawatt-hours for Unit 2 for the periods in question.

6. BALANCING ACCOUNT (Paragraph 6)

A. The first sentence of Paragraph 6A is modified to read (additions are shown by underlining): "PG&E waives all rights to amortize in rates the amounts that have accured and are uncollected in the Diablo Canyon Adjustment Account (DCAA) from the respective dates of commercial operation of Units 1 and 2 through June 30, 1988." However, as set

forth in Paragraph 6B, PG&E shall be entitled to retain all amounts earned as interim rates for Diablo Canyon service provided through June 30, 1988 and those amounts shall no longer be subject to refund.

B. It is the intention of the parties that rate changes required by the Settlement Agreement shall be effective immediately after the filing of tariffs by PG&E with the Commission.

C. All amounts collected in rates pursuant to the Settlement Agreement for service rendered between July 1, 1988 and the "final approval date" (as defined in Paragraph 6D) shall be used as credits to the DCAA, ECAC or the Electric Revenue Adjustment Mechanism (ERAM) in the event that the Commission's approval of [*332] this settlement is overturned by any court.

D. The difference between the revenues that would be due PG&E under the Settlement Agreement and those revenues earned at current rates for service provided between July 1, 1988 and the date upon which Commission approval of the Settlement Agreement becomes effective shall accrue in the DCAA and be transferred from the DCAA to the ECAC balancing account as soon as those revenues can be determined and included in an Advice Filing. The period to collect or refund these revenues will be determined by the Commission in future ECAC proceedings, and will be consistent with the Settlement Agreement.

7. BASIC REVENUE REQUIREMENT (Paragraph 7)

A. The "utility assets" referred to in Paragraph 7B are defined and quantified as follows:

	Estimated Amount June 30, 1988 (in millions)
Asset No. 1 - Excess AFUDC	
Excess AFUDC recorded on Diablo Canyon over interest capitalized under SFAS No. 34, Capitalization of Interest Cost	$ 746
Asset No. 2 - Other incurred costs	
Incurred costs on Diablo Canyon common facilities	64
Deferred taxes on prior flow-through timing differences	104
Incurred costs for nuclear fuel inventory at lower of cost or market	83
Unamortized gain/loss on reacquired debt related to Diablo Canyon	59
Net Required Utility Assets	$ 1,056

[*333]

The amounts above are net of tax and before apportionment between CPUC and FERC jurisdictions, except for item 1 of Asset No. 2. The calculations of the utility asset amounts assume adoption of SFAS No. 96, Accounting for Income Taxes, concurrent with the settlement.

B. The basic revenue requirement for the 1990 test period will be included in ERAM rates by an Advice Filing. Future changes in the basic revenue requirement will be recovered in general rate cases.

C. The basic revenue requirement for these utility assets will be included in the base revenue amount in ERAM and will be modified as described in the preceding paragraph.

8. REVENUE (Paragraph 8)

A. Within 5 days of the publication of the Commission's decision approving the Settlement Agreement, PG&E will file tariff sheets to:

	(in millions)
1. Remove authorized nuclear fuel related revenues from the ECAC/ Annual Energy Rate (AER).	
2. Remove noninvestment-related revenues from base rates, consistent with Decision 88-05-027.	-$ 201.600
3. Remove Diablo Canyon-related administrative and general revenues from base rates, consistent with	- $ 12.047

		(in millions)
	Decision 86-12-095.	
4.	Remove fuel savings related revenue requirements from DCAC rates, consistent with Decision 88-05-027.	- $ 472.856
5.	Increase base rates for recovery of the basic revenue requirement.	+ $ 219.000
6.	Increase ECAC/AER rates for recovery of the revenues as prescribed by Paragraph 8B of the Settlement Agreement. Rates will be based on the forecasted level of generation authorized in the ECAC decision on PG&E's Application No. 88-04-057.	
7.	Increase base rates for recovery of the revenues required to pay for the Independent Safety Committee.	+ $ 0.504

[*334]

B. In the future, rate changes under the Settlement

Agreement will be implemented as follows:

1. The basic revenue requirement will be computed and filed in accordance with the provisions of Paragraph 7B of the Implementing Agreement.

2. The "Diablo Canyon annual revenue" (as defined in Paragraph 8A) less the "basic revenue requirement" (as defined in Paragraph 7) will be filed through annual ECAC applications. Pro forma tariff sheets are attached hereto as Exhibit A.

3. As described in the Settlement Agreement, all revenues related to the Settlement Agreement shall be excluded from AER risk allocation. To accomplish this, a debit or credit entry will be booked to ECAA at the end of the AER forecast period to adjust the amount of the recorded energy expense allocated to the AER. The adjustment shall be based on the difference between the adopted and recorded Diablo Canyon generation multiplied by an energy price formula approved by the Commission.

4. Except as specifically provided in the Settlement Agreement and Implementing Agreement, the current operation of the AER mechanism will not change.

5. The first sentence of Paragraph 8C is modified to read (deletions are [*335] shown by overstriking): "If the difference between the Diablo Canyon annual revenue and the basic revenue requirement is less than zero, PG&E shall still receive the full basic revenue requirement."

C. For purposes of the Settlement and Implementing Agreements, base rates are rates established in general rate case proceedings to recover the non-Diablo Canyon portion of operating and maintenance expenses, administrative and general expenses, depreciation, income tax liabilities, tax expense other than income taxes, return on rate base and decommissioning expenses for the Diablo Canyon and Humboldt Bay Nuclear Power Plants, costs of the Independent Safety Committee, and the basic revenue requirement defined in the Settlement Agreement.

9. FLOOR (Paragraph 9)

A. To trigger the floor as provided in Paragraph 9A, PG&E must inform the Executive Director of the Commission or his successor in writing of its intent to do so. This notice must be provided on or before January 31 of the year following the year for which PG&E elects the floor payments. Example: if PG&E elects the floor payments for 1995, notice must be given on or before January 31, 1996.

B. The first sentence of Paragraph [*336] 9B is modified to read (additions are shown by underlining): "The formula revenue shall be the sum of the then current fixed and escalating prices multiplied by a specified capacity factor multiplied by the megawatt (MW) rating times the number of days in the year (365 or 366) times 24 hours." For example, the formula revenue for 1989 would be:

(31.5 + 51.85) mills/kWhr x 36% x (1073 + 1087) MW x 365 days/year x 24 hours/day = $ 567.762 million.

C. Floor payments equal the greater of the formula revenue or the basic revenue requirement minus any actual Diablo Canyon annual revenue (as defined in Paragraph 8A) for the year in which the floor provision is invoked. For example, assuming the plant operated at 20% in 1989 and PG&E elected to invoke the floor provision, the floor payments would be:

(31.5 + 51.85) mills/kWhr x 36% x (1073 + 1087) MW x 365 days/year x 24 hours/day = $ 567.762 million minus (31.5 + 51.85) mills/kWhr x 20% x (1073 + 1087) MW x 365 days/year x 24 hours/day = $ 315.423 million equals $ 252.339 million.

D. The third sentence of Paragraph 9B is modified to read (additions are underlined): "Each time the floor is triggered, 3% shall also be [*337] deducted from the specified capacity factor for the next applicable year."

E. Required floor repayments are to be made from 50% of revenues received after operations for that year have reached 60% of the annual capacity of Diablo Canyon. PG&E has the option of making additional floor repayments if it chooses.

F. Whenever floor payments received by PG&E are repaid pursuant to Paragraph 9C, the specified capacity factor in effect prior to the repayment shall be increased by 3% for each year's floor payments repaid.

G. PG&E shall establish and maintain a Floor Payment Memorandum Account (FPMA). The FPMA shall be used to record all floor payments received by PG&E, to accrue interest on the amount of the floor payments received pursuant to Paragraph 9C, and to record all repayments of floor payments.

10. DECOMMISSIONING (Paragraph 10)

In addition to the decommissioning revenues described in Paragraph 10 of the Settlement Agreement, the costs of updating, filing and litigating decommissioning costs shall continue to be included in base rates.

11. PURCHASE POLICY (Paragraph 11)

"Hydro spill" is defined as water which bypasses a hydroelectric unit which is capable of additional [*338] generation but for which no load is available and capable of being served. Hydro spill does not include water which may bypass a fully loaded unit due to reservoir storage limitations.

12. SEGREGATION OF COSTS (Paragraph 12)

A. Diablo Canyon operating and overhead costs will be segregated from other PG&E operations. Diablo Canyon costs shall include an allocation of franchise requirements and uncollectible accounts expense. The detailed methodology for allocation of common costs will be described and determined in PG&E's general rate case. This agreement is not intended to limit the rights of the Commission as set forth in the Public Utilities Code with respect to access to the books of account and associated records pertaining to the ownership and operation of Diablo Canyon, including any subsequent capital additions.

B. For purposes of the Settlement Agreement, Diablo Canyon's capital structure (capital costs and ratios) will be assumed to be the same as that of PG&E at June 30, 1988 adjusted to reflect full accrual of amounts recorded in the DCAA. The writeoffs required by the Settlement Agreement and associated with the waiver of amortization rights and the waiver of [*339] the right to collect litigation expenses recorded in the deferred debit account as described in Paragraph 6A, will be assigned to Diablo Canyon.

C. PG&E shall not recover any premium in its authorized return on equity after January 1, 1989 as a result of the Settlement or Implementing Agreement or the operation of Diablo Canyon. Nor shall PG&E incur any decrease in its authorized return on equity after January 1, 1989 as a result of the operation of Diablo Canyon.

D. Any net increase in PG&E's overall cost of capital that is caused by the operation of Diablo Canyon under the Settlement Agreement as compared to the operation of Diablo Canyon under traditional ratemaking, assuming a $ 2 billion disallowance, shall be considered as a Diablo Canyon cost, and recovered only through the revenues provided under the Settlement Agreement. Any party claiming that there has been an increase in the cost of capital shall have the burden of proving the cause and amount of such increase. In addition to any other defenses, PG&E shall have the right to claim that there have been offsetting decreases in the cost of capital due to the operation of Diablo Canyon. If PG&E makes such a claim, PG&E [*340] shall have the burden of proving that, between July 1, 1988 and the date the increase is claimed to have occurred, there was an offsetting decrease in PG&E's overall cost of capital caused by the operation

of Diablo Canyon under the Settlement Agreement as compared to the operation of Diablo Canyon under traditional ratemaking, assuming a $ 2 billion disallowance.

13. ABANDONMENT (Paragraph 13)

A. The floor payments referred to in Paragraph 13A(1) are the floor payments that would be available for the 10 years commencing with the year of the abandonment request, using the specified capacity factors and prices that would be used in those years pursuant to Paragraph 9. For example, assuming PG&E seeks abandonment recovery in the year 2000 and has twice exercised the floor prior to 1997, without repayment, the formula set forth in Paragraph 13A(1) shall be calculated as follows: PG&E may ask for recovery of floor payments for eight years. The price used in calculating those payments would escalate in accordance with the terms of Paragraphs 3 and 4 of the Settlement Agreement, using an estimate of future CPI escalation, where necessary. The total payments would be based on the [*341] following assumed capacity factors:

Year	Assumed Capacity Factor
2000	27%
2001	24%
2002	21%
2003	18%
2004	15%
2005	12%
2006	9%
2007	6%

B. Paragraph 13A(2) is modified to read (changes are shown by overstriking and underlining), "$ 3.00 billion in capital costs through 1988, reduced by $ 100 million per year on January 1 of each year starting in 1989. In the event of a prolonged nationwide shutdown of all nuclear plants (not just Westinghouse plants), the capital cost amount computed under this subparagraph may be increased by the CPUC to include the non-equity portion of reasonable direct costs of capital additions made on or after July 1, 1988, reduced by straight-line depreciation."

C. If PG&E abandons operation of Diablo Canyon or permanently retires Diablo Canyon with a net credit balance remaining in the FPMA, as defined in Paragraph 9G of this Implementing Agreement, PG&E shall file a request with the Commission to terminate the FPMA. Nothing in the Settlement Agreement or Implementing Agreement shall preclude the parties from proposing or the Commission from considering such factors as the unpaid balance in the FPMA and the financial [*342] impact of abandonment upon PG&E in determining the reasonable level of abandonment costs to be provided to PG&E.

D. PG&E shall maintain the following abandonment rights accounts:

(1) Initial Plant Allowance Account which shall track the capital costs of Diablo Canyon through 1988 as described in Paragraph 13A(2) ($ 3 billion).

(2) Accumulated Depreciation Account which shall track the annual reductions in the capital costs described in Paragraph 13A(2) ($ 100 million annually for 28 years).

(3) Capital Additions Account which shall track Diablo Canyon-related capital additions described in Paragraph 13A(2).

(4) Accumulated Depreciation for Capital Additions Account which shall track annual depreciation for the amounts in the Capital Additions Account based on the expected useful life of those additions.

14. CAPACITY FACTOR

For purposes of the Settlement Agreement and this Implementing Agreement, capacity factor shall be calculated for each unit according to the following formula:

(Net generation for the year in megawatt hours) x 100% / (MW rating per Paragraph 9B) x (number of hours in year)

15. SAFETY (Paragraph 16 and Attachment A)

No person shall serve as a member [*343] of the Independent Safety Committee if he or she has received $ 250 or more in income (as defined in Government Code Section 82030, but excluding dividends or interest from stocks or bonds) or gifts (as defined in Government Code Section 82028) from PG&E or an affiliated company within twelve

months prior to the start of his or her original term, or if he or she has, at the time of the commencement of service, an investment (as defined in Government Code Section 82034) worth $ 1000 or more in PG&E or any affiliated company. In addition, no member of the Independent Safety Committee shall make, participate in making, or in any way attempt to use his or her official position to influence any action of the Independent Safety Committee in which he or she knows or has reason to know that he or she has a financial interest. The provisions of the Political Reform Act, including implementing regulations and rulings, as applied to Government Code Section 87100 shall be used to determine whether a member has a conflict of interest.

Members of the Independent Safety Committee shall file a Statement of Economic Interest at the same time and in the same manner as designated employees of the [*344] Public Utilities Commission must file under the Political Reform Act and Commission Conflict of Interest Code. Members of the Independent Safety Committee shall disclose any investment in or income from the following:

(1) An electric corporation subject to the jurisdiction of the Commission, including any parent, subsidiary or affiliated business entity;

(2) A business entity that regularly supplies natural gas, nuclear fuel, fuel oil or other forms of energy to an electric corporation subject to the jurisdiction of the Commission;

(3) Any business entity that has done more than $ 10 million of work on the design, construction, engineering or operation of the Diablo Canyon power plant.

Copies of the members' Statements shall be filed with the Governor, the Attorney General and the Energy Commission and shall be available for public inspection.

DATED: July 15, 1988

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PRELIMINARY STATEMENT

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B.  ENERGY COST ADJUSTMENT CLAUSE (ECAC)
     1.  PURPOSE: The purpose of this Energy Cost
         Adjustment Clause (ECAC) provision is to
         reflect in rates: (1) the cost of fuel,
         (2) purchased power, (3) the revenue                    (T)
         requirements associated with fuel oil
         inventory, and (4) certain other energy-related         (T)
         costs.
     2.  APPLICABILITY: This ECAC provision applies
         to bills for service under applicable
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B. ENERGY COST ADJUSTMENT CLAUSE (ECAC)

rate schedules and under contracts subject to the jurisdiction of the Commission.

3. EFFECTIVE RATES: The Adjustment Rates and Annual Energy Rates, in effect at any time and applicable to bills for service under each rate schedule and contract, shall be the Average Adjustment Rate and Annual Energy Rate determined pursuant to the following provisions and adjusted to reflect the rate design standards of the Commission and the requirements of applicable law. The rates so adjusted shall become effective for service on and after the Effective Date. The amount to be added to or subtracted from each bill for service shall be the product of the total kilowatt hours for which the bill is rendered multiplied by the applicable Adjustment Rates and by the applicable Annual Energy Rates. The Adjustment Rates and Annual Energy Rates applicable to each rate schedule will be set forth in the Rate Schedule Summary in the Preliminary Statement.

4. DEFINITIONS:

a. EFFECTIVE DATE: The Effective Date for revised Adjustment Rates and Annual Energy Rates shall be the applicable Revision Date or such other date as the Commission may authorize.

b. FORECAST PERIOD:

(1) The Forecast Period for calculating Adjustment Rates shall be the 12 calendar month period commencing with the applicable Revision Date.

(2) The Forecast Period for calculating the Annual Energy Rates shall be the 12 calendar month period commencing with the Revision Date.

c. FRANCHISE FEES AND UNCOLLECTIBLE ACCOUNTS: Franchise Fees and Uncollectible Accounts Expense shall be included at the rate derived from PGandE's most recent general rate case decision issued by the Commission.

d. REVISION DATE(S):

(1) The Revision Dates for calculating Adjustment Rates shall be August 1 of each year and, when required by the conditions set forth in Decision No. 83-02-076, February 1 of the next succeeding year.

(2) The Revision Date for calculating Annual Energy Rates shall be August 1 of each year.

e. DIABLO CANYON SETTLEMENT AGREEMENT: The Diablo Canyon Settlement Agreement is that agreement signed June 24, 1988, and adopted by the Commission on (Date) by Decision No. (Number), which describes the methods by which the costs of owning and operating the Diablo Canyon Nuclear Power Plant are to be included in PG&E's rates. (N)

B. ENERGY COST ADJUSTMENT CLAUSE (ECAC)

5. CALCULATION OF THE AVERAGE ADJUSTMENT RATE: The Average Adjustment Rate shall be determined as follows:

a. The volumes of gas and of each type of oil and coal fuel estimated to be used for electric generation in each month of the Forecast Period, ** expressed in millions of Btu and the volumes of geothermal production in each month of the Forecast Period, expressed in kilowatthours, shall be multiplied by the current price of each as set forth below; (D)

(1) The current price of gas fuel shall be the weighted average of a) the billing price excluding markup and O&M expense for those therms of gas used to generate energy for off-system sales and b) the G-55 gas rate for the remaining therms of gas used to generate energy for electric sales during the Forecast Period.

(2) The current price of low sulphur fuel oil (LSFO) shall be the estimated price computed on a last-in first-out (LIFO) method in each month of the forecast period using the estimated replacement price of LSFO during the forecast period and the estimated additions and withdrawals in each such month.

(3) The current prices of oil and coal fuel, other than LSFO, shall be the estimated average cost in dollars per million Btu of each type from inventory (CPUC Account No. 151, Fuel Stock) computed as of the end of the month prior to each month of the Forecast Period, using the estimated replacement price of each type of such fuel during the Forecast Period and the estimated additions and withdrawals in each such month.

(4) The current price of geothermal energy shall be the estimated average prices per kilowatthour of geothermal plant output (including payments for effluent disposal) of producers effective for production during the Forecast Period. (D)

b. Plus: the total cost of purchased electric energy as estimated to be recorded in the Forecast Period in CPUC Account No. 555, Purchased Power, including payments for Auxiliary Power Sources (APS) and purchases from Cogenerators and Small Power Producers; Less: the amount of revenue estimated to be billed during the Forecast Period, excluding O&M at the contract rate, for off-system sales;

c. Plus: an adjustment to reflect the revenue requirement associated with fuel oil

B. ENERGY COST ADJUSTMENT CLAUSE (ECAC)

inventory estimated for the Forecast Period;

d. Plus: the fuel oil contract facility charges estimated to be recorded during the Forecast Period;

e. Plus: the fuel oil contract underlift payments estimated to be recorded during the Forecast Period;

f. Less: 91 percent of the amount of gains (or plus 91 percent of the amount of losses) on the sale of fuel oil and adjustments thereto estimated to be incurred during the Forecast Period;

g. Plus: the estimated payments to others during the Forecast Period for water used in the Utility's hydroelectric production;

h. Plus: the estimated fair value of electric energy produced during precommercial testing of any generating facility.

i. Less: nine percent of the sum of 5(a) through 5(h) above;

j. Plus: an adjustment to reflect 91 percent of the revenue requirement associated with excess fuel oil inventory estimated for the Forecast Period;

k. Plus: the estimated amount to be recovered during the Forecast Period pursuant to the Diablo Canyon Settlement Agreement, as described in part 6.g. below. (N) (N)

l. The net of 5(a) though 5(k) above shall be allocated to the sales subject to this ECAC provision during the Forecast Period in the manner set forth in term 6(j) below; (T) (T)

m. Plus: 91 percent of the sum of 1/24 of the CPUC jurisdictionalized fuel oil inventory (FOI) write-down amount on January 1, 1987 to be amortized during the forecast period. (T)

n. Plus: 91 percent of the sum of the monthly interest on the average balance in the FOI write-down ECAC subaccount at a rate equal to 1/12 of the balancing account interest rate during the forecast period. (T)

o. Plus: any estimated debit balance (or less any estimated credit balance) in the Energy Cost Adjustment Account as of the Revision Date, adjusted to amortize such balance over the appropriate period; (T)

p. the net of items 5(l) through 5(o) above, increased to provide for Franchise fees and Uncollectible Accounts Expense, shall be divided by the Forecast Period kilowatt-hours of applicable jurisdictional sales. * (T)

6. ENERGY COST ADJUSTMENT ACCOUNT: PG&E shall maintain an Energy Cost Adjustment Account. Entries shall be made to this account at the end of each month as follows: (T)

a. A debit entry equal to 91 percent of the algebraic sum of the following items:

B. ENERGY COST ADJUSTMENT CLAUSE (ECAC)

(1) The actual cost of gas used to generate electricity for off-system sales at the billing price (excluding markup and O&M), the remaining gas used to generate electricity at the G-55 gas rate, oil, and coal ** used for the generation of electricity during the month, such cost to include underlift and facilities payments to fuel oil suppliers and 91 percent of any gains or losses from fuel oil sales; (T)

(2) Plus: The actual costs of purchased electric and geothermal and other steam energy, such cost to include purchases from Cogenerators and Small Power Producers, during the month; Less: the amount of revenue, excluding O&M at the contract rate, billed during the month for off-system sales.

(3) Plus: The actual costs of transmission of electricity by others (wheeling), excluding nonvariable payments for continuing transmission services;

(4) Plus: The recorded fuel expense during the month associated with fuel receipts in payment for electric service;

(5) Plus: The carrying costs on fuel oil in inventory at the rate equal to 1/12 of the interest rate on banker's acceptances (top-rated, three months) for the previous month as published in the Federal Reserve Statistical Release, G.13, or its successor publication applied to 6.107 million barrels at $ 14.19 per barrel;

(6) Plus: Payments to others for water used in PG&E's hydroelectric production; (T)

(7) Plus: The fair value of electric energy produced during precommercial testing of any generating facility.

b. A credit entry equal to the amount of revenue billed during the month under the Adjustment Rates excluding the allowance for Franchise Fees and Uncollectible Accounts Expense;

c. A debit entry equal to 91 percent of the product of 1/12 of the balancing account interest rate and the recorded inventory level in excess of 6.107 million barrels at $ 14.19 per barrel.

d. A debit entry equal to 91 percent of the product of 1/12 of the balancing account interest rate and the difference between the average inventory value per barrel and $ 14.19 multiplied by the number of barrels in inventory.

e. A debit entry equal to 91 percent of 1/24 of the CPUC jurisdictionalized FOI write-down amount on January 1, 1987.

f. A debit entry equal to 91 percent of the interest on the average of the balance

B. ENERGY COST ADJUSTMENT CLAUSE (ECAC)

in the FOI write-down ECAC subaccount at the beginning of the month and the balance at the end of the month at a rate equal to 1/12 of the ECAC balancing account interest rate.

g. A debit entry equal to the amount allowed to recover the costs of owning and operating the Diablo Canyon Nuclear Power Plant as specified in the Diablo Canyon Settlement Agreement. This debit, whether computed in accordance with (1) or (2) below, shall exclude the allowance for Franchise Fees and Uncollectible Accounts Expense and shall not be less than zero. (N)

(1) This amount shall be computed as:

(a) the net generation from Diablo Canyon during the month multiplied by the price in effect as defined in Paragraphs 3, 4, and 5 of the Diablo Canyon Settlement Agreement;

(b) minus the amount of the Diablo Canyon Basic Revenue Requirement, defined in Paragraph 7 of the Diablo Canyon Settlement Agreement, included in PG&E's Base Revenue Amount, described in part D of the Preliminary Statement, recorded in PG&E's Electric Revenue Adjustment Account for the month. (N)

PG&E shall record at the end of the calendar year an adjustment to this Energy Cost Adjustment Account, if necessary, such that the cumulative amount recorded for the calendar year shall be the greater of (a) the amount which would result if this computation were made based solely on the annual net generation from Diablo Canyon minus the annual Diablo Canyon Basic Revenue Requirement, or (b) zero.

(2) If PG&E has notified the Commission that the floor provision of Paragraph 9 of the Diablo Canyon Settlement Agreement has been invoked, the amount of this debit shall be computed as: (N)

(a) the net generation from Diablo Canyon (both generating units) during the month had the plant operated at the capacity factors set forth in Paragraph 9B of the Diablo Canyon Settlement Agreement, multiplied by the prices in effect as defined in Paragraphs 3, 4, and 5 of the Diablo Canyon Settlement Agreement;

(b) minus the amount of the Diablo Canyon Basic Revenue Requirement, defined in Paragraph 7 of the Diablo Canyon Settlement Agreement, included in PG&E's Base Revenue Amount, described in part D of the Preliminary Statement, recorded in PG&E's Electric Revenue Adjustment

B. ENERGY COST ADJUSTMENT CLAUSE (ECAC)

Account for the month.

h. A credit entry equal to the amount computed in part 11.b. below, reflecting repayment of revenues which may be received by PG&E pursuant to the floor provisions (Paragraph 9) of the Diablo Canyon Settlement Agreement.

i. A debit or credit entry to adjust, if necessary, the total energy costs to be recovered through the Annual Energy Rate due to variations in net generation from Diablo Canyon, pursuant to Paragraph 8 of the Diablo Canyon Settlement Agreement. This entry shall be made at the end of the AER Forecast Period and shall be a debit if Diablo Canyon net generation during the period was less than the adopted forecast and a credit if the net generation was greater than the adopted forecast. This entry shall be computed as the product of the jurisdictional factor adopted for the forecast period times 9 percent of the product of the average utility-electricity-generation gas rate adopted for the Forecast Period times the system average heat rate adopted for the Forecast Period times the difference between the recorded net generation from Diablo Canyon and the estimated net generation from Diablo Canyon previously adopted for the Forecast Period. (N)
The components of the formula described above will be determined in each ECAC application. (N)

j. It is intended that this account reflect only the balances to be amortized by (N)
rates for sales to which this Energy Cost Adjustment Clause applies. For the (T)
purpose of determining entries to the Energy Cost Adjustment Account, items 6(a), 6(c), 6(d), 6(g), 6(h), and 6(i), above, in any month shall be (T)
pro-rated to applicable jurisdictional energy sales * by the ratio of such jurisdictional energy sales and energy sales under Federal Energy Regulatory Commission jurisdiction, * excluding sales associated with any off-system transactions in 6(a)(2) and in 6(a)(4) above.

k. A debit entry equal to interest on the average of the balance in this account at (T)
the beginning of the month and the balance in this account after entries 6(a) through 6(i) above, and adjusted as stated in 6(j) above, if the average balance (T)
is debit (credit entry, if the average balance is credit), at a rate equal to 1/12 of the interest rate on Commercial Paper (3 months) for the previous month as published in the Federal Reserve Statistical Release, G.13. Should publication of the interest rate on

B. ENERGY COST ADJUSTMENT CLAUSE (ECAC)

three-month Commercial Paper be discontinued, interest will so accrue at the rate of 1/12 of the previous month's interest rate on Commercial Paper, which most closely approximates the rate that was discontinued, and which is published in the Federal Reserve Statistical Release, G.13, or its successor publication.

1. The balance in this account is subject to annual adjustment to implement the Earnings Limitation Provision, set forth in item 10 below. Any such adjustment shall include one-half year's interest at the annual average of the monthly interest rates applicable to this account. (T)

7. ANNUAL ENERGY RATE (AER): The AER shall be determined as follows:
   a. Nine percent of the net of 5.a. through 5.h. above;
   b. Plus: nine percent of the sum of 1/24 of the FOI write-down amount to be amortized during the forecast period;
   c. Plus: nine percent of the sum of the monthly interest on the average balance in the FOI write-down ECAC subaccount at a rate equal to 1/12 of the ECAC balancing account interest rate during the forecast period.

   The net of 7.a. through 7.c. above shall be allocated to the sales subject to the ECAC provision during the Forecast Period in the manner set forth in term 6.g. above and increased to provide for Franchise Fees and Uncollectible Accounts Expense, shall be divided by total sales during the Forecast Period.

8. TIME AND MANNER OF FILING: PG&E shall file an application for authority to place into effect revised Adjustment Rates with the California Public Utilities Commission on or before April 21 of each year with respect to the August 1 Revision Date and December 3 of each year with respect to the February 1 Revision Date. Each such filing shall be accompanied by a report which shows the derivation of the rate to be applied. (T)

9. ANNUAL REVIEW OF REASONABLENESS: In conjunction with the filing for the August 1 Revision Date, PG&E shall file with the Commission on April 7 of each year, a report on the reasonableness of recorded fuel and energy costs and other energy-related costs includable in the Energy Cost Adjustment Account during the twelve-month period ending January 31 of each year. (T)

10. EARNINGS LIMITATION PROVISION:
   a. PURPOSE: The purpose of the Earnings Limitation Provision is to place a limitation on the amount of pretax earnings variations which the Utility may

B. ENERGY COST ADJUSTMENT CLAUSE (ECAC)

experience due to unforecast energy cost changes.

b. DEFINITIONS:

(1) CAPITAL RATIO FOR COMMON EQUITY: The Capital Ratio for Common Equity is the rate adopted in the Commission's most recent general rate decision with respect to PG&E, applicable for the Record Period, which reflects the common equity component of the capital structure. (T)

(2) RATE BASE: The Rate Base is the average California jurisdictional rate base adopted by the Commission in the most recent general rate decisions with respect to PG&E, applicable for the Record Period, adjusted to reflect any changes in rate base adopted by the Commission in other decisions that affect rate base. (T)

(3) RECORD PERIOD: The Record Period is the 12 calendar month period ending on July 31 of each year.

c. EARNINGS LIMIT: The Earnings Limit shall be calculated as follows: I = RB x CR[CE] x 0.0140, where: I = Earnings Limit, RB = Rate Base, CR[CE] = Capital Ratio for Common Equity, and 0.0140 = the 140 basis point cap on variations in pre-tax return on common equity adopted by the Commission in Decision No. 83-08-048.

d. EARNINGS LIMITATION AMOUNT: PG&E shall calculate annually the Earnings Limitation Amount to be included in the ECAC Balancing Account. This amount shall be determined from the following calculations: (T)

(1) Nine percent of the CPUC jurisdictional recorded total fuel and purchased power costs and other energy-related costs applicable for inclusion in the AER during the Record Period, including the adjustment described in item 6(i) above; (T)

(2) Less: the amount of revenue billed during the Period under the AER, not including the allowance associated with Franchise Fees and Uncollectible Accounts Expense;

(3) If the net of items 10(d)(1) and 10(d)(2) above is a positive amount, it shall be reduced by the Earnings Limit. If this calculation produces a positive amount, such amount shall be the Earnings Limitation Amount to be debited to the Energy Cost Adjustment Account. If this calculation produces a negative amount, no entry shall be made to the Energy Cost Adjustment Account. If the net of items 10(d)(1) and 10(d)(2) above is a

B. ENERGY COST ADJUSTMENT CLAUSE (ECAC)

negative amount, it shall be increased by the Earnings Limit. If this calculation produces a negative amount, such amount shall be the Earnings Limitation Amount to be credited to the Energy Cost Adjustment Account. If this calculation produces a positive amount, no entry shall be made to the Energy Cost Adjustment Account.

11. PG&E shall maintain a memorandum account that will accumulate any revenues received (N)
by PG&E pursuant to the floor provision (Paragraph 9) of the Diablo Canyon Settlement Agreement and any amounts of such revenues returned to ratepayers. If PG&E notifies the Commission that the floor provisions have been invoked, entries to the account shall be made at the end of each calendar year as follows:

a. A credit equal to the amount by which the floor revenue debited to the Energy Cost Adjustment Account, pursuant to part 6.g.(2) above, exceeds the amount that would have been debited to the Energy Cost Adjustment Account pursuant to part 6.g.(1), above, based on net generation from the Diablo Canyon Power Plant during the year, excluding the limitation that the computation in part 6.g.(1), above, not be less than zero. (N)

b. A debit equal to one-half of the net generation at the Diablo Canyon Power Plant (N)
that is in excess of net generation at a 60-percent capacity factor multiplied by the price effective for the year as specified in Paragraphs 3, 4, and 5 of the Diablo Canyon Settlement Agreement. This computed amount is the minimum that must be debited to the memorandum account. PG&E has the option of debiting a larger amount. The amount of this debit shall be limited, if necessary, to that amount required to bring the net balance in this memorandum account to zero.

c. A credit equal to the interest on the average of the balance in this memorandum account at the beginning and at the end of the year, computed at the interest rate on 10-year single A utility bonds as listed in the last issue of Moody's Bond Survey published in the year in which the floor provision is invoked.

PG&E shall credit the Energy Cost Adjustment Account with an amount equal to the debit described in part 11.b., above. This credit is the repayment of revenues received by PG&E pursuant to the floor provision of the Diablo Canyon Settlement Agreement. (N)

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* Except (a) for sales for which payment is made in fuel. Sales under Federal Energy Regulatory (L) Commission jurisdiction, where used herein, shall be adjusted by multiplying such sales by the ratio of California jurisdictional sales (excluding the foregoing exceptions) as a fraction system generation for such sales to Federal jurisdictional sales as a fraction of system generation for such sales.

** Excluding fuel receipts in payment for electric service. (L)

APPENDIX E

Table 1-1
Comparison of Performance Based Pricing With
Traditional Cost of Service Ratemaking
Nominal $ Millions

	Performance Based Pricing			Traditional
	Fixed Payment (1)	Escalating Payment (2)	Total Payment (3)	Cost of Service Ratemaking (4)
1985			$ 311	$ 311
1986			637	637
1987			656	656
1988	$ 174	* $ 573	747	707
1989	346	569	915	730
1990	346	634	980	2306
1991	346	707	1053	2316
1992	346	789	1134	2319
1993	346	879	1225	2319
1994	346	959	1304	2288
1995	346	997	1343	1366
1996	346	1037	1383	1376
1997	346	1080	1426	1393
1998	346	1124	1470	1412
1999	346	1170	1516	1442
2000	346	1218	1564	1463
2001	346	1268	1614	1489
2002	346	1320	1666	1529
2003	346	1374	1720	1588
2004	346	1431	1776	1628
2005	346	1489	1835	1710
2006	346	1550	1896	1760
2007	346	1614	1960	1826
2008	346	1680	2026	1901
2009	346	1749	2095	1984
2010	346	1821	2166	2078
2011	346	1895	2241	2184
2012	346	1973	2319	2305
2013	346	2054	2400	2448
2014	346	2138	2484	2624
2015	233	1502	1735	2596
2016	34	230	264	2084
1985 NPV at 11.5%			$ 10,041	$ 12,601
			-10,041	
NPV Difference				$ 2,560

[*347]

* Includes DCAA payment for 1st half of 1988.

APPENDIX F

Table 1-2
Comparison of Performance Based Pricing With
Traditional Cost of Service Ratemaking
1985 Present Value $ Millions

	Traditional Cost of Service

	Performance Based Pricing Ratemaking, Incl. Cumulative Fixed Escalating Total DCAA Amortization Difference				
	(1)	Payment (2)	Payment (3)	Payment (4)	(5)
1985			$ 311	$ 311	$ 0
1986			571	571	0
1987			527	527	0
1988	$ 126	$ 413	539	510	-29
1989	224	368	592	473	-148
1990	201	368	569	1338	621
1991	180	368	548	1205	1279
1992	161	368	529	1083	1832
1993	145	368	513	971	2289
1994	130	360	490	859	2659
1995	116	336	452	460	2667
1996	104	313	418	416	2665
1997	94	292	386	377	2656
1998	84	273	357	343	2641
1999	75	255	330	314	2625
2000	68	238	306	286	2606
2001	61	222	283	261	2584
2002	54	207	262	240	2562
2003	49	194	242	224	2544
2004	44	181	225	206	2525
2005	39	169	208	194	2511
2006	35	158	193	179	2497
2007	32	147	179	167	2485
2008	28	137	166	155	2475
2009	25	128	154	146	2466
2010	23	120	143	137	2461
2011	20	112	132	129	2457
2012	18	104	123	122	2457
2013	16	97	114	116	2459
2014	15	91	106	112	2465
2015	9	57	66	99	2498
2016	1	8	9	71	2560
Total 1985 NPV at 11.5%			$ 10,041	$ 12,601	

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APPENDIX G

REVENUE REQUIREMENT REVISIONS AND ACCOUNT ADJUSTMENTS

Pacific Gas and Electric Company

Diablo Canyon

1. Revisions to Attrition Year 1989 Revenue Requirement

Revenues herein are on a CPUC-jurisdictional basis, including franchise fees and uncollectibles (FF&U), except where noted. Diablo Canyon revenue revisions will be incorporated into the revenue requirement used to set rates in PG&E's current ECAC proceeding (A.88-04-020 and A.88-04-057).

A. Base Energy Rate

Change to Base Revenue Amount:

Amount ($ million)	Item	Source
$ (201.600)	Exclude Diablo Canyon noninvestment expenses from Base Revenue Amount and base rates.	Tariff Sheet 10539-E
(12.141)	Exclude Diablo Canyon administrative and general expenses from Base Revenue Amount and base rates.	Ex. 515, p. 49
+ 216.943	Basic Revenue Requirement. n1	Rev. workpapers

Amount ($ million)	Item	Source
$ 3.202	Total	dated 12/12/88

n1 Calculated at 11.04% rate of return (13.00% return on equity).

B. Energy Cost Adjustment Clause (ECAC)

(1) Exclusion of nuclear fuel expenses in D.88-12-040

= $ (99.791) million x 0.91 x 0.9774 x 1.00774

= $ (89.444) million.

(2) Calculation [*349] of Diablo Canyon energy purchase cost: In PG&E's current ECAC case the adopted level of Diablo Canyon generation for the August 1, 1988 - July 31, 1989 forecast period is based on a 67% full cycle capacity factor, 18 month cycle length, 12 week refueling outage and 146 gWh generation loss during ramp-up at the start of each fuel cycle. During the ECAC forecast period there is one refueling outage forecast for Unit 2, but during calendar 1989 the one refueling outage will be for Unit 1. That change to ECAC forecast generation is made here.

Operating cycle capacity factor

= [(1.5 x 365) / ((1.5 x 365) - (12 x 7))] x 67 = 79.14%.

Unit 1 capacity = 1073 MW; Unit 2 capacity = 1087 MW.

Calendar 1989 generation

= [(1073 x (365 - (12 x 7))) + (1087 x 365)] / 1000 x 24 x 0.7914 - 146

= 13,116.6 gWh.

Calendar 1989 Diablo energy price

= 0.0315 fixed + 0.05185 escalating = $ 0.08335 per kWh.

Calendar 1989 Diablo Canyon energy purchase cost

= 13,116.6 million x $ 0.08335 x 0.9774 ECAC juris. factor

= $ 1,068.561 million.

(2) Independent Safety Committee revenue requirement

= $ 500,000 x (0.08335 / 0.078) x 1.00774 / 1,000,000 first year escalation FF&U

= $ 0.538 million.

(3) [*350] Change to ECAC revenue requirement:

Amount ($ million)	Item	Source
$ (89.444)	Exclude nuclear fuel expenses.	Calculation above
1,068.561	Energy purchase cost.	Calculation above
(216.943)	Exclude Basic Revenue Requirement.	Base Energy Rate
+ 0.538	Independent Safety Committee.	Calculation above
$ 762.712	Total	

C. Annual Energy Rate (AER)

Exclusion of nuclear fuel from AER revenue requirement

= $ (99.791) million x 0.09 x 0.9774 x 1.00774

= $ (8.846) million.

D. Diablo Canyon Adjustment Clause (DCAC)

Revenue requirement will be reduced from the present $ 472.856 million to zero.

E. Summary of Changes to Revenue Requirement

Amount ($ million)	Rate Element
$ 3.202	Base Energy Rate
762.712	ECAC rate
(8.846)	AER
+ (472.856)	DCAC rate
$ 284.212	Total

These changes are relative to previously authorized revenues, not present rate revenues. For this reason, revenue changes may differ slightly from revenue changes reported for rate design purposes in connection with PG&E's current ECAC case. Adopted revenues are not affected.

2. Ratemaking Account Adjustments for the Period July 1, 1988 - December [*351] 31, 1988

Account adjustments herein are on a CPUC-jurisdictional basis, identified as including or excluding FF&U as appropriate. Note that the ERAM account and AER revenue requirement include FF&U, but the ECAC and DCAC accounts do not. Individual account adjustments for interest charges are not shown, but PG&E should incorporate interest charges in its calculation of the net adjustment, including interest at the ECAC account rate on AER revenues billed to customers.

The intent of the adjustments is to compute a single ECAC account entry to reflect revenue impacts on PG&E as if the settlement were effective July 1, 1988. Many of the calculations are only illustrative, awaiting availability of recorded data.

A. ERAM Account

For the July 1 - December 31, 1988 period the ERAM account balance must be adjusted to exclude debits for noninvestment expenses and administrative and general expenses, and to include debits for the Basic Revenue Requirement.

(1) Debits to the ERAM account are recorded by using the monthly distribution factors shown on Tariff Sheet 10143-E:

July	0.091
August	0.092
September	0.090
October	0.082
November	0.080
December	0.082.

[*352]

The total for six months is 0.517.

(2) Annual revenue requirement for noninvestment expenses is $ 201.600 million, including FF&U, per Tariff Sheet 10539-E. Stipulated annual administrative and general expenses embedded in the Base Revenue Amount are $ 12.141 million, also including FF&U, per Ex. 515, p. 49.

(3) The CPUC-jurisdictional Basic Revenue Requirement for 1988 is $ 110.929 million, which must be multiplied by two to be put on an annual basis. The amount is from Ex. 515, Tab H1.

(4) Net ERAM account adjustment

= 0.517 x [- $ 201.600 - $ 12.141 + (2 x $ 110.929)] million

= $ 4.196 million, including FF&U.

This calculation does not require updating for recorded data.

B. ECAC Account

The ECAC account balance must be reduced to exclude nuclear fuel expenses, increased for Diablo Canyon energy purchase costs; and reduced to exclude the Basic Revenue Requirement.

(1) Nuclear fuel adjustments will equal recorded monthly ECAC account entries, not recorded total expenses. The account entries are equal to recorded expenses times the monthly recorded ECAC jurisdictional factors times the authorized ECAC fraction. The ECAC fraction is 0.91 from July 1 to September [*353] 21, 1988 and 1.00 thereafter, due to the suspension of PG&E's AER ordered by D.88-09-036. The adjustment excludes FF&U.

(2) Monthly Diablo Canyon energy purchase costs will be the recorded net generation by the plant times the recorded monthly ECAC jurisdictional factors times 7.8 cents per kWh. This adjustment includes FF&U, as confirmed by the settlement proponents at the October 12, 1988 Technical Meeting.

(3) The six month adjustment for the Basic Revenue Requirement exactly offsets the ERAM account adjustment for that factor, including FF&U, and is:

= 0.517 x 2 x $ (110.929) million

= $ (114.701) million.

C. Annual Energy Rate

The general approach for this adjustment is to calculate the fraction of AER revenue requirement that is due to nuclear fuel, then multiply that fraction by billed AER revenues for the adjustment period July 1 - September 21, 1988. This adjustment requires recorded billing data from PG&E and includes FF&U.

The nuclear fuel fraction of AER revenues is calculated from the adopted revenues in Appendix B to D.87-11-019, which was in effect for the entire adjustment period. From that decision, the AER allocation of energy expenses is $ 134,573,000, [*354] of which nuclear fuel is 9% of $ 114,562,000. Therefore the nuclear fuel fraction is:

= 0.09 x $ 114,562,000 / $ 134,573,000 = 0.0766.

The net AER adjustment, including FF&U, will be 0.0766 times billed AER revenues for the July 1 - September 21, 1988 period.

D. Diablo Canyon Adjustment Clause

This rate element will be terminated by the settlement. The DCAC account books jurisdictional revenues, excluding FF&U, but the DCAC rates include FF&U. Therefore the net adjustment will be the DCAC billed revenues for July 1 - December 31, 1988 period, and it will include FF&U.

E. Summary of Adjustments

Amount ($ million) Including FF&U	Excluding FF&U	Rate Element
$ 4.196	n2	Base Energy Rate (ERAM)
n2	n3	Nuclear fuel
n4	n2	Diablo Canyon energy purchase
(114.701)	n2	Basic Revenue Requirement
[subtotal]	[subtotal]	Subtotal ECAC adjustment
n5	n2	AER
+ n5	n2	DCAC
[total]	[total]	Total

n2 Amount to be determined by application of FF&U factor of 1.00774 to amount in other column. Multiply or divide as appropriate.

n3 Amount calculated from recorded nuclear fuel expenses.

n4 Amount calculated from recorded plant generation.

n5 Amount calculated from billed revenues. [*355]

The net adjustment to the ECAC account will be the total in the second column of this table. Rates to refund or amortize this amount shall be set in subsequent ECAC proceedings, over a period not to exceed three years.

F. Advice Filing

PG&E shall make the net adjustment to the ECAC account as soon as the necessary data are available, but no later than January 31, 1989. PG&E shall so notify the Commission and all parties to this proceeding by advice filing within 30 days of the date of the adjustment. The advice filing shall include work papers to derive all amounts in the manner shown above, including interest charges.

3. Tariff Sheet Revisions

The tariff sheets in Exhibit 93,303 modify the tariff sheets attached to the Implementing Agreement. They in turn should be revised to include the Diablo Incremental Energy Rate (DIER) in the annual AER adjustment formula.

APPENDIX H

COMPLIANCE REQUIREMENTS

Pacific Gas and Electric Company

Diablo Canyon

1. Reporting

Pacific Gas and Electric Company (PG&E) shall annually file with the Director of the Commission Advisory and Compliance Division (or its successor) a Diablo Canyon Compliance Report, which shall include [*356] all information shown below. The report shall be due March 31 of each year, commencing in 1989 through the year after both plant units are retired or abandoned.

For purposes of the report, the "historical" format requires annual reporting of data from the previous calendar year and all prior years, commencing with commercial operation dates of each plant unit, preferably in the form of tables to be updated each year. "Event" or "one time" formats require reporting events or data from only the previous or current year, without showing prior year data. All calendar year 1988 data should also be separated into periods before and after July 1, 1988, the effective date of the settlement pricing provisions.

This appendix shows minimum reporting requirements. PG&E may reorganize the data or revise the actual report formats as convenient.

2. Production

All production data shall be in the historical format through the end of the previous year, showing unit by unit data and summary data for both units where those summaries have meaning.

A. Cycle information

(1) Cycle number;

(2) Refueling dates

a. Beginning of refueling outage,

b. Start of next fuel cycle or date of abandonment [*357] or retirement;

(3) Refueling outage duration (days);

(4) All other outages of zero net production at either unit lasting 15 days or longer; report dates, durations, and brief descriptions of causes and remedies.

B. Energy production, showing production during summer peak pricing periods (as defined by the Settlement Agreement), nonpeak periods, and annual totals.

(1) Recorded gross gWh;

(2) Recorded net gWh;

(3) Adopted net gWh in ECAC forecast; show data for each ECAC period in the year and annual total. Note the basis for the ECAC forecast: operating or full cycle capacity factor, cycle duration, refueling outage duration, ramp-up losses, etc.

C. Recorded capacity factors, both full cycle and operating cycle. Note data compiled for incomplete fuel cycles.

(1) Annual;

(2) Since start of cycle, even if refueling outage has not yet begun.

D. Off-system sales of Diablo Canyon energy to regular non-jurisdictional customers and due to hydro spill conditions.

3. Consumer Price Index (CPI)

For the one previous year and the current year only, report annual values and % increases from the last year. Show dates when CPI values are reported, adopted, or made effective. [*358]

A. CPI forecast in ECAC proceeding.

B. First report of recorded annual CPI data.

C. All adjustments prior to deadline for use in pricing.

D. Later adjustments too late for use in pricing formula.

4. Pricing. Use historical format through the current year.

A. Price as forecast in ECAC proceeding.

B. Price ultimately applicable for the year.

C. CPI values ultimately applied to pricing formula.

D. CPI % increase from last year.

5. Revenues. Use historical format except where noted.

A. Basic Revenue Requirement through the current year.

(1) Annual values;

(2) Current year results of operation (on one time basis), showing authorized rate of return and return on equity; in 1989 report also report the 1988 results of operation.

B. ECAC forecast revenue requirement (excluding Independent Safety Committee) for each ECAC forecast period in the year, and weighted average. Show dates and applicable jurisdictional factors through the most recent forecast period.

C. Diablo Incremental Energy Rate (DIER) as adopted in ECAC proceedings, through the current year. Show proxy value in 1989 report.

D. Recorded ECAC debits for pricing formula revenues.

(1) [*359] Monthly entries for previous year only

a. expense debits excluding interest charges;

b. jurisdictional factor for that month;

c. applicable interest rate.

(2) Historical basis data

a. annual total debits excluding interest charges;

b. annual weighted average (by number of days) of monthly interest rates;

c. annual weighted average jurisdictional factor.

E. Independent Safety Committee. Use historical format.

(1) Maximum revenue requirement using CPI forecast in ECAC proceeding;

(2) Maximum revenue requirement ultimately applicable for the year;

(3) Annual recorded expenses.

6. Annual AER Adjustment

A. One time basis for previous year.

(1) Formula inputs;

(2) Data sources;

(3) Calculation of amount.

B. Annual adjustment amount, in historical format, noting sign convention.

7. Floor Payments

A. Historical record of specified capacity factor.

B. Historical record of key floor payment activities with dates and notes on whether automatic or elective.

(1) Invoking of trigger;

(2) Floor Payment Memorandum Account (FPMA) repayments.

C. Event format report of floor payment activities relating to previous year production excluding interest [*360] charges.

(1) Dates;

(2) Calculation of floor payment amount;

(3) Attach copies of letters invoking elective or explaining automatic triggers or repayments.

D. Historical record of annual FPMA transactions. Note if automatic or elective.

(1) Account debits from floor payment triggers;

(2) Repayments;

(3) Interest rate for each payment;

(4) Interest charges for each payment;

(5) Account balance.

8. Abandonment Accounts

A. Historical format report of annual account transactions showing capital additions on a total plant basis and the non-equity share account entries. Note jurisdictional basis.

(1) Annual entries;

(2) Interest rate;

(3) Interest charges;

(4) Account balance;

(5) For previous year only, show the basis and computation of the non-equity share of capital additions;

B. For previous year only, show CPUC authorized non-Diablo capital structure, including capital ratios, costs, weighted costs, and total.

9. Monthly General Order 65 Reports

PG&E shall continue to file the monthly financial statements required by G.O. 65, showing the following information.

A. Income statement and balance sheet for total company operations.

B. Income [*361] statement and balance sheet segregated among non-Diablo Canyon operations (CPUC jurisdictional), Diablo Canyon operations, and other non-jurisdictional operations, which when combined equal total company operations.

C. Rate of return on non-Diablo Canyon operations, Diablo Canyon operations, and other non-jurisdictional operations.

D. Monthly allocation between non-Diablo Canyon and Diablo Canyon for the following:

(1) Transactions affecting long term debt accounts.

(2) Transactions affecting preferred stock accounts.

(3) Transactions affecting common stock accounts.

(4) Transactions affecting retained earnings accounts.